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Institute for Creation Research Graduate School
Response to the
Texas Higher Education
Coordinating Board

Executive Summary

Prepared and Submitted
to the
Texas Higher Education Coordinating Board
by
Henry M. Morris III
Chief Executive Officer
March 2008

Introduction

The Institute for Creation Research (ICR) and its educational ministry the Institute for Creation Research Graduate School (ICRGS) is pleased to provide additional information about our Master of Science degree program in Science Education. The following documents are in response to the Texas Higher Education Coordinating Board (THECB) requests that aggregate from the THECB Visiting Team report on November 8, 2007, the interview with the THECB Certification Advisory Council on December 14, 2007, and a subsequent meeting with a special team of advisors assembled by Commissioner Parades on January 10, 2008.

Relying on First Amendment principles, ICR has carefully reviewed and revised its online programs to meet, and in some areas to exceed, virtually all of the AAAS Project 2061 Benchmarks (in science, mathematics, technology, etc,) and National Science Education Standards. Variations would occur only on those content issues which dogmatically or substantively conflict with ICR's sincerely held religious convictions and/or those which dogmatically or substantively conflict with ICR's sincerely held scientific-interpretive positions.

Although it is common for accredited universities in Texas and the United States to teach other disciplines with a "science" designation (i.e. military science; social science; political science, etc.), the real challenge is to accommodate the teaching of the natural sciences (e.g. bioscience and geophysical science) that is comparable to other Texas accredited institutions, and equal to the academic rigor standards

required of them, while duly respecting the academic freedom and religious freedoms prioritized in our U.S and Texas constitutions (and in the Texas Religious Freedom Restoration Act of 1999).

Accordingly, a short list of Special Comments regarding ICRGS's "Institutional Viewpoint Distinctives" is provided in the accompanying Appendix R, to aid consideration of these types of special issues, in hopes that the ultimate outcome promotes educational diversity and liberty within the world of private online postsecondary education.

The ICRGS has made a careful audit of all the THECB critiques of our program, and is confident that we have addressed each of the specified concerns identified by members of the THECB staff and advisors. We have arranged the material in the sequence of the various THECB Standard nomenclatures so that the documentation follows a coherent pattern.

Standard 4: Distinction of Roles

Although the ICR Trustee Board is large and diverse, concern was expressed about the apparent conflict of interest and possible lack of distinction of roles by the ICR Chief Executive Officer and the ICR President. In its January 26, 2008 meeting, the ICR Board of Trustees amended the Bylaws to designate these two offices as *Ex Officio* members of the Board. A copy of the appropriate section of those minutes is provided in Appendix A.

Standard 7: Institutional Assessment

The THECB visiting team recognized that the ICRGS Institutional Assessment was both cumbersome and difficult to administer. The ICRGS had been following a previous guideline from the Transnational Association of Christian Colleges and Schools (TRACS) under which the ICRGS had previously obtained accreditation.

Subsequent to the THECB visiting team's report, the ICRGS adopted the Nichols model for assessment. A copy of the current draft of the ICRGS Handbook of Effectiveness Assessment is provided in Appendix B.

Standard 8: Student Admission and Remediation

Concerns were raised about the ICRGS admission requirements for the different minors within the Science Education program, requesting clarification and amplification in the catalog and on the website. Those concerns are addressed in the Tab for Standard 8 and the specific course requirements are outlined in Appendix L.

Standard 9 and 10: Faculty Qualifications and Size

Requests were made to the ICRGS that we provide a list of the Faculty research and publication history in order to more effectively assess the faculty qualifications. A complete list of research projects and publications is contained in Appendix D.

Concern was expressed that the Science Education component of the ICRGS faculty was insufficient for the number of courses, and a request was made that the ICRGS demonstrate an active recruiting process to obtain qualified faculty. The

public position announcement and subsequent resumes submitted are contained in Appendix D.

Appendix T contains copies of three recent articles from our publications, *Acts and Facts*, which address the issue of scientific evidence.

Standard 12: Curriculum

Although the THECB visiting team carefully reviewed the ICRGS curriculum and recommended approval, the subsequent review by Commissioner Parades' ICR Review Committee requested that the ICRGS conduct a comparative analysis of its curriculum against several specified "smaller" universities in Texas. A summary of the requests and the ICRGS basic response is provided under the Tab labeled "Standard 12: Curriculum." The details of the comparative analysis are contained in the following Appendices:

Appendix E: Comparison of Program Titles

Appendix F: Comparison of Program Purposes

Appendix G: Comparison of Admission Criteria

Appendix H: Comparison of Instructional Delivery Systems

Appendix I: Comparison of Curricula

Appendix J: Comparison of Graduation Requirements

The ICR Review Committee also requested additional information on Scope and Sequence, Prerequisites for Admission, Textbook adoptions, and a listing of the Professional Journal subscriptions. These data are supplied in the following Appendices:

Appendix K: Curriculum Scope and Sequence

Appendix L: Prerequisites for Admission

Appendix M: Comparison of Textbook Adoptions Nationwide

Appendix N: Professional Journal Subscriptions

Standard 15: Library

Concern was expressed by the THECB visiting team that the ICRGS did not have professional library support or personnel. Request was made that the ICRGS identify and secure agreements with strategically located libraries for the online student population to access, and that the ICRGS contract for professional librarian assistance to be immediately available for the student. It was further suggested that the ICRGS prepare an online tutorial to assist its students in the use of their research with the professional journals.

These issues are addressed in Appendix O and P respectively.

Changes in Access to Information

During the Commissioner's special committee meeting of January 10, 2008, concern was expressed that certain information was either difficult to find or verify on the ICRGS website, or that comparisons between ICRGS printed material and its website differed. The ICRGS has undertaken a complete re-write of its Catalog

(provided in the Tab so labeled) and has insured that its website conveys precisely the same information. Further to insure that all material presented to the THECB was consistent, the ICRGS has rewritten all of the course syllabi to conform to other publicly available information. Those syllabi are available in Appendix S.

Standard 4: Distinction of Roles

"…pertaining to Standard 4 – the Distinction of Roles, and consist of removing the Chief Operating Officer and the President from governing board service…"

Source: Recommendation from the Certification Advisory Council review conducted on December 14, 2007.

Assurances were given verbally at the December meeting by CEO Dr. Henry M. Morris III that the ICR Board would take such action at its next scheduled meeting to be held on January 26, 2008. The ICR Board meeting was held as scheduled and an amendment to the ICR Bylaws was made by appropriate motion of the board.

A copy of the relevant portion of the ICR Board Minutes appears in Appendix A.

Standard 7: Institutional Effectiveness

"Articulate in writing to the Coordinating Board staff specific plans and a timetable for implementing institutional assessment as defined in Standard 7."

Source: Agenda Item VIII – G; THECB Agenda for January 24, 2008

Background

During the THECB Site Evaluation Team visit, a member (Dr. Rusty Waller) spent a portion of his interview time discussing with the Dean the issue of annual assessment of institutional effectiveness. During these discussions, the Nichols model was suggested as a viable alternative to the cumbersome system the Graduate School had discontinued several weeks prior to the visit.

Advantages of the Nichols model included ease of management, increased time in the cycle devoted to assessment, simplification of timelines needed to fit with meetings of the Board of Trustees in January and June, and the focus on outcomes, in contrast to accounting for inputs and processes.

Subsequent Activities

Following the Team visit, the Dean obtained copies of handbooks on institutional effectiveness and other assessment resources that were based on the Nichols model.

Utilizing these resources, the Dean began composing components of the Graduate School's Handbook for Effectiveness Assessment. As components were drafted, the Dean circulated them to the faculty members and the Director of Admission/Registrar, for review and revision. The Dean also solicited outcomes from each of these people, and composed such statements for his own office.

Because of the economy of scale at which the Graduate School operates (eight full-time professional employees at this time), it is possible for the Dean and faculty to meet as a "Committee of the Whole" to finalize and refine the contents and processes of the Handbook (the current draft of the Handbook for Effectiveness Assessment appears in Appendix B).

Next Steps

The current draft of the Handbook has been forwarded to the CEO, along with the request that it be reviewed and revised as needed by the Executive Committee of the Board, at its earliest convenience.

Once feedback from the Executive Committee is received, the Dean will update the Handbook, duplicate it, and distribute it for implementation on or about May, 2008, the beginning of the annual effectiveness assessment cycle.

In the meantime, the Committee of the Whole will complete the development of outcome effectiveness assessment tools for each set of outcomes to be assessed (i.e., learning resources, in cooperation with the Dean of Libraries at Southwestern Baptist Theological Seminary).

Standard 8: Student Admission and Retention

"Clarify the admissions requirements to the science education program. What bachelor's degrees and undergraduate courses are required to enroll? Do you allow exceptions? Do you require that the bachelor's degrees be from accredited institutions?"

Source: List of questions/concerns e-mailed from the THECB staff to the Graduate School prior to the January 10, 2008 meeting with the Commissioner and selected THECB staff.

Introduction

Following are the sections of the 2008 – 2009 General Catalog that clarify three important admission requirements to the science education program:

1. the Graduate School, because current students reside in 23 states other than Texas, is not, and cannot be, in the business of teacher certification, but, rather is in the business of teacher education;

2. the Graduate School requires both general and specific prerequisites to be met in order for students to be admitted to degree-seeking status (see the general "Prerequisites" that apply to all applicants below: and

3. the Graduate School allows exceptions to these general prerequisites. The following statement appears in the ICRGS 2008 – 2009 General Catalog on page 18.

> "Students whose overall GPA falls between 2.5 and 3.0 may be admitted on probation, which means they will not be officially admitted into the program until they have completed 9-12 quarter hours with a GPA of 3.0 or higher. Students whose overall GPA is lower than 2.5 may be required to take the general GRE, which must be passed with a score of 1000 (adding the verbal and quantitative scores)."

Teacher Education

The following statement appears in the ICRGS 2008 – 2009 General Catalog on page 17:

> "This program enhances knowledge, skills, and abilities in science and pedagogy of science teachers. It is primarily intended for training teachers for middle and secondary schools, as well as educators who teach postsecondary freshmen and sophomores. "

This program is also appropriate for some elementary teachers, science lecturers, administrators, and various types of science literature writers.

ICRGS is especially sensitive and responsive to the unique niche and needs, in the science education market, for quality-trained science educators who can teach in those private schools which select or invite a creation science perspective, such as church-affiliated Christian K-12 schools, Christian liberal arts colleges, and Bible colleges, as well as for various Christian parachurch organizations, including creation science literature publishers.

ICRGS's program is uniquely positioned and equipped to serve the educational needs of this specialized education market, as that market seeks science teachers who can teach from the creation science perspective, yet are also well-informed on (and who can comparatively teach) the evolutionary model for interpreting origins and empirical scientific data."

General and Specific Prerequisites

Applicants who are admitted to degree seeking status will possess a variety of academic qualifications, which include the following (these statements appear under the heading of "Prerequisites" on page 40 of the General Catalog):

- "An undergraduate degree from a regionally accredited college or university (in the case of international applicants, and institution of equivalent standing);

- "A cumulative grade-point average for the undergraduate degree of 2.75 or higher (4.0 = A);

- "Undergraduate courses in the sciences and supporting academic disciplines, as specified in the section of this catalog that presents the Academic Departments and their requirements for a minor."

Following are the specific prerequisites for the respective minors:

Prerequisites for admission to the Astro-Geophysics minor: "Students entering this course of study are expected to have completed during their undergraduate education the following course work: Mathematics – two semesters calculus; Physics – two semesters (8 semester hours), calculus- based, including labs; Chemistry – two semesters (8 semester hours) including labs; Meteorology – one semester (3 semester hours); Astronomy – one semester (3 semester hours), Geology – one semester (3 semester hours).

Students with a minor emphasis in one of the other disciplines who desire to enroll in one of the Astro-Geophysics courses will be counseled as to their appropriate preparedness for success in the Astro-Geophysics course of their choice. A score above the 60th percentile on the Physics GRE subject test would

merit enrollment in Astro-Geophysics courses" (this statement appears on page 24-25 of the General Catalog).

Prerequisites for admission to the Biology minor: "Students entering this course of study are expected to have completed during their undergraduate education the following course work: Biology – two semesters of general biology (or one semester each of zoology and botany), one semester in genetics, cell biology (or physiology), developmental biology, environmental biology (ecology), and anatomy and physiology; Chemistry – two semesters of general chemistry and two semesters of organic chemistry; Mathematics – one semester of introductory calculus and one semester of statistics; Physics – two semesters of general physics.

Students with a minor emphasis in one of the other disciplines for the Master of Science degree desiring to enroll in one of the Biology courses will be counseled as to their appropriate preparedness for success in the Biology course of their choice. A score above the 60th percentile on the Biology GRE subject test would merit enrolment in Biology courses" (this statement appears on page 30 of the General Catalog).

Prerequisites for admission to the Geology minor: "Students entering this course of study are expected to have completed during their undergraduate education the following course work: Geology – one semester of physical or historical geology; Biology – one semester of zoology or botany; Chemistry – two semesters of general chemistry; Physics – two semesters of general physics; Mathematics – one semester of introductory calculus and one semester of statistics.

Students with a minor emphasis in one of the other disciplines for the Master's degree desiring to enroll in one of the Geology courses will be counseled as to their appropriate preparedness for success in the Geology course of their choice (this statement appears on page 33 of the General Catalog).

Prerequisites for admission to the General Science minor: "The entrance requirements include a Bachelor's degree in a field of science and/or science education and/or science teaching experience,; with adequate science or science education preparation as described in the minor. An overall 2.75 undergraduate GPA (3.0 in science and science-related courses) is required for admission into the graduate program" (this statement appears on page 21 of the General Catalog).

Standards 9 and 10: Faculty Qualifications and Size

"What is the involvement of faculty in research or publication in science and science education during the past five years?"

Source: List of questions/concerns e-mailed from the THECB staff to the Graduate School prior to the January 10, 2008 meeting with the Commissioner and selected THECB staff.

Descriptions of faculty research programs, and a reverse chronological list of publications, during the past five years, appears in Appendix C.

"There seems to be only one faculty member teaching the six courses in the science education component. Would you discuss how one person can cover the depth and breadth of a graduate science education curriculum?"

Source: List of questions/concerns e-mailed from the THECB staff to the Graduate School prior to the January 10, 2008 meeting with the Commissioner and selected THECB staff.

This deficiency was acknowledged by the Graduate School even prior to submission of the Application for a Certificate of Authority to Grant Degrees in Texas. However, because the Institute was in the process of relocating its various departments to Texas, it was determined that additional faculty members should be recruited who would reside in the Dallas area. Until such time as space was available at the Dallas Center to office new faculty members, it was deemed to be premature to recruit them.

Now that office space is available, the Graduate School is actively searching for a second full time faculty member in the Department of Science Education. The position announcement appears in Appendix D.

To date, three (3) applications have been received, and one (1) candidate has been interviewed. Resumes of the candidates who have been interviewed also appear in Appendix D.

Standard 12: Curriculum

Introduction

In this section the Graduate School has responded to six issues: (1) similarities and differences between the Science Education masters program offered by the ICR Graduate School and programs offered by selected smaller Texas universities; (2) clarification of the scope and sequence of the ICRGS Masters program; (3) the apparent absence of chemistry in the curriculum; (4) possible redundancies in the contents of the course syllabi; (5) hands-on experience in 'doing science' that are available to students; and (6) potential differences in the learning resources used in ICRGS classes and those used in programs offered in several smaller Texas universities.

1. **Conduct a comparative analysis between the masters program in Science Education offered by the ICR Graduate School and those offered by selected smaller Texas universities.**

   Source: Notes taken during the meeting with the Commissioner and selected THECB staff on January 10, 2008.

The ICRGS Registrar compiled information that could be utilized in a comparative analysis from nine of the Texas universities (Baylor, Rice, TAMU-Commerce, TCU, TSU-San Marcos, Texas Tech, Houston, UT-Dallas, and Wayland). This information pertained to program titles, purposes, admission criteria, instructional delivery systems, curricula, and graduation requirements.

Following are synopses of these comparisons, along with references to Appendices which contain more detailed information on the similarities and differences between ICRGS components and those similar components in the Texas universities selected for comparison purposes.

In comparing **program titles**, it must be noted that most of these universities offered several degrees in the field of education. For the purpose of this comparative analysis, however, a single program from each was selected that most nearly matched the Masters Degree in Science Education offered by ICR. Two of the smaller universities (Rice and UT-Dallas) offer just a Master of Arts in Teaching. The related major at Rice can be a selected academic field, and the major at UT-Dallas can be Science Education. Four universities (TCU, TSU-San Marcos, Texas Tech, and Wayland) offer Master of Education degrees. The most closely related major at TSU-San Marcos is Secondary Education. The other three offer majors in Science or Science and Mathematics Education. Two of the universities (TAMU-Commerce and Houston) offer Master of Science degrees. TAMU-Commerce's major is Secondary Education and Houston's major is Science Education. One of the universities (Baylor) offers a Master of Science in Education degree with a major in a selected academic field.

A simple listing of the degrees and majors is presented in Appendix E.

A comparison of **program purposes** revealed a common thread of intent among the nine universities but, as might be expected, a great variety of ways of expressing this intent can be observed. The following excerpts from the universities' purpose statements illustrate this insight:

Baylor "seek[s] to prepare students for professional roles in teaching, administration, counseling, instructional technology, health, human performance, leisure studies, and related areas."

ICR "prepares teachers to use effectively the skills of learning and teaching to promote higher level thinking among students so the learner can draw valid scientific conclusions relating to the evolution and creation worldviews."

Rice "offers an opportunity for a wide range of gifted individuals to acquire the skills necessary to teach young people in a manner which is exciting, relevant, and profoundly rewarding."

TAMU-Commerce "offers educational preparation emphasizing specialized skills and creative independence enabling graduates to function at a high level of performance as . . . Classroom teachers . . . Supervisors of Instruction . . . Curriculum Specialists."

TCU "prepares teachers to meet the growing demand for improved K-12 science instruction and to assume leadership roles in science education."

TSU-San Marcos "prepares teachers, principals, superintendents, school counselors, school psychologists, diagnosticians, as well as professionals in health, exercise science, sports management, recreation and leisure services."

Texas Tech "prepare[s] creative, reflective and innovative professional educators with high moral and ethical standards who view themselves as agents of change, who are committed to the welfare of children, and who have the understanding, attitudes and skills necessary for effective teaching of science and mathematics in early childhood (EC) through 12th grade classrooms."

Houston "promotes the broad goals of Science Education, which aim to develop content knowledge, inquiry skills, attitudes, and interest in science, and how science, technology, and society influence one another."

UT-Dallas "focus[es] on providing teachers with the research, critical thinking, and life-long learning skills essential for leaders in today's schools based on a foundation of content knowledge in the sciences and mathematics."

Wayland's program "is designed to enhance the preparation and leadership of individuals within the education profession and those entering teaching."

A report showing a more complete purpose presentation of the nine universities is presented in Appendix F

Admission criteria vary significantly among the nine universities. For the purpose of comparison, four admission categories were analyzed: (1) undergraduate preparation, (2) entering GPA score, (3) GRE test requirements, and (4) other significant requirements.

In the first category, there was broad-based consistency. Where any requirement was stated, it was generally in terms of the preparation being from a regionally accredited institution. In the case of three universities, this requirement was not readily found, which probably indicated that it was implicitly expected. ICR is more explicit, requiring a significant number of credit hours in upper-division science or science education courses.

Regarding GPA scores, five of the colleges required a 3.0 on the last 60 credit hours of undergraduate work. TSU requires a 2.75. Baylor states the requirement as a "minimum grade-point average from accredited institution." And Texas Tech refers to the GPA as "competitive." ICR calls for a GPA of 3.0 in undergraduate science courses.

The GRE requirement showed the most variability. The only schools that stated a specific score requirement were Rice (at or above the 70th percentile) and TSU-San Marcos (900 on verbal and quantitative combined). Baylor, TAMU-Commerce and UT-Dallas call for a "satisfactory score." Texas Tech states that each score is considered separately by broad major. Houston and Wayland make vague reference to the possibility of the scores being used. ICR requires GRE scores when GPA or undergraduate preparation is below admission policies .

There were a number of other criteria listed. In addition to ICR, three of the universities (TCU, UT-Dallas, and Wayland) require a writing sample. Wayland's is required only when the GPA is below 3.0. Beyond the writing sample, ICR also requires that students agree with the purpose, goals, and tenets of the institution. Rice calls for a passing score on the THEA test. Houston states that the criteria for admission to a particular program are developed by the faculty of that program, and that the criteria among programs may vary widely.

A table showing a schematic presentation of the admission requirements is provided in Appendix G.

A variety of **instructional delivery systems** were evident, including the face-to-face system, which is offered by all of the universities. Six (TAMU, TSU-San Marcos, Texas Tech, Houston, UT-Dallas, and Wayland) make reference to some use of Interactive Television (ITV). In addition, Baylor apparently makes use of this medium for teacher training purposes. With regard to online courses, all the universities (except Baylor) have some type of formal internet program. The biggest variety in this issue is the scope and complexity of the programs offered. In the case of at least two of the universities (TCU with its MLA program and Wayland with its Master of Education program) the degree can be pursued entirely online.

A detailed listing of the online and ITV offerings is provided in Appendix H.

When comparing **curricula,** in many instances it was difficult to determine exactly what was being taught in the courses in the universities because of the general wording and/or abbreviated

length of the course descriptions. Even with these limitations in specificity, it is reasonable to assume that the following comparisons are accurate.

In regard to the six courses that comprise the ICR major in Science Education, similar courses were found in at least seven of the 10 universities and in most instances similar courses were found in eight or nine of the universities.

When comparing the four courses that comprise the ICRGS Astro-Geophysics minor, similar courses were found in at least two of the universities for Paleoclimatology, and similar courses were found in at least five of the other universities for the remaining courses.

A comparison of the five ICRGS courses that comprise the Biology minor yielded similar courses in at least six of the 9 universities.

The five ICRGS courses that constitute the minor in Geology, when compared with the curricula of the 9 universities, yielded at least three similar courses ("Natural Disasters") and as many as seven similar courses ("Field Geology").

A complete listing of the ICRGS course requirements and the matching courses, along with their descriptions, from the nine universities is presented in Appendix I.

While making these comparisons, it became apparent that, although there are a number of instances in which the ICRGS courses are similar to those offered by the universities, there are several differences between the universities themselves, differences that reflect the diversity of opportunities which are already available to science educators who wish to improve their teaching knowledge and skills in the State of Texas.

*The **graduation requirements*** for the nine universities are somewhat varied. All the smaller universities require 36 semester hours for graduation (except Rice, which requires 33, like the ICRGS). A thesis is required by three of the smaller universities (Baylor, Rice, and TCU). In four of the universities (TAMU-Commerce, Texas Tech, Houston, and UT-Dallas) a thesis option is available. Similarities and differences among the titles of the required courses are described below.

Seven of the nine universities offer **courses in psychology,** three of which utilize the same nomenclature as the ICRGS course: "Educational Psychology". The other four universities employ such titles as, "Psychology of Learning" (Baylor), "Theories of Human Development" (TCU), "Human Growth and Development" (Houston), and "Child and Adolescent Development and Learning" (Wayland).

Eight of the nine universities offer courses in **design of instruction**, three of which utilize the same nomenclature as the ICRGS course, "Instructional Design". The other five universities employ such titles as, "Courseware Development" (Baylor), "Models of Teaching in Secondary Schools" (TAMU-Commerce), "Theory and Pedagogy of Science" (TCU), "Strategies for Improving Secondary Teaching" (TSU-San Marcos) , and "Classroom Management Grades 8 – 12" (UT-Dallas).

All nine of the universities offer courses in **science education research**, five of which utilize the same nomenclature as the ICRGS course: "Educational Research". The other four universities employ such titles as, "Field-Based Studies in Teaching and Learning" (Rice), "Research Methodologies" (TAMU-Commerce), "Action Research I" (Texas Tech), and "Research Methods and Data Analysis" (Wayland).

All nine of the smaller universities offer courses in **design of curriculum**, four of which utilize the same nomenclature as the ICRGS course: "Curriculum Design (or Development)". The other five universities employ such titles as, "Contemporary Curriculum" (Baylor), "The Secondary School Curriculum" (TAMU-Commerce), "Curriculum Theory" (TCU), "Teaching of Science" (UT-Dallas), and "Science in the Elementary School" (Wayland).

Seven of the nine universities offer courses in **instruction and** (or) **assessment**, none of which utilize the same nomenclature as the ICRGS course: "Curriculum Implementation and Assessment". These universities employ such titles as, "Issues in Curriculum and Instruction" (Baylor); "Management and Curriculum Development for Diverse Learners" (TAMU-Commerce), "Educational Assessment" (TCU), "Science Curriculum and Instruction" (Texas Tech), "Instructional Evaluation" (Houston), "Curriculum and Instruction in the Natural Sciences" (UT-Dallas), and "Advanced Principles and Practices in Education" (Wayland).

Eight of the nine universities offer courses in the **nature of science education**, none of which utilize the same nomenclature as the ICRGS course: "Inquiry and the Nature of Science Education". These universities employ such titles as, "Social Foundations of Education (Baylor), "Philosophy of Education" (TAMU-Commerce), "Historical and Philosophical Foundations of Education" (TCU), "Philosophical Foundations of Education" (TSU-San Marcos), "Issues and Reform in American Secondary Schooling" (Texas Tech), "Cultural Foundations of American Education" (Houston), "Critical Issues in Science Education" (UT-Dallas), "Topics in Education" (and may be repeated; Wayland).

The specific course requirements for the degrees in each of the universities are displayed in a side-by-side comparison with the requirements of ICR's program in Appendix J.

2. **"…Clarify the scope and sequence of the program. The materials we have reviewed have not provided a clear picture of which courses are taken in which order and how they build on each other.**

   "Do the students majoring in science education take all of the six courses listed in science ed and then take a minor in one of the other areas? Or is there some combination of the other science groups that make up the rest of the 33 SCH?

   "The course syllabi and descriptions do not clearly indicate that these courses are truly graduate level. Would you help us understand what the prerequisites of each course are and how each course is at the graduate level?"

Source: List of questions/concerns e-mailed from the THECB staff to the Graduate School prior to the January 10, 2008 meting with the Commissioner and selected THECB staff.

Regarding clarification of the scope and sequence of the program, Appendix K contains that section of the General Catalog in which the interrelationships between the science education courses and the science courses that comprise the minors are presented.

Regarding the prerequisites for each course, apart from the general prerequisites required of all applicants who seek admission to the Masters degree program, prerequisites for the Graduate School courses come in two forms: those that are related to the undergraduate preparation needed to facilitate academic success and those that pertain to the optimum sequencing of courses set forth in the scope and sequence included in the General Catalog. Appendix L contains a course-by-course listing of both forms of prerequisites.

Regarding evidence that each course is at the graduate level, there are at least four sources. First, the knowledge level requirements for admission stipulate not only an undergraduate degree, but a degree that contains a significant amount of academic work in the sciences and supporting courses such as mathematics and statistics; the equivalent of at least a minor in science if not a major. See prerequisites for admission to the Graduate School in the "Admission Policies and Procedures" section of the 2008 – 2009 General Catalog.

Second, the learning objectives in the courses are focused on the higher levels in the cognitive domain. For example, graduate students analyze and synthesize, not simply observe, memorize, and reproduce the information they acquire. Course descriptions in the 2008 – 2009 General Catalog reflect these higher order learning objectives.

Third, the learning resources include, among other things, textbooks that have been adopted for graduate study by universities both within and outside the state of Texas (see Appendix M for an annotated list of textbook adoptions. Further, the Graduate School's courses place heavy reliance on the professional journals that contain the latest research on the topics they address (see Appendix M for a listing of the professional journals selected by the faculty to support their learning activities).

Fourth, the documents used in the assessment of student learning outcomes are more dependent on the students' abilities to apply what they have learned than to simply rehearse or reproduce these learnings. Thus, the faculty relies more heavily on write-ups of projects and papers that synthesize and/or depict ways in which learnings can be applied to actual classroom situations, than simply on objective tests that, at best, measure little more than recall. Program objectives in the 2008 – 2009 General Catalog reflect these higher order outcomes.

3. "There seems to be an absence of Chemistry in the science education curriculum. Would you address this issue?"

Source: List of questions/concerns e-mailed from the THECB staff to the Graduate School prior to the January 10, 2008 meeting with the Commissioner and selected THECB staff.

In order for students to select the Astro-Geophysics, Biology, or Geology minors, at least eight (8) semester hours of undergraduate Chemistry with laboratories are required. Courses that require this background in Chemistry include AG 501 Planetary and Stellar Astronomy, AG 502 Geochronology with Laboratory, AG 503 Paleoclimatology with Laboratory, and AG 504 Creation Cosmology and the 'Big Bang' Theory: BI 501 Biological Origins and BI 501L Biological Origins Laboratory; GE 502 Geochronology with Laboratory, and GE 505 Field Geology (which requires GE 502 as a prerequisite).

Further, two other courses require four semester hours of Chemistry as prerequisite: BI 505 Advanced Cell and Molecular Biology and GE 504 Interpreting Earth History.

Reasons for requiring this Chemistry background can be inferred from a review of the course descriptions appearing in the 2008 – 2009 General Catalog.

4. "In reading the course syllabi, the courses seem somewhat redundant. Would you address this issue?"

Source: List of questions/concerns e-mailed from the THECB staff to the Graduate School prior to the January 10, 2008 meeting with the Commissioner and selected THECB staff.

While it was not clear from the content of the question what aspects of the course syllabi seemed to be somewhat redundant, there are three principles that have been followed in developing the course content in both the major and in the minors.

The first principle is that of general to specific progression. For example, the course in Astronomy focuses on the sun, planets, stars, and other heavenly bodies, and addresses their composition, motion, relative position, size, etc. The Cosmology course, on the other hand is a study of the theory of the nature and principles of the universe; of the physics which underlies the interplay of mass, space, and time and addresses more of the process of formation. In other words, the Astronomy course is primarily descriptive of what can be observed in the heavens, while the Cosmology course focuses on theoretical explanations of how the heavens got to be the way we see it.

The second principle is that of knowledge building. For example, knowledge of how students learn is the foundation, so the first course in the program focuses on developing this critical understanding. The second knowledge building block is the content of the science courses in the minor. Armed with these two bodies of knowledge, students are equipped to begin designing both curriculum and instructional strategies for engaging the students with the content, the third and fourth building blocks, respectively. The fifth building block involves implementing the instructional strategies and assessing their effectiveness. A building block that is used to support the other five is that of research in science education, which equips the teacher with the necessary knowledge and experience to continually add new findings from research to the knowledge base already in existence.

The third principle is that of research utilization. For example, learning resources for the courses are of several different kinds but those relied on most heavily are of two kinds:

(1) professional journals and (2) scholarly monographs. Utilization of the former resource is evidenced by the list of professional journals the faculty has requested (see Appendix N). Utilization of the latter resource is evidenced by the scholarly monographs, adopted by postgraduate programs in universities in the U. S. as texts and required readings for their courses (see Appendix O). As a part of this second kind, the ICR scientists engaged in an eight year research effort that focused on radioisotopes and the age of the earth resulted in the publication of two monographs containing a compendium of all that was learned.

While it may have seemed that there were some redundancies in the course syllabi, it is probable that this impression was generated by information that was included in order to facilitate the progression from general to specific (first principle in course content development) and/or research resources that may have applicability to more than one course (third principle in course content development).

5. "Most large science education masters programs utilize large laboratories. How do students get this needed component with an on-line program?"

Source: List of questions/concerns e-mailed from the THECB staff to the Graduate School prior to the January 10, 2008 meeting with the Commissioner and selected THECB staff.

The following courses require laboratory or fieldwork experiences that give the students the opportunity to "do" science. AG 501L Planetary and Stellar Astronomy Laboratory, AG 502 Geochronology with Laboratory (cross-listed with GE 502 Geochronology with Laboratory), Paleoclimatology with Laboratory; BI 501L Biological Origins Laboratory, BI 502 Comparative Vertebrate Anatomy Laboratory, BI 503F Paleontology Field Investigations, BI 504 Advanced Ecology with Laboratory; GE 505F Field Geology.

Descriptions of the ways in which students "do" science can be found in the course descriptions appearing in the 2008 – 2009 General Catalog.

Further explanation of the laboratory experiences for AG 502/GE 502 can be found at the end of course listings for each Department in the 2008 – 2009 General Catalog.

In addition to the laboratory experiences mentioned above, Appendix Q contains a comparison between the Texas teaching domains in science and science education, and the course objectives addressed by the courses offered in the Graduate School. This comparison reveals that the vast majority of the competencies are covered by the courses in the ICR Graduate School.

6. "The Textbooks and materials that are listed are for the most part not the textbooks that would be listed in other science education programs. Would you address this concern?"

Source: List of questions/concerns e-mailed from the THECB staff to the Graduate School prior to the January 10, 2008 meeting with the Commissioner and selected THECB staff.

Analysis of adoptions for those textbooks used in the Graduate School courses revealed that all were adopted by several major universities in the United States, which includes universities that are located in the State of Texas.

Appendix M contains the results of that analysis.

Standard 15: Library

"…form contractual arrangements with regional librarians to implement online library orientation course for all users, and recruit a library supervisor who will oversee the ongoing library program."

Source: Agenda Item VIII – G; THECB Agenda for January 24, 2008.

In order to implement online library orientation for all users and oversee the ongoing library program while a library supervisor is recruited, the services of the Dean of Libraries (Dr. Berry Driver) and Associate Dean of Libraries (Dr. Robert Phillips) at Southwestern Baptist Theological Seminary have been obtained to fulfill these responsibilities (see Appendix O for a copy of the letter of agreement).

The THECB indicated that it would be helpful for the ICRGS students to have immediate access to an online Library Tutorial to assist them in using the online journals that are available for their study and research. Appendix O contains a facsimile of the Tutorial.

In order to make regional library resources available for those students who may want to use them, public universities that were closest to the students were contacted and information needed for students to gain access to both their collections and their services (i.e., interlibrary loan) was obtained. Subsequently, each of the students was provided with this information (see Appendix P for the names of these universities, and the information that was made available to the students to facilitate accessing their collections and services).

Access to Information Items
Agreement between Information Sources

Introduction

During the meeting between the Commissioner and members of his staff, and representatives from the ICR Graduate School on January 10, 2008, approximately one-third of the time was spend in responding to questions that took one of two forms:

1. "I looked on your website, but I couldn't find _____. Can you tell me where it's located?

2. "I found _____ on your website, but the information did not agree with what I found in the print copy of your catalog. Can you help me understand?

As this scenario unfolded, it became clear that we had not done an adequate job of providing a user-friendly, internally consistent system for determining who we are and what we do. The opportunity to address this issue, along with the others raised by the Site Evaluation team in its written report, by the Certification Advisory Council at its meeting on December 14, 2007, and the Commissioner and members of the THECB staff following the meeting on January 7, 2008 with selected Texas scientists and science educators, was much appreciated.

Response

In order to rectify the information challenges, the paper copy of the 2008 – 2009 General Catalog was developed, edited, proofread, and duplicated (copies of this document can be found inside the front covers of the Progress Report binders). Once completed, this paper copy was used as a template for editing the **icr.edu website**.

Further, the home page of the **icr.edu website** was reconfigured so that each major section of the General Catalog now has its own icon (i.e., "Admission Policies and Procedures"). By clicking on these icons, "pop ups" containing the titles of each of the minor sections within major sections are revealed. Clicking on one of the pop up items reveals the specific item being sought (i.e., "Prerequisites" under "Admission Policies and Procedures").

Graduate School

of the

Institute for Creation Research

General Catalog

2008-2009

Notice of Non-Discriminatory Policy as to Students

The Institute for Creation Research Graduate School admits qualified students of any race, color, sex, national and ethnic origin or handicap to all the rights, privileges, programs and activities generally accorded or made available to students at the school. Pursuant to applicable law, it does not discriminate on the basis of race, color, sex, national, ethnic origin, or handicap in the administration of any of its policies or programs.

Terms of Website Use

The information in this catalog accurately represents the ICR Graduate School at the time of publication. However, the Graduate School reserves the right to make changes in policies, procedures, calendar, faculty, curriculum, and costs.

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INSTITUTE FOR CREATION RESEARCH

ICR Mission and Purpose

The mission of the Institute for Creation Research (ICR) is to study, teach, and communicate the works of God's creation.

ICR has been established for three main purposes:

> **Research**. As a research organization, ICR will engage in laboratory, field, theoretical, and library research on projects that seek to understand the science of origins and earth history.
>
> **Education**. As an educational institution, ICR will offer formal courses of instruction, conduct seminars and workshops, present radio and television lectures, or any other means of instruction.
>
> **Communication**. ICR will produce and/or publish books, films, periodicals, and other media for communicating the evidences and information related to its research and education to its own constituents and to the public in general.

Board of Trustees

The Institute for Creation Research (ICR) is administered by a Board of Trustees that consists of at least nine elected members plus the Chief Executive Officer and President, who serve Ex Officio. Members are elected by the members of the existing Board to serve for staggered three-year terms and are eligible for re-election to one additional term. At least three members are elected to serve on an Executive Committee that meets approximately bi-monthly. The entire Board meets at least twice annually. Current Board members are as follows:

Dr. David A. Wismer (Colorado Springs, Colorado), Chairman

Mr. Richard Bliss (Milwaukee, Wisconsin), Vice Chairman

Mr. Daniel Mitchell (White Oak, Texas)

Dr. Robert Armstrong (Belgrade, Montana)

Mr. Brian Bissell (Lakewood, Colorado)

Mr. Jack Brady (Dallas, Texas)

Dr. John Eckersley Jr. (Palm City, Florida)

Mr. Dan Manthei (Desert Hot Springs, California)

Dr. Henry Morris III (Irving, Texas)

Dr. John D. Morris (Santee, California)

Lt. Col. Charles C. Morse (Seoul, Korea)

The Board establishes general policies, approves budgets, and appoints the major administrative officers. ICR administration implements Board policies in day-to-day operations.

Technical Advisory Board

In addition to its regular professional staff, ICR has a Technical Advisory Board consisting of distinguished scientists and educators throughout the country who serve as consultants and advisors in various phases of ICR activities. These are as follows:

Edward F. Blick, Ph.D., Professor of Petroleum and Geological Engineering, Retired, University of Oklahoma

David R. Boylan, Ph.D., Professor of Chemical Engineering, Retired, Formerly Dean of Engineering, Iowa State University

Malcolm A. Cutchins, Ph.D., Professor Emeritus of Aerospace Engineering, Auburn University, Alabama

Raymond V. Damadian, M.D., Inventor and Professor, Woodbury, New York

Robert H. Eckel, M.D., Professor of Medicine, University of Colorado Health Sciences Center, Denver, Colorado

Carl B. Fliermans, Ph.D., Microbial Ecologist, Westinghouse, Savannah River Company, Aikon, South Carolina

Joseph L. Henson, Ph.D., Chairman Emeritus, Director of Natural Sciences, Bob Jones University, Greenville, South Carolina

Gailen D. Marshall, Jr., M.D., Ph.D., Associate Professor of Medicine and Pathology, Director, Division of Allergy & Clinical Immunology, University of Texas (Houston)

David Menton, Ph.D., Associate Professor Emeritus, Washington University School of Medicine, St. Louis, Missouri

John R. Meyer, Ph.D., Formerly Professor of Biology, Baptist Bible College, Clark's Summit, Pennsylvania; Currently Director, C.R.S. Research Center, Arizona

John W. Oller, Jr., Ph.D., Professor and Department Head of Communicative Disorders, University of Louisiana at Lafayette

Ker C. Thomson, D.Sc., Professor of Geophysics, Retired, Baylor University, Waco, Texas

John C. Whitcomb, Jr., Th.D., Formerly Director of Doctoral Studies, Grace Theological Seminary, Winona Lake, Indiana; Currently founder of Whitcomb Ministries, Inc.

ICR Administration

Chief Executive Officer	Henry M. Morris III
President	John D. Morris
Director of Research	Larry Vardiman
Dean of the Graduate School	Eddy Miller
Director of Communications	Lawrence Ford
Director of Administrative Services	Eileen Turner
Director of Donor Relations	Henry M. Morris, IV
Director of Internet Ministries	Richard Pferdner
Director of Information Technology	Daryl Robbins

A Word from the Chief Executive Officer

The Institute for Creation Research Graduate School (ICRGS) is the educational arm of ICR and an integral part of the Institute's broader mission. The ICRGS represents the finest educational effort of our research efforts, and has been granting Master of Science degrees since 1981.

Our faculty all have terminal degrees from prestigious universities around the United States, and are actively involved both in the design of the curricula and in cutting-edge technical and experimental research on the major issues of origins and earth history. ICRGS teaches experimental science as found in any standard university curricula, but maintains a different perspective when it comes to the historic or forensic science that interprets empirical data as it relates to those issues.

ICRGS students receive a rigorous and thorough education in the sciences, in which they are exposed to standard naturalistic and evolutionary theories found in secular universities, with the additional benefit that they are also challenged with evidences of the supernatural intervention of the Creator, thus ensuring a heightened ability and skill of critical thinking.

We are delighted that you are considering joining the ICRGS program. We stand ready to respond to your questions and trust that your decision—and your degree—will lead you to a fruitful and exciting life of service in the sciences.

Henry M. Morris III, D.Min.

A Word from the President

Thousands of scientists around the world contribute to an ever-deepening understanding of origins and earth history from a non-evolutionary perspective, and thousands of educators participate in efforts to disseminate that scientific knowledge. Polls of public opinion reveal that a majority of people question the veracity of the theory of evolution, which nonetheless holds a monopoly on discourse in the market place of ideas.

ICR Graduate School is known for its scientific research into and open advocacy of a creationist view of early earth history. The great world-altering events of Genesis inform our research, and is reflected in our teaching. Students have the rare opportunity to learn science from cutting-edge scientists, and education methodology from skilled educators. The online format facilitates the learning process, and the field and lab experiences increase practical knowledge.

All of us would encourage you to join us in the graduate school program, sharing with us as multitudes of trained colleagues join the ranks. May God lead you in the days ahead, and may He grant you multiplied fruit from your labors.

John D. Morris, Ph.D.

THE GRADUATE SCHOOL

Purpose and Goals

The Institute for Creation Research Graduate School (ICRGS) is the formal education arm of the Institute for Creation Research (ICR). The ICRGS program provides graduate-level training in science education through an online environment, with minors in the natural sciences that are particularly relevant to the study of origins.

The purpose of ICRGS is (1) to prepare science teachers and other individuals to understand the universe within the integrating framework of a biblical perspective using proven scientific data, and (2) to prepare students for leadership in science education. A clear distinction is drawn between scientific creationism and biblical creationism, but it is the position of the Institute that the two are compatible and that all genuine facts of science support the Bible.

The programs and curricula of the Graduate School, while similar in factual content to those of other graduate colleges, are distinctive in one major respect. ICR bases its educational philosophy on the foundational truth of a personal Creator-God and His authoritative and unique revelation of truth in the Bible.

Graduate School Administration

Dean of the Graduate School (Interim)	Eddy Miller, Ph. D.
Admissions Secretary	Mary Smith, B. S.
Registrar	Jack W. Kriege, Ph. D.

A Word from the Dean

Thank you for considering the Master of Science degree in Science Education at ICRGS. Our calling is to partner with students who are committed to a view of science and education that is not restricted to naturalistic processes and who have the zeal and self-discipline required to excel in an environment that is both rigorous and rewarding. If you join with us, you will have the opportunity to study with several of the foremost scholars in origins research and education, a priceless experience for school teachers like yourself who are committed to providing your own students with a thoroughly balanced science education.

Eddy Miller, Ph.D.

Our Philosophy of Science

ICR is committed to conducting science research in the same tradition as the great scientists of past generations—including Newton, Kepler, Faraday, Maxwell, Pasteur, Pascal, Kelvin, and Steno—whose efforts proved instrumental in the foundation of every major scientific discipline. These men held a sharp distinction between two fundamentally different endeavors that are both called science today.

Experimental science, which deals with the observable present, employs the concept of the laboratory. There the chemist, for example, designs his controlled experiments and is able to confirm his observations by repetition. He allows no tampering in his laboratory, for unless it is a closed system all results are invalidated.

Historical or *Origins* science (sometimes called *forensic* science), on the other hand, is not at liberty to project the assumption of a closed system into the indefinite past. For example, the archeologist who seeks to understand the origin of a circular pattern of stones in a field must entertain at least two possibilities in order for his investigation to have validity. Either the arrangement was random, or it was intentionally arranged by an external intelligence. His is an open system. The better the archeologist understands the laws of physics, probability, etc., that operate in the ordinary, everyday world as revealed to him by experimental science, the better equipped he will be to spot the extraordinary in his historical science.

The very thing excluded from one endeavor (outside intervention) is, in fact, the focus of investigation for the other. One feeds the other. The great scientists of the past could appreciate these distinctions and tended to see both the ordinary and the extraordinary as having come from the same source. Their belief in Providence in no way hindered their passion for science in the truest sense of that word; it was the very thing that ignited and sustained it.

We at ICR seek to follow no less an example.

Our Philosophy of Science Education

Teachers influence and shape the values of an individual and society through what and how they teach. They understand the learner, have a depth of content knowledge, and implement and assess learning science content through a variety of teaching practices that ensure learning. Science teaching is unique because "science" is all about asking questions through scientific inquiry, understanding the nature of science, seeking the answers by "doing" science utilizing the scientific method and reflecting through assessment successful learning. ICRGS prepares teachers to teach science by engaging students in meaningful learning based on a strong foundation of scientific content-knowledge and skills in utilizing scientific inquiry.

To teach science with confidence, the teacher must possess a depth of knowledge. Science teachers with adequate content knowledge teach with authority, answer students' questions, promote discussion, encourage inquiry and design appropriate instruction. During the acquisition process, graduate students must learn to distinguish between information that is derived from direct and formally structured observation and information that is inferred. There is a significant impact on the knowledge gained by students when the teacher skillfully interconnects understanding of the learner, content, curriculum, instruction and assessment. The faculty at ICRGS is committed to modeling these qualities.

The master teacher designs curriculum and instruction that is age-level appropriate to increase the scientific knowledge and to develop scientific reasoning and process skills. Appropriate instruction incorporates the following:

(a) minds-on: cognitive attention to the content;
(b) hands-on: utilizing physical senses to explore a concept; and
(c) hearts-on: enthusiasm for science and doing science

Engaging the students in doing science ensures all three. Students who are engaged in these aspects of learning science have a desire to learn science; furthermore, students are adequately prepared and aspire to continue their college education in science.

ICRGS faculty is committed to scientific inquiry and the scientific method. Doing science is an important aspect of learning science. Master science teachers utilize instructional tools and skills to help students design scientific experiments, analyze data, and draw conclusions from a variety of perspectives. These same skills help students solve problems and use higher level thinking skills throughout daily lives. Some of the skills of scientific inquiry include asking questions and proposing provable statements that help

create enthusiasm for the subject matter; allowing students to ask questions and search for the answers through observation and analysis of data result in more highly-developed scientific minds.

THE ACADEMIC PROGRAM

Scope and Sequence

The scope of the Master of Science degree in Science Education is five-fold:

1. Understanding the learner
2. Acquiring a knowledge base in science
3. Developing curricula, giving expression through instructional methodologies
4. Gaining knowledge in research processes, designing, successfully completing, and writing a research project for publication
5. Delivering instruction and assessing outcomes

Within this five-fold scope, courses are offered according to the following sequence template. If scheduling challenges occur, the Chair of the Science Education Department, in consultation with other appropriate Graduate School personnel, will resolve them in ways that are most consistent with the template.

1. Understanding the Learner:

SE 501 Advanced Educational Psychology

2. Acquiring a knowledge base in science:

Students who pursue the Astro-Geophysics minor, will complete the following courses:

AG 501 Planetary and Stellar Astronomy
AG 501L Planetary and Stellar Astronomy Laboratory
AG 502 Geochronology with Laboratory
AG 503 Paleoclimatology with Laboratory
AG 504 Cosmology

Or

Students who pursue the Biology minor, will select 28.5 quarter units from the following list of courses:

BI 501, 501L Biological Origins, and Laboratory
BI 502, 502L Comparative Vertebrate Anatomy, and Laboratory
BI 503, Principles and Patterns of Paleontology
BI 503L, Paleontology Field Investigations
BI 504 Advanced Ecology with Laboratory

BI 505 Advanced Cell and Molecular Biology

Or

Students who pursue the Geology minor, will select 25.5 quarter units from the following list of courses:

GE 501, Natural Disasters,
GE 501L Natural Disasters Field Experience
GE 502 Geochronology with Laboratory
GE 503, Principles and Patterns in Paleontology
GE 503L, Paleontology Field Investigations
GE 504 Interpreting Earth History

Or

Students who pursue the General Science minor will complete the following courses, plus select another science course that will fulfill the 24 quarter unit requirement for a General Science minor:

GE 501 Natural Disasters
GE 501L Natural Disasters Field Experience
BI 504 Advanced Ecology and Laboratory
AG 501, 501L Planetary and Stellar Astronomy, and Laboratory

3. Developing Curricula, giving expression through instructional methodologies:

SE 502 The Science Curriculum
SE 503 Planning Science Instruction: Methods

4. Designing, successfully completing, and writing for publication a research project:

SE 504 Research in Science Education
SC 580 Science Paper
SC 581 Comprehensive Examination

5. Delivering instruction and assessing outcomes:

SE 505 Implementing and Assessing Science Teaching

The Course Management System

The distance education web platform used by the Graduate School is Moodle, an internet-based curriculum development platform for online educational programs.

Students are responsible for their own hardware, software, and internet connection, but technical support is provided by the Graduate School to help students get connected. In addition, the Graduate School provides troubleshooting assistance if difficulties are encountered in establishing the connection.

Learning Resources

The learning resources that support faculty and students are designated as either primary or secondary, based on access.

Primary learning resources are electronic and consist of a carefully selected collection of web links and periodicals chosen by the faculty for their relevance to the curriculum. In order to connect students to the most recent research, web links are included in the online course materials. Each course includes these resources as a minimum, while some of the courses also include PDF files (used with permission).

Primary learning resource support is available by email and phone at designated hours from ICRGS support staff.

Secondary learning resources are in printed formats and are available through regional university libraries. The Registrar has contacted libraries that make their collections available to students who are enrolled elsewhere. Students who are interested in accessing these resources can contact the Registrar regarding the university library on the list that is most easily accessed, and receive the contact information and process to be followed in gaining access to the hard copy collection.

Students are also encouraged to do their own web and library searches to identify and access further information, and are required to cite the sources of such information in their writings. Learning resource support is available by email and phone at designated hours from ICRGS support staff.

THE ACADEMIC DEPARTMENTS

Department of Science Education
Patricia L. Nason, Ph.D. Chair

Introduction

The Master of Science degree in Science Education at ICRGS prepares science teachers to use effectively the skills of learning and teaching to promote higher level thinking, inquiry, depth in content knowledge and hands-on science among students so the learner can draw valid scientific conclusions relating to the natural sciences, with special attention to teaching empirical science research methodology and empirical science analysis, as well as origins science analysis.

This program enhances knowledge, skills, and abilities in science and pedagogy of science teachers. It is primarily intended for training teachers for middle and secondary schools, as well as educators who teach postsecondary freshmen and sophomores.

This program is also appropriate for some elementary teachers, science lecturers, administrators, and various types of science literature writers.

ICRGS is especially sensitive and responsive to the unique niche and needs in the science education market for quality-trained science educators who can teach in those private schools that select or invite a creation science perspective, such as church-affiliated Christian K-12 schools, Christian liberal arts colleges, and Bible colleges, as well as for various Christian parachurch organizations, including creation science literature publishers.

ICRGS's program is uniquely positioned and equipped to serve the educational needs of this specialized education market, as that market seeks science teachers who can teach from the creation science perspective, yet who are also well-informed on (and who can comparatively teach) the evolutionary model for interpreting origins and empirical scientific data.

Program Objectives

The ICRGS graduate will be able to integrate content knowledge in science from the evolutionary and creationist perspectives in their curriculum and instruction.

The ICRGS graduate will be able to utilize knowledge of student development and culture in his or her classroom to (a) plan learning goals and objectives,

and (b) to implement a variety of instructional methods that successfully convey scientific knowledge.

The ICRGS graduate will be able to apply skills in effective written, verbal, and non-verbal communication that exhibit the qualities of a communicator who stimulates the thinking of the listener/reader.

The ICRGS graduate will be able to (a) analyze research, (b) conduct his or her own research, and (c) develop curriculum and instructional materials that contribute to scientific knowledge in his or her science teaching field.

The ICRGS graduate will be able to implement assessment strategies for (a) self-evaluation, (b) student learning, (c) evaluation of curriculum and instruction, and (d) evaluation of scientific and educational research.

Prerequisites for Admission

The entrance requirements include a Bachelor's degree in a field of science and/or science education and/or science teaching experience, with adequate science or science education preparation as described in the minor. An overall 2.75 undergraduate GPA (3.0 in science and science-related courses) is required for admission into the graduate program. Students whose overall GPA falls between 2.5 and 3.0 may be admitted on probation, which means they will not be officially admitted into the program until they have completed 9-12 quarter hours with a GPA of 3.0 or higher. Students whose overall GPA is lower than 2.5 may be required to take the general GRE, which must be passed with a score of 1000 (adding the verbal and quantitative scores).

Requirements for Graduation

A total of 54 quarter hours (equal to 36 semester hours) of work beyond the bachelor’s degree are required for the Master’s degree. The requirements are composed of 22.5 quarter hours of core science education courses, 24 quarter hours from the department of the minor (Astro-Geophysics, Biology, Geology, General Science), 3 quarter hours of independent research, and 4.5 quarter hours of electives.

All Master’s degree students are required to complete a formal paper that is comparable to a refereed journal article. The paper will present a study in a field of science or science education. It will be journal submission "ready" before being accepted.

Courses

SE 501 Advanced Educational Psychology: Understanding the Learner
4.5 quarter hours

Survey of principles of developmentalism with an emphasis on skills that apply to successful science teaching. Topics include the importance of developmentalism; intellectual, social, moral, emotional, and spiritual development; ethnicity and cultures; individual uniqueness; cognitive psychology; constructing knowledge, thinking skills; behavioral approaches to learning; motivation; brain research and multiple intelligence. Note: There is an observation component to this course. (Prerequisite: admission to the Graduate School)

SE 502 The Science Curriculum
4.5 quarter hours

Study of curricular trends in science education in the United States, examination of philosophical implications of various approaches to curriculum design, and evaluation of current science curricula. Topics include: National Science Education Standards (NSES); progressivism, cognitive, traditional, behavioral, and structure of the disciplines curriculum approaches; process skills, behavioral objectives, inter- and intra-disciplinary, inquiry and assessment approaches, hands-on science, societal trends and issues. Includes individual/group scope and sequence project. (Prerequisites: SE 501; completion of courses in the minor or consent of instructor)

SE 503 Planning Science Instruction Methods
4.5 quarter hours

Planning and developing instruction that maximizes and supports learning through the use of the 5-E approach including active participation of students. Topics include: lab investigations (scientific method), discrepant events, brainstorming, cooperative learning, mind mapping, scientific inquiry, the use of technology, simulations, authentic assessment, interactive lectures, student projects. Variety of strategies required to be used in lesson plans. (Prerequisites: completion of science content courses and SE 502 or consent of instructor)

SE 504 Research in Science Education
4.5 quarter hours

Survey of the basic principles of science education research through analysis of research in science education. Topics include: interpreting science education research; qualitative and quantitative research designs; formulating a research

problem, collecting data, using research tools, communicating the results; historical research; evaluation research; case studies, action research, and statistical techniques. Students will conduct interviews, surveys, observations; collect and analyze data as class project. Students will submit a proposal for a research paper that is to be completed before graduation. (Prerequisites: SE 503)

SE 505 Implementing and Assessing Science Teaching
4.5 quarter hours

Application and evaluation of content knowledge, instructional and assessment skills in the learning environment. Assessment of effectiveness in the classroom setting. Self-critique of video-taped instruction implementing the 5-E learning cycle. Topics include: effective communication, formative and evaluative assessment strategies (applied), positive feedback, reflective evaluation, engaging students. *Note: this course has a practicum.* (Prerequisites: capstone course; all coursework must be completed except SE 507 Independent Study)

SE 510 Special Topics in Science Education
Variable quarter hours

Hands-on courses offered as the need arises for various topics in Science Education.

The Minor in General Science

Introduction

The minor in General Science is intended for individuals who do not teach science in a specific field (i.e., biology, geology, etc.). Such individuals usually do not have enough undergraduate science courses in a particular field of science but still meet the admission requirements with an adequate number of upper division science courses. Students who may fit this situation include elementary and/or general science teachers; speakers and/or writers who work for science research or education organizations, and others who are interested in the sciences.

Program Objectives

The ICRGS graduate who minors in General Science will be able to evaluate current scientific literature.

The ICRGS graduate who minors in General Science will utilize a variety of resources to continue building on his or her science and science teaching knowledge base.

The ICRGS graduate who minors in General Science will demonstrate a depth of scientific knowledge as it relates to perspectives on origins.

The ICRGS graduate who minors in General Science will be able to apply effective written and verbal communication skills that exhibit the qualities of a communicator who stimulates the thinking of the listener/reader.

Prerequisites for Admission

The entrance requirements include a Bachelor's degree in a field of science and/or science education and/or science teaching experience, with adequate science or science education preparation as described in the minor. An overall 2.75 undergraduate GPA (3.0 in science and science-related courses) is required for admission into the graduate program. Students whose overall GPA falls between 2.5 and 3.0 may be admitted on probation, which means they will not be officially admitted into the program until they have completed 9-12 quarter hours with a GPA of 3.0 or higher. Students whose overall GPA is lower than 2.5 may be required to take the general GRE, which must be passed with a score of 1000 (adding the verbal and quantitative scores).

Requirements for Graduation

Completion of the Science Education core, AG 501 (4.5 quarter hours) with AG 501L (3 quarter hours), BI 504 with laboratory (6 quarter hours), and GE 501 (4.5 quarter hours) with GE 505F (3 quarter hours) plus 7.5 quarter hours of electives. Electives can include the Supplemental Courses, and/or science courses for which candidates have met the prerequisites.

Courses

AG 501 Planetary and Stellar Astronomy
4.5 quarter hours

A survey of planetary and stellar astronomy, including aspects of the sky, time, coordinates, telescopes, and observational techniques. Topics include: early astronomy, light and telescopes, planet earth, motion and the moon, solar systems, planets, and star properties. (Prerequisites: SE 501 and/or permission of instructor)

AG 501L Planetary and Stellar Astronomy Laboratory
3 quarter hours

One week laboratory course offered on the campus of the University of South Carolina Lancaster (USCL) during the summer quarter, and includes access to the observatory of the Charlotte Amateur Astronomy Club which features a 24-inch Newtonian reflector, a 16-inch Cassegrain reflector, and a 6-inch Alvin Clark refractor. Topics include: lenses and telescopes, spectroscopy, earth's orbital velocity, sunspots, the Hertzsprung-Russell diagram, RR Lyrae stars, the Crab Nebula, Pulsars, structure of the Milky Way, the Hubble Relation, and quasars. (Prerequisites: SE 501, AG 501 or taken concurrently)

BI 504 Advanced Ecology with Laboratory
6 quarter hours

A model is presented for how the biosphere is designed, structured, and functions. Communities, ecosystems, and biomes are examined to see how they fit the model. Mankind's role in managing the earth is discussed and evaluated. Possible solutions to various environmental problems are evaluated. Field work is integrated with coursework. (Prerequisites: SE 501)

GE 501 Natural Disasters
4.5 quarter hours

Analysis of some of the most extraordinary geologic events that have affected the earth's surface, including displacement processes (earthquakes, landslides,

storm surges and tsunamis), nozzle and penetration events (caldera and summit eruptions, pluton intrusion, piping failure of natural dams, meteor impacts), and energetic granular flows (debris avalanches, debris flows, hyper-concentrated river floods, and pyroclastic flows). Focus is on eyewitness reports allowing geological classification and quantitative description. Mechanical analysis employs force vectors, energy balance, and work budgets with only occasional use of calculus. Probability analysis addresses potential threat to humans. This course is also appropriate for science educators needing broad experience with surface geologic processes. (Prerequisites: SE 501, and/or consent of instructor)

GE 505F Field Geology
3 quarter hours

Field explorations for science educators at selected geological locations in Southern California. Visits and instruction occur at shore-face strata sequence (Torrey Pines State Reserve), ancient delta of the Colorado River (Anza-Borrego Desert State Park), leading edge of the North American Plate boundary (San Andreas fault, Mojave Desert, and Owens Valley), craton-deposited marine flood strata (Sierra Nevada Mountains, Inyo Mountains and Mojave Desert), supervolcano structure and deposits (Owens Valley, Long Valley Caldera, Mammoth volcanic center, and Mono Craters), intrusive igneous structures (Peninsular Ranges Batholith, Sierra Nevada Batholith, and Independence dikes), and glacial landforms (Yosemite National Park). Maps, reports and rocks are supplied for the students prior to the field study. Students write a paper that stresses geologic skills of observing, classifying, measuring, interpreting and reporting. The nine-day field trip is offered in August. (Prerequisites: GE 501, GE 502)

Department of Astro-Geophysics
Larry Vardiman, Ph.D., Chair

Introduction

The Astro-Geophysics minor in science education trains teachers in a traditional physics core. The focus of the department's ongoing research programs is on the chronology and processes of stellar, planetary, and atmospheric systems. Students may apply the skills acquired in the physics core to critical questions arising from these research programs through specialized course work and a Science Paper. The Astro-Geophysics minor is designed to prepare teachers at college or secondary education levels**.** The ICRGS graduate who minors in Astro-Geophysics will demonstrate advanced levels of research process and content knowledge, plus presentation and communication skills, in those academic disciplines addressed by the curriculum.

Program objectives

The ICRGS graduate who minors in Astro-Geophysics will demonstrate an advanced level of knowledge acquired from both evolutionary and creationist sources and construct a personal perspective which allows the student to convey a model of earth history in accurate, technical terms.

The ICRGS graduate who minors in Astro-Geophysics will demonstrate proficiency in the use of nomenclature, data, procedures, and concepts of Astronomy, Cosmology, Paleoclimatology, and Geochronology.

The ICRGS graduate who minors in Astro-Geophysics will be able to analyze research data and findings, construct and interpret displays of original data, and utilize the data analysis skills obtained in the online setting.

The ICRGS graduate who minors in Astro-Geophysics will exhibit library research skills using current science journals to prepare a Science Paper, building on his or her knowledge base in Astro-Geophysics.

The ICRGS graduate who minors in Astro-Geophysics will be able to apply effective written and verbal communication skills that exhibit the qualities of a communicator who stimulates the thinking of the listener/reader.

Prerequisites for Admission

Students entering this course of study are expected to have completed during their undergraduate education the following course work: Mathematics – two semesters calculus; Physics – two semesters (8 semester hours), calculus-

based, including labs; Chemistry – two semesters (8 semester hours) including labs; Meteorology – one semester (3 semester hours); Astronomy – one semester (3 semester hours), Geology – one semester (3 semester hours).

Students with a minor emphasis in one of the other disciplines who desire to enroll in one of the Astro-Geophysics courses will be counseled as to their appropriate preparedness for success in the Astro-Geophysics course of their choice. A score above the 60th percentile on the Physics GRE subject test would merit enrollment in Astro-Geophysics courses.

Requirements for Graduation

Students choosing an emphasis in Astro-Geophysics must take 24 quarter hours from the Astro-Geophysics courses offered, including 4 hours of field or laboratory work. Planetary and Stellar Astronomy, AG 501, is required for all students desiring a Minor in General Science. Course work is best understood taken in the sequence designated by course numbering and the time of year the courses are offered beginning with the spring quarter.

Courses

AG 501 Planetary and Stellar Astronomy
4.5 quarter hours

A survey of planetary and stellar astronomy, including aspects of the sky, time, coordinates, telescopes, and observational techniques. Topics include: early astronomy, light and telescopes, planet earth, motion and the moon, solar systems, planets, and star properties. (Prerequisites: SE 501 and/or permission of instructor)

AG 501L Planetary and Stellar Astronomy Laboratory
3 quarter hours

One week laboratory course offered on the campus of the University of South Carolina Lancaster (USCL) during the summer quarter, and includes access to the observatory of the Charlotte Amateur Astronomy Club which features a 24-inch Newtonian reflector, a 16-inch Cassegrain reflector, and a 6-inch Alvin Clark refractor. Topics include lenses and telescopes, spectroscopy, earth's orbital velocity, sunspots, the Hertzsprung-Russell diagram, RR Lyrae stars, the Crab Nebula, Pulsars, structure of the Milky Way, the Hubble Relation, and quasars. (Prerequisites: SE 501, AG 501 or taken concurrently)

AG 502 Geochronology with Laboratory
6 quarter hours

A review, critique, and evaluation of methods and assumptions used to calculate the age of rocks and estimate the age of the earth, especially from radioisotope dating methods. Topics include: biblical chronology, scientific evidence for a young earth, the basics of radioactive decay and radioisotope dating, rubidium-strontium dating, potassium-argon dating, samarium-neodymium dating, uranium-thorium-lead dating, radiohalos and fission tracks, radiocarbon dating, and an accelerated decay model within a Biblical young-earth history. The laboratory requires original data on rubidium-strontium, potassium-argon, samarium-neodymium, uranium-lead, and carbon-14 to be downloaded, plotted, and interpreted using IsoPlot 3.0, which is an add-on to MS Excel. Cross referenced with GE 502. (Prerequisites: admission to the Astro/Geophysics minor, SE 501, AG 501, and/or consent of instructor).

NOTE: see "Using Online Data and Excel for Astro-Geophysics Laboratories" at the end of the Astro-Geophysics course listing below.

AG 503 Paleoclimatology with Laboratory
6 quarter hours

Descriptions and methods for evaluating current, past, and future climates: Paleoclimate reconstruction, climate and climatic variation, dating methods, ice cores, marine sediments and corals, non-marine geological evidence, pollen analysis, dendrochronology, documentary data, and paleoclimate models. The laboratory requires proxy variables from multiple sources to be downloaded, plotted and interpreted using MS Excel. (Prerequisites: admission to the Astro-Geophysics minor SE 501, AG 501)

NOTE: see "Using Online Data and Excel for Astro-Geophysics Laboratories" at the end of the Astro-Geophysics course listing below.

AG 504 Creation Cosmology and the Big Bang Theory
4.5 quarter hours

This course teaches the basics of cosmology, outlines the Big Bang theory, and contrasts it with several origins cosmologies. It touches on areas in science such as orbital mechanics, astronomy, relativity, and quantum mechanics, but not in great detail. It emphasizes concepts with a minimum of mathematics. Topics include: history of cosmology, stars and galaxies, a cosmic center, space and time, special relativity, curved space and general relativity, black and white holes, time dilation, Big Bang models, and creation models. (Prerequisites: admission to the Astro-Geophysics minor, SE 501, AG 501, AG 502, and AG 503 and/or consent of instructor)

AG 510 Special Topics in Astro-Geophysics
Variable hours

Hands-on courses offered as the need arises for various topics in Astro-Geophysics.

Using Online Data and Excel for Astro-Geophysics Laboratories

The laboratories for the Paleoclimatology and Geochronology courses require students to download, analyze, and interpret data provided online using a standard plotting routine called Excel. These data are not collected directly by the students in the field or in the laboratory, but are supplied either from sources online or by the professor from university, government, or commercial laboratories, as the direct collection of these data would be cost and time prohibitive for the students themselves.

For example, the collection of ice core data from Greenland and Antarctica require international teams and millions of dollars in equipment. The collection of almost all of the other data such as sea-floor sediment data, pollen data, satellite data, and global weather data are likewise prohibitive. Most researchers who report and analyze such data rely on specialists who collect and store their data on government and university websites. The U. S. government has established a policy that all data and model calculations done under government grants must be posted and available to whomever needs the data within a two-year period after they are collected. Students in Paleoclimatology will follow these standard practices of acquiring and analyzing such data.

Geochronology students are provided with data collected by ICRGS faculty and staff. Rocks are collected from Grand Canyon National Park, Yosemite National Park, Yellowstone National Park, Death Valley, Australia, Georgia, New Hampshire, etc. These rocks are then processed in the ICRGS laboratory and samples sent to commercial laboratories for component analyses. The results are then supplied to our students for plotting and interpretation. The cost and time constraints of such field and laboratory processing would not allow the majority of our students to be directly involved in the collection and processing.

Paleoclimatology students use MS Excel to plot and interpret the paleoclimatology data. Geochronology students use IsoPlot 3.0, an add-on to MS Excel developed at the Isotope Laboratory at the University of California at Berkeley, to plot and interpret the geochronology data. MS Excel contains a relatively easy-to-use plotting routine which has become a standard in the two fields, which allows for entering and displaying data on multiple types of plots and documenting the graphs in handy forms. A significant goal of the Astro-

Geophysics department is to make our students literate in plotting and displaying data in a clear, readable manner.

Department of Biology
Daniel C. Criswell, Ph.D., Chair

Introduction

The Master of Science degree in Science Education emphasis in Biology offers post-baccalaureate students the opportunity for adding depth and meaning to previous educational, vocational, or non-vocational experiences, from a unique perspective on bioscience. Through advanced course work and research activities, the program addresses the hierarchy of biological organization with an emphasis on origins, diversification, and integration of biological components and systems. The theoretical approach of studying living systems is conducive to scientifically productive inquiry, fostering a capacity for critical thinking and developing skills for the evaluation of evidence.

In the process of matriculation in the Master's degree with an emphasis in Biology at ICRGS, some students may identify special interests leading them to pursue a more advanced degree in bioscience. Otherwise, this Master's program has immediate application to such vocations as small college or secondary level teaching, science writing, and communication in a variety of non-vocational intellectual pursuits.

While the Biology curriculum is cohesive and structured for preparing the Master's degree candidate, the majority of individual course offerings are open to students majoring in other areas and to individuals whose immediate objective may not be a Biology emphasis in the Master's degree. The latter, including advanced undergraduates, are welcome in Biology courses of interest to them.

Program objectives

The ICRGS graduate who minors in Biology will be able to evaluate current biological literature and distinguish between biological origins perspectives.

The ICRGS graduate who minors in Biology will be able to utilize a variety of resources to continue building on his or her biology knowledge base.

The ICRGS graduate who minors in Biology will be able to demonstrate a depth of biological knowledge as it relates to the creationist perspective.

The ICRGS graduate who minors in Biology will be able to proficiently communicate in writing and verbally the significance of biological support from a young earth origins perspective.

Prerequisites for Admission

Students entering this course of study are expected to have completed during their undergraduate education the following course work: Biology – two semesters of general biology (or one semester each of zoology and botany), one semester in genetics, cell biology (or physiology), developmental biology, environmental biology (ecology), and anatomy and physiology; Chemistry – two semesters of general chemistry and two semesters of organic chemistry; Mathematics – one semester of introductory calculus and one semester of statistics; Physics – two semesters of general physics.

Students with a minor emphasis in one of the other disciplines for the Master of Science degree desiring to enroll in one of the Biology courses will be counseled as to their appropriate preparedness for success in the Biology course of their choice. A score above the 60th percentile on the Biology GRE subject test would merit enrolment in Biology courses.

Requirements for Graduation

Students choosing an emphasis in Biology must take 24 quarter hours from the biology courses offered, including three hours of field or laboratory work. Biological Origins (BI 501) is required for all students desiring a Minor in Biology. Course work is best understood taken in the sequence designated by course numbering and the time of year the courses are offered beginning with the fall quarter.

Courses

BI 501 Biological Origins
4.5 quarter hours

A survey focusing on the various theories of biological origin and diversification. Students will evaluate current theories of origins beginning with the origin of life and proceeding through the origin of cells, species, and man. All theories are reviewed in light of contemporary biological knowledge. Emphasis is placed on distinguishing between observation, hypothesis, evidence, and confirmation as applied to evaluating origins paradigms and their implications. (Prerequisites: SE 501 or consent of professor)

BI 501L Biological Origins Laboratory
1.5 quarter hours

An intensive one-week course designed to instruct Middle and High School teachers on how to integrate laboratory exercises into their curriculum. Instruction is based on teacher development in all phases of laboratory

protocols with an emphasis on new developments in biotechnology and bioinformatics useful in Middle School and High School classrooms. Students in the course participate in 10 laboratory modules designed to increase skills in teaching observation, hypothesis, evidence, and confirmation when applied to the evaluation of origins, ethics, and their implications. (Prerequisites: admission to biology minor, SE 501 and BI 501)

BI 502 Comparative Vertebrate Anatomy
4.5 quarter hours

In this class comparative vertebrate anatomy will be taught using texts and resources from a variety of origin philosophies. Scientific knowledge so gained will enable the student to evaluate the origin theories as presented. To be taken concurrently with BI 502L. (Prerequisites: admission to biology minor SE 501, BI 501, admission to biology minor and/or consent of professor)

BI 502L Comparative Vertebrate Anatomy Laboratory
1.5 quarter hours

This lab will concentrate on the structures of the various vertebrate classes. To enable practical application there will be weekly teaching adventures involving an evaluation of origin issues. We will concentrate on known facts and consider which paradigm of origins the facts fit best. To be taken concurrently with BI 502. (Prerequisites: admission to biology minor, SE 501, BI 501 or consent of professor)

BI 503 Principles and Patterns in Paleontology
4.5 quarter hours

Comparisons of criteria used to classify fossils and extant forms are analyzed in Systematic Paleontology for patterns used to propose and defend models for the origin and history of major taxonomic groups. (Cross-listed with GE 503) BI 503L to be taken concurrently. (Prerequisites: admission to biology minor, SE 501, BI 501, BI 502 with lab or consent of professor)

BI 503F Paleontology Field Investigations
1.5 quarter hours

Collect and identify fossils, especially from the Ice Age; participate in hands-on workshops; investigate fossil evidence relating to origins. Must be taken concurrently with BI 503 or after completion of BI 503. (Prerequisites: admission to biology minor, SE 501, BI 501, BI 502 with lab, or consent of professor)

BI 504 Advanced Ecology with Laboratory
6 quarter hours

A model is presented for how the biosphere is designed and structured and how it functions. Communities, ecosystems, and biomes are examined to see how they fit the model. Mankind's role in managing the earth is discussed and evaluated. Possible solutions to various environmental problems are evaluated. Field work is integrated with coursework. (Prerequisites: SE 501)

BI 505 Advanced Cell and Molecular Biology
4.5 quarter hours

A survey of the molecular processes governing inheritance and an investigation into the variation of these processes and their limits. Special consideration is given to current molecular topics related to the origin of biochemical pathways. (Prerequisites: SE 501, BI 501).

BI 510 Special Topics in Biology
Variable quarter hours

Hands-on courses offered as the need arises for various topics in Biology.

Department of Geology
Steve A. Austin, Ph.D., Chair

Introduction

The mission of the Geology Department is to teach and model by utilizing laboratory experiments and field observations how data on earth processes and structures are understood and evaluated within interpretive frameworks for earth history. The Master of Science degree in Science Education with an emphasis in Geology offers post-baccalaureate students the opportunity for adding depth and meaning to previous educational, vocational, and/or non-vocational experiences from a unique perspective on geological processes. The purpose is to prepare teachers with broad and specific experience in the geological sciences.

Program objectives

The ICRGS graduate who minors in Geology will be able to acquire knowledge in the geological sciences and construct a personal perspective of earth history using accurate, technical terms.

The ICRGS graduate who minors in Geology will be able to evaluate current geological literature and analyze results utilizing two interpretive frameworks in the field of Geology.

The ICRGS graduate who minors in Geology will be able to utilize a variety of resources to continue building on his or her geology knowledge base.

The ICRGS graduate who minors in Geology will be able to apply skills in effective written and verbal communication skills that exhibit the qualities of a communicator who stimulates the thinking of the listener/reader.

Prerequisites for Admission

Students entering this course of study are expected to have completed during their undergraduate education the following course work: Geology – one semester of physical or historical geology; Biology – one semester of zoology or botany; Chemistry – two semesters of general chemistry; Physics – two semesters of general physics; Mathematics – one semester of introductory calculus and one semester of statistics.

Students with a minor emphasis in one of the other disciplines for the Master's degree desiring to enroll in one of the Geology courses will be counseled as to their appropriate preparedness for success in the Geology course of their choice.

Requirements for Graduation

Students choosing an emphasis in Geology must take 24 quarter hours from the geology courses offered, including three hours of field or laboratory work. Course work is best understood taken in the sequence designated by course numbering and the time of year the courses are offered beginning with the fall quarter.

Courses

GE 501: Natural Disasters
4.5 quarter hours

Analysis of some of the most extraordinary geologic events that have affected the earth's surface including displacement processes (earthquakes, landslides, storm surges and tsunamis), nozzle and penetration events (caldera and summit eruptions, pluton intrusion, piping failure of natural dams, meteor impacts), and energetic granular flows (debris avalanches, debris flows, hyper-concentrated river floods, and pyroclastic flows). Focus is on eyewitness reports allowing geological classification and quantitative description. Mechanical analysis employs force vectors, energy balance, and work budgets with only occasional use of calculus. Probability analysis addresses potential threat to humans. This course is also appropriate for science educators needing broad experience with surface geologic processes. (Prerequisites: SE 501, and/or consent of instructor)

GE 502 Geochronology with Laboratory
6 quarter hours

A review, critique, and evaluation of methods and assumptions used to calculate the age of rocks and estimate the age of the earth, especially from radioisotope dating methods. Topics covered are: biblical chronology, scientific evidence for a young earth, the basics of radioactive decay and radioisotope dating, rubidium-strontium dating, potassium-argon dating, samarium-neodymium dating, uranium-thorium-lead dating, radiohalos and fission tracks, radiocarbon dating, and an accelerated decay model within a Biblical young-earth history. The laboratory requires original data on rubidium-strontium, potassium-argon, samarium-neodymium, uranium-lead, and carbon-14 to be downloaded, plotted, and interpreted using IsoPlot 3.0 which is an add-on to MS Excel. (Prerequisites: admission to geology minor, SE 501, GE 501, and/or consent of instructor)

NOTE: see "Using Online Data and Excel for Astro-Geophysics Laboratories" at the end of the Astro-Geophysics course listing below.

GE 503 Principles and Patterns in Paleontology
4.5 quarter hours

Comparisons of criteria used to classify fossils and extant forms are analyzed in Systematic Paleontology for patterns used to propose and defend models for the origin and history of major taxonomic groups. (Cross-listed with BI 503) GE 503L to be taken concurrently. (Prerequisites: admission to geology minor, SE 501, GE 501, GE 502, and/or consent of professor)

GE 503F Paleontology Field Investigations
1.5 quarter hours

Collect and identify fossils, especially from the Ice Age; participate in hands-on workshops; investigate fossil evidence relating to origins. (Cross-listed with BI 503L)Must be taken concurrently with GE 503 or after completion of GE 503. (Prerequisites: admission to geology minor, SE 501, GE 501, GE 502 with lab or consent of professor)

GE 504 Interpreting Earth History
4.5 quarter hours

Survey of the human quest to understand the earth's past. Overview of terminology and methodology for describing and interpreting earth history from geological and geophysically-inferred structures and processes. Analysis of uniformitarian and catastrophist approaches to interpreting earth history. Application of computational techniques to simulate geological and geophysical processes. Exploration of the limitations of both uniformitarian and catastrophist paradigms. (Prerequisites: admission to geology minor, SE 501, GE 501, GE 502,and GE 503 with lab and/or consent of instructor)

GE 505F Field Geology
3 quarter hours

Field explorations for science educators at selected geological locations in Southern California. Visits and instruction occur at shore-face strata sequence (Torrey Pines State Reserve), ancient delta of the Colorado River (Anza-Borrego Desert State Park), leading edge of the North American Plate boundary (San Andreas fault, Mojave Desert, and Owens Valley), craton-deposited marine flood strata (Sierra Nevada Mountains, Inyo Mountains and Mojave Desert), supervolcano structure and deposits (Owens Valley, Long Valley Caldera, Mammoth volcanic center, and Mono Craters), intrusive igneous structures (Peninsular Ranges Batholith, Sierra Nevada Batholith, and Independence dikes), and glacial landforms (Yosemite National Park). (Prerequisites: GE 501, GE 502)

GE 510 Special Topics in Geology
Variable quarter hours

Hands-on courses offered as the need arises for various topics in Geology.

Supplementary Courses

SC 501 The History and Nature of Science
4.5 quarter hours

Study of historical science and survey of literature of major philosophers of science reveals clashes in perception throughout history. Individuals will discover how interpretation of the meaning of the nature of science has affected science. Topics include: philosophy of science, STS (science-technology-society), inquiry, the nature of science, history of science. (Prerequisites: SE 501, science content classes and consent of instructor)

SC 580 Science Paper
3 quarter hours

After identifying a topic and developing a proposal in SE 504, students will complete a formal paper that is comparable to a refereed journal article, and must be in journal-submission form before it can be accepted. The paper must present a study in the field of Science Education or the scientific discipline in which students are pursuing their minors.

Contents of the latest edition of *The Publication Manual of the American Psychological Association* and the *ICR Instructions for Preparation and Submission of the Science Education Paper* will govern format (including quotations, footnotes, endnotes, bibliographical references, tables and illustrations, etc.).

SC 581 Comprehensive Examination
No quarter hours

A final oral examination will be administered through a conference call after students have completed the program of study and all other requirements for graduation. Members of the examining committee will include representatives from the Department of Science Education and from the Department in which students pursued minors. Students will be given a general study guide prior to the oral examination. Its contents will include questions pertaining to the courses taken the Science Paper. Students must pass the comprehensive examination in order to graduate.

THE FACULTY

Steven A. Austin, Professor of Geology and Chair of the Department of Geology

B. S., University of Washington, Seattle, Washington, 1970
M. S., San Jose State University, San Jose, California 1971
Ph. D., Pennsylvania State University, College Park, Pennsylvania, 1979

John R. Baumgardner, Associate Professor of Geophysics

B. S., Texas Tech University, Lubbock, Texas, 1968
M. S., Princeton University, Princeton, New Jersey, 1970
M. S., University of California, Los Angeles, California, 1981
Ph. D., University of California, Los Angeles, California, 1983

Sharon E. Cargo, (adjunct) Assistant Professor of Biology

B. S., Ohio State University, Columbus, Ohio, 1972
D.V.M., Ohio State University, Columbus, Ohio, 1977
M. S., Institute for Creation Research Graduate School, Santee, California, 2002

Daniel C. Criswell, Assistant Professor of Biology and Chair of the Department of Biology

B. S., Weber State University, Ogden, Utah, 1982
M. S., Institute for Creation Research Graduate School, Santee, California 1994
Ph. D., University of Montana, Missoula, Montana, 2004

Stephen W. Deckard, (adjunct) Professor of Education

B. A., McKendree College, Lebanon, Illinois, 1975
M. S., University of Illinois, Champaign, Illinois 1979
Ed. D., Agrosy University, Sarasota, Florida, 1993

David A. DeWitt, (adjunct) Associate Professor of Biology

B. S., Michigan State University, East Lansing, Michigan, 1991
Ph. D., Case Western Reserve University, Cleveland, Ohio, 1996

Danny R. Falkner, (adjunct) Associate Professor of Astronomy

B. S., Bob Jones University, Greenville, South Carolina 1976
M. S., Clemson University, Clemson, South Carolina 1979
M. A., Indiana University, Bloomington, Indiana 1983
Ph. D., Indiana University, Bloomington, Indiana 1989

Russell D. Humphreys, Associate Professor of Physics

B. S., Duke University, Durham, North Carolina, 1963
Ph. D., Louisiana State University, Baton Rouge, Louisiana, 1972

Eddy Miller, Dean of the Graduate School

B. A., Northwestern State University, Natchitoches, Louisiana, 1963
M. S. in Ed., Southern Illinois University, Carbondale, Illinois, 1965
Ph. D., U. S. International University, San Diego California, 1969

Patricia L. Nason, Associate Professor of Science Education and Chair of the Department of Science Education

B. A., Sam Houston State University, Huntsville, Texas, 1984
M. Ed., Texas A&M University, College Station, Texas, 1991
Ph. D., Texas A&M University, College Station, Texas, 1994

Chris Osborne, (adjunct) Professor of Biology

B. A., California State University, Fullerton, California, 1975
M. S., Institute for Creation Research Graduate School, Santee, California, 1985
Ph. D., Loma Linda University, Loma Linda, California, 1989

Gary Parker, Professor of Biology

B.A., Wabash College, Crawfordville, IN, 1962
M.S., Ball State University, Muncie, IN, 1965
Ed.D., Ball State University, Muncie, IN, 1973

Larry Vardiman, Professor of Atmospheric Science and Chair of the Department of Astro-geophysics

B. S. University of Missouri, Rolla, Missouri, 1965
M. S., St. Louis University, St. Louis, Missouri, 1967
M. S., Colorado State University, Fort Collins, Colorado, 1972
Ph. D., Colorado State University, Fort Collins, Colorado, 1974

ADMISSIONS

Introduction

The Graduate School seeks to partner with prospective students who have a strong science background and who desire to increase both their knowledge of the scientific evidences pertaining to origins and their skills and abilities in teaching such evidences.

Most current students in the Graduate School are already engaged in teaching and have either obtained certification to teach in their respective states or have determined that such certification is not required.

Prospective students who are seeking state certification as teachers should examine closely the policies and procedures required for certification in their respective states, and should not anticipate that a degree from the Graduate School will achieve this outcome.

The Graduate School has designed all its learning activities to help students become better teachers and uses as evidence for achieving this outcome graduates' scores on the National Teachers Exam (PRAXIS).

Prerequisites

Applicants who are admitted to degree seeking status will possess a variety of academic qualifications, which include the following:

> An undergraduate degree from a regionally accredited college or university (or in the case of international applicants, an institution of equivalent standing)
>
> A cumulative grade-point average for the undergraduate degree of 2.75 or higher (4.0 = A)
>
> Undergraduate courses in the sciences and supporting academic disciplines, as specified in the section of this catalog that presents the Academic Departments and their requirements for a minor (see "Prerequisites for Admission"), with a grade-point average of 3.0 or higher (4.0 = A)

Applicants who do not meet these prerequisite standards may be asked to demonstrate their potential for academic success by fulfilling additional requirements.

Admissions Procedures

When to Apply

In order to be considered for matriculation in any given quarter, applications for admission, along with all other supporting materials, must be in the hands of the Admissions secretary no later than 30 days prior to the beginning of the quarter in which matriculation is sought.

How to Apply

The ICRGS Master of Science degree is provided primarily through an online program. Your ability to successfully use the ICRGS website to apply for the program is one immediate indicator of your ability to undertake an online candidate program.

Application materials can be obtained *via* the ICRGS website at www.icr.edu.

Admissions office:

Telephone:	214.615.8300
Fax:	214.615.8299
E-Mail:	apply@icr.edu
Postal mail:	Ms. Mary Smith Admissions Secretary ICR Graduate School 1806 Royal Lane Dallas, Texas 75229

Once you download the application materials from www.icr.edu:

1. Complete the Application and send it via postal mail to the Admissions office at the address above;
2. Request official transcripts (copies are not acceptable) to be sent via postal mail to the Admissions office at the address above;
3. Request two character references by following the directions on the Character Reference Forms;
4. Email the essay portion of the application to apply@icr.edu.

Note: The Family Education Rights and Privacy Act of 1974 allows college students access to their files; however, letters of recommendation have traditionally not been shown to students. Because of the importance of

preserving the confidentiality of letters of recommendation, educational institutions are permitted to suggest that applicants may waive their rights of access to letters of recommendation. It is, therefore, suggested to applicants that they consider waiving their rights to see these recommendations. Signing such a waiver statement is not required as a condition of admission. Signing the waiver statement on the reference form is all that is necessary to implement this waiver.

Transfer Applicants

All of the information included above applies to first-time graduate applicants and those who have already taken coursework at the graduate level.

FINANCIAL INFORMATION

Introduction

The Graduate School seeks to provide a program of high quality for all its students at the most reasonable cost possible. As a private, not-for-profit institution, the Graduate School receives no support from taxes or other public funds, thus the tuition and fees charged must be supplemented by significant outside gifts from concerned individuals in order to keep costs at levels that are feasible for students. The expenses of students at the Graduate School are shown below. The Graduate School must reserve the right to change all student charges, modify its services, or change its programs of study should economic conditions, curriculum revisions, or national emergency make it necessary to do so.

Tuition

Per quarter hour	$150.00	
Total cost for 54 quarter hours		$8,100.00

Special Fees (Non-Refundable)

Textbooks and supplies (about $150/course)		$1,800.00
Application Fee: Must be submitted before application can be processed		$ 30.00
Supplemental Laboratory or Field Trip costs (may vary depending on course)		$3,500.00
Processing Fee for Graduation		$ 20.00
Transcript Fee (first transcript is free)	$2.00	

Estimated Cost for the Program **$13,450.00**

ACADEMIC PROGRESS

Academic Advising

Upon acceptance into the program, the student is assigned an Academic Advisor by the Dean. The advisors assume immediate responsibility for the programs and counseling of graduate students in their respective minors. The program course sequence is available to students and faculty on the distance education website.

Academic counseling is available via telephone calls, email, or virtual office from the student's Academic Advisor, Department Chairs, or other faculty members. By the time 12 quarter hours have been completed, the student will declare a minor and then a degree plan will be completed by the Academic Advisor. The degree plan will be kept on file in the graduate office and made available to the student upon request.

The faculty at large will also provide career counseling upon request.

Transfer Credit

A maximum of nine quarter hours (six semester units) of graduate coursework may be transferred from other approved graduate institutions. A catalog description of the course(s) to be transferred should be included. The course(s) must have been completed within the most recent five year time period. The Admissions Review Committee will evaluate the course(s) to be transferred and make a recommendation.

Registration

Official registration for courses is required at the beginning of each quarter. Students will not be admitted to classes until they have completed the formal registration process described below.

Registration is a two-part process.

1. The first part involves academic advisement, new student orientation, and registration. Once students are admitted to degree seeking status, their names are put into the distance education website. By contacting their Advisor, students will receive assistance in choosing the most appropriate course for which to register and will be given the information needed to access this website. Once the students gain access, they can

complete the online orientation, and then register for the appropriate classes.

2. The second part involves payment of tuition and fees. Complete and print the enrollment form, following the instructions provided. Early enrollment is advised to ensure a place in the class. Enrollments are processed in the order received and must be accompanied by the full fee, or by VISA or MasterCard charge. Cost per quarter unit is $150 per quarter hour or a total of $675 per 4.5 quarter hour course.

Students must register by the day the class begins, and enrollment is not official until the fee is processed. Access to the online courses will be available once the enrollment is complete.

Dropping and Adding Courses

Students may add courses at any time prior to the beginning of the third week of the quarter by contacting the Registrar, enrolling in the class, and paying the assessed tuition and fees as directed by the Registrar.

Students may drop a course at any time before the beginning of the fourth week of the quarter by completing a withdrawal form, which can be obtained by contacting the Registrar. A grade of "WP" or "WF" will be awarded, based on performance in the course up to the point of withdrawal. If withdrawal is made without proper notice, a grade of "WF" will be recorded.

Refunds

A student may be entitled to a partial refund of tuition, providing proper withdrawal procedures are completed in the Registrar's Office. Failure to participate in the online courses will not entitle a student to a refund unless the proper withdrawal procedures are followed, including payment of all outstanding financial obligations to the Institute. A student who has not made total payment for a class and drops without filing an official withdrawal will be responsible for the remaining balance. In the event a student is dismissed, no refund is warranted; however, the Dean and/or CEO of the Institute may consider authorizing a partial refund if mitigating circumstances appear to justify it.

Students who voluntarily withdraw, following proper procedures, may request the following partial tuition refunds (no refunds can be given for any of the Special Fees):

Withdrawal	Amount Refunded
Prior to or during first class meeting	100%
Prior to the completion of one-third of the class	67%
After this time	0%

Grading Scale

Grade	Grade point
A	4.00
A-	3.67
B+	3.33
B	3.00
B-	2.67
C+	2.33
C	2.00
C-	1.67
D+	1.33
D	1.00
D-	0.67
F	00

Courses with a D or F are not accepted and need to be retaken – your new grade will replace the old grade.

Declaration of a Minor

When seeking a minor in Biology, Astro-Geophysics, Geology, or General Science, the potential student must have adequate subject preparation for the proposed graduate minor. If a student does not have a 2.5 GPA and/or he or she does not have adequate coursework in the minor the student wishes to pursue, then the student must take both the specialty GRE exams and receive a score above the 50th percentile.

Students inadequately prepared for their desired minor may be admitted to the program on a conditional basis. The Department Chairman and committee

members will identify deficiencies and require completion of them prior to beginning the courses in the minor. Course deficiencies can be completed at accredited colleges and universities approved in advance by the Department Chair. Details of conditional admission will be stated in the student's letter of admission. Courses identified as deficiencies are in addition to the 54 quarter hours required for graduation.

Leave of Absence

Students who are not able to maintain normal progress in pursuing their degrees may request a leave of absence by contacting the Dean of the Graduate School. A leave of Absence is normally granted for up to one year, but may be extended, at the discretion of the Dean.

Withdrawal

Students who do not intend to complete their degree program are requested to complete a formal petition for withdrawal. Students who are contemplating withdrawal should contact the Dean.

Readmission

Students who have withdrawn from the Graduate School and desire to return must submit a new application along with new references and transcripts from all postsecondary institutions attended since leaving the Graduate School. Applications for readmission will be reviewed by the Admission Committee, and applicants will be notified by the Dean.

GRADUATION REQUIREMENTS

Introduction

Students are expected to complete all requirements for graduation that are in place at the time of matriculation. Students who choose to change minors after matriculating will need to meet the graduation requirements associated with the new minor. Such a decision may extend the time needed to complete degree requirements.

Normal Progress and Time Limit

Students who complete three courses per year are considered to be making normal progress. Students who fail to take at least one course in two consecutive quarters may need to re-apply for admission and be subject to the degree requirements in place at the time of this subsequent matriculation.

Regardless of students' registration frequency, the maximum length of time allowed for completion of all degree requirements is six years.

Graduation Policies

Complete at least 54 quarter hours (equals 36 semester units) of graduate coursework that are distributed in the following ways:

27 quarter hours (18 semester units) in Science Education;
24 quarter hours (16 semester units) in a science minor;
3 quarter hours (2 semester units) in completing the science paper.

Maintain a cumulative grade point average of at least 3.0;

Present a Science Paper of publishable quality;

Pass a comprehensive examination over the curricular content.

DISTANCE EDUCATION FAQ

Q. Which degrees are offered through ICRGS Online Distance Education?
A. Master of Science in Science Education.

Q. What are the goals of the ICRGS Online Distance Education program?
A. The overall goals of our distance learning community are to:

- create a network of science teachers who desire to teach scientific truths about biblical creation;
- learn the most effective ways to teach scientific truths about biblical creation;
- unite teachers and learners in a meaningful learning endeavor to grow spiritually as well as intellectually;
- carry course content through the use of electronic educational media;
- establish two-way communication between instructors and students, or student and students, although they are separated in space and time;
- explore together the scientific truths of biblical creation and biblical concepts of teaching those truths, while allowing students to pursue their own interests in these areas; and
- establish an active learning environment through logging on and contributing to conversations that show evidence of discernment and critical thinking when confronted with various philosophies of science and science education.

Q. Why should I get my degree through distance education?
A. There are several advantages to participating in an online degree program. Advantages include that the learner:

- does not have to give up his or her family responsibilities to get a degree;
- can maintain his or her professional responsibilities providing financially for himself or herself;
- can go to class and study within his or her own weekly time frame rather than having to set aside particular hours every week (flexibility);
- does not waste time driving to and from the location of classes;
- encumbers no expenses (such as a place to live, gas for a car, etc.) outside of the cost of tuition and books;
- does not have to take time out of his or her summer to go to a college or university to take courses; and
- develops synergy working with other like-minded individuals throughout the country and the world.

Q. How is ICRGS's Masters in Science Education Online program unique?
A. The Institute for Creation Research Graduate School's program in Science Education:

- teaches science from a creationist perspective;
- grounds the learner in a biblically-based program in the sciences with science and teaching science as the focus;
- educates the learner to discern the biblical perspective in science and science teaching;
- provides the learners (science teachers) a chance to network with other science teachers so they can develop a network of Christian educators who support creation science (research shows that students in interactive online programs know each other better than those in face-to-face classes);
- assists the learner in developing creation apologetics in his or her science classroom;
- teaches the learner how to develop curriculum, instructional strategies, and classroom activities related to creation science;
- uses a quarter system with all the students in the course learning the same material at the same time; and
- implements due dates for learner accountability and to help manage and organize the courses.

Q. Is distance education right for me?
A. The distance education learner is active and creative in the learning process. He or she is a successful learner in a computer-mediated environment. To help facilitate active and creative learning, asynchronous (posting comments to a discussion area) and synchronous (logging on to a discussion at the same time) discussions may be used, and collaborative projects are encouraged.

The individual learner who participates in a distance learning community:
- is self-motivated
- has higher expectations of themselves
- is more self-disciplined
- takes education seriously
- takes responsibility in helping create a learning community (unity of believers). This is done by displaying the following characteristics:
    - upholds honesty when working with others and in what is produced
    - expresses responsiveness to others' needs
    - demonstrates respect to others – whether teacher or student
    - exhibits a work ethic

Q. What is the role of the Instructor in a distance education learning community?
A. The instructor in the ICRGS Online Distance Education program functions in a variety of roles in order to help create a learning community and to model

the qualities that the learners should exhibit in their own classrooms. These roles include:

- **Instructor/Teacher:** determines the content in science and science education (and how it is delivered) that the learner must know and apply in order to be a master teacher of creation science.
- **Mentor:** shares knowledge and experiences that are in the learner's best interests; is a role model; and provides feedback to individuals and small groups, frequently defining, explaining, or modeling the standard for good work.
- **Facilitator:** makes things easier for the learner by answering his or her questions, organizing the content and time frame of its delivery so the learner's knowledge and understanding build.
- **Encourager:** promotes trust within the learning community; emphasizes the essential habits of mind (critical thinking, doing one's best, respect for each other).
- **Guide/Manager:** leads or directs the learner to his or her destination.
- **Assessor/Evaluator:** provides feedback to individuals and small groups, frequently defining, explaining, or modeling the standard for good work; uses a variety of tools to measure and evaluate learner progress.

Q. How do I start the admission process?

A. Visit the icr.edu website and click on the Contact icon.

FOUNDATIONAL PRINCIPLES

The Institute for Creation Research Graduate School has a unique statement of faith for its faculty and students, incorporating most of the basic Christian doctrines in a creationist framework, organized in terms of two parallel sets of tenets, related to God's created world and God's inspired Word, respectively. Reproduced below are the ICR Tenets of Scientific Creationism and Biblical Creationism.

Principles of Scientific Creationism

- The physical universe of space, time, matter, and energy has not always existed, but was supernaturally created by a transcendent personal Creator who alone has existed from eternity.
- The phenomenon of biological life did not develop by natural processes from inanimate systems but was specially and supernaturally created by the Creator.
- Each of the major kinds of plants and animals was created functionally complete from the beginning and did not evolve from some other kind of organism. Changes in basic kinds since their first creation are limited to "horizontal" changes (variations) within the kinds, or “downward” changes (*e.g.*, harmful mutations, extinctions).
- The first human beings did not evolve from an animal ancestry, but were specially created in fully human form from the start. Furthermore, the "spiritual" nature of man (self-image, moral consciousness, abstract reasoning, language, will, religious nature, etc.) is itself a supernaturally created entity distinct from mere biological life.
- The record of earth history, as preserved in the earth's crust, especially in the rocks and fossil deposits, is primarily a record of catastrophic intensities of natural processes, operating largely within uniform natural laws, rather than one of gradualism and relatively uniform process rates. There are many scientific evidences for a relatively recent creation of the earth and the universe, in addition to strong scientific evidence that most of the earth's fossiliferous sedimentary rocks were formed in an even more recent global hydraulic cataclysm.
- Processes today operate primarily within fixed natural laws and relatively uniform process rates, but since these were themselves originally created and are daily maintained by their Creator, there is always the possibility of miraculous intervention in these laws or processes by their Creator. Evidences for such intervention should be scrutinized critically, however, because there must be clear and adequate reason for any such action on the part of the Creator.

- The universe and life have somehow been impaired since the completion of creation, so that imperfections in structure, disease, aging, extinctions, and other such phenomena are the result of "negative" changes in properties and processes occurring in an originally-perfect created order.
- Since the universe and its primary components were created perfect for their purposes in the beginning by a competent and volitional Creator, and since the Creator does remain active in this now-decaying creation, there do exist ultimate purposes and meanings in the universe. Teleological considerations, therefore, are appropriate in scientific studies whenever they are consistent with the actual data of observation. Furthermore, it is reasonable to assume that the creation presently awaits the consummation of the Creator's purpose.
- Although people are finite and scientific data concerning origins are always circumstantial and incomplete, the human mind (if open to possibility of creation) is able to explore the manifestations of that Creator rationally, scientifically, and teleologically.

Principles of Biblical Creationism

- The Creator of the universe is a triune God: Father, Son, and Holy Spirit.[1] There is only one eternal and transcendent God, the source of all being and meaning, and He exists in three Persons, each of whom participated in the work of creation.
- The Bible, consisting of the thirty-nine canonical books of the Old Testament and the twenty-seven canonical books of the New Testament, is the divinely-inspired revelation of the Creator to man. Its unique, plenary, verbal inspiration guarantees that these writings, as originally and miraculously given, are infallible and completely authoritative on all matters with which they deal, free from error of any sort, scientific and historical as well as moral and theological.
- All things in the universe were created and made by God in the six literal days of the Creation Week described in Genesis 1:1-2:3, and confirmed in Exodus 20:8-11. The creation record is factual, historical, and perspicuous; thus all theories of origins or development that involve evolution in any form are false. All things that now exist are sustained and ordered by God's providential care. However, a part of the spiritual creation, Satan and his angels, rebelled against God after the creation and are attempting to thwart His divine purposes in creation.

[1] The Holy Spirit is one of the three divine Persons of the Holy Trinity, one God in three persons. His ministry is to convict, regenerate, indwell, instruct, and guide all believers in Christ.

- The first human beings, Adam and Eve, were specially created by God, and all other men and women are their descendants. In Adam, mankind was instructed to exercise "dominion" over all other created organisms, and over the earth itself (an implicit commission for true science, technology, commerce, fine art, and education), but the temptation by Satan and the entrance of sin brought God's curse on that dominion and on mankind, culminating in death and separation from God as the natural and proper consequence.
- The biblical record of primeval earth history in Genesis 1-11 is fully historical and perspicuous, including the creation and Fall of man, the Curse on the Creation and its subjection to the bondage of decay, the promised Redeemer, the worldwide cataclysmic deluge in the days of Noah, the post-diluvian renewal of man's commission to subdue the earth (now augmented by the institution of human government), and the origin of nations and languages at the tower of Babel.
- The alienation of man from his Creator because of sin can only be remedied by the Creator Himself, who became man in the person of the Lord Jesus Christ, through miraculous conception and virgin birth. In Christ we are indissolubly united perfect sinless humanity and full deity, so that His substitutionary death is the only necessary and sufficient price of man's redemption. That the redemption was completely efficacious is assured by His bodily resurrection from the dead and ascension into heaven; the resurrection of Christ is thus the focal point of history, assuring the consummation of God's purposes in creation.
- The final restoration of creation's perfection is yet future, but individuals can immediately be restored to fellowship with their Creator on the basis of His redemptive work on their behalf, receiving forgiveness and eternal life solely through personal trust in the Lord Jesus Christ, accepting Him not only as estranged Creator, but also as reconciling Redeemer and coming King. Those who reject Him, however, or who neglect to believe on Him, thereby continue in their state of rebellion and must ultimately be consigned to the everlasting fire prepared for the devil and his angels.
- The eventual accomplishment of God's eternal purposes in creation, with the removal of His curse and the restoration of all things to divine perfection, will take place at the personal bodily return to earth of Jesus Christ to judge and purge sin and to establish His eternal kingdom.
- Each believer should participate in the "ministry of reconciliation" by seeking both to bring individuals back to God in Christ (the "Great Commission") and to "subdue the earth" for God's glory (the Edenic-Noahic Commission). The three institutions established by the Creator for the implementation of His purposes in this world (home, government, church) should be honored and supported as such.

In addition to a firm commitment to creationism and to full biblical inerrancy and authority, the ICR Graduate School is committed to traditional education and to high standards of academic excellence. The ICRGS M.S. program is

offered in an online environment, with interaction between instructors and students, and includes a research investigation approved by each department chair (in lieu of a thesis). ICR's highly qualified and experienced faculty is in itself assurance of a rigorous and creative educational experience for its graduates, equipping them both for productive careers in their chosen fields and for making a significant contribution to the ongoing worldwide revival of theistic creationism.

Appendix A

Board Minutes regarding Distinction of Roles

The information in this Appendix contains the pertinent section of the ICR Board January 26, 2008 meeting in which the ICR CEO and President were made *Ex Officio* of the Board.

Appendix A

Board Minutes regarding Distinction of Roles

Institute for Creation Research
Board of Trustees Meeting
January 26, 2008

Attendees:

Dr. Henry Morris, III – CEO
Dr. John Morris – President
Dr. David Wismer – Chairman
Dr. Robert Armstrong – Trustee
Mr. Brian Bissell – Trustee
Mr. Jack Brady – Trustee
Mr. Dan Manthei – Trustee
Mr. Dan Mitchell – Trustee
Lt. Col. Charles Morse - Trustee (present via teleconference)
Dr. Eddy Miller – Dean ICRGS
Ms. Eileen Turner – Acting Board Secretary

CEO's Report – Dr. Henry Morris, III
Included was information related to ICR's attempt to gain approval from the Texas Higher Education Coordinating Board (THECB). ICR has requested a delay to come before THECB until their April 24th meeting. Discussion was had concerning media coverage, ICR's position relative to other institutions teaching graduate level science, our strengths and weaknesses before THECB, etc.

Action – Bylaw Amendment Vote
Motion to establish the Board of Trustees for the ICRGS: Full ICR Board of Trustees serve as Board for the ICRGS with bylaw amendment that Henry M. Morris, III and John Morris serve as ex-officio members of the Board. Moved by Jack Brady, second by Rick Bliss, unanimous vote to approve amendment of ICR bylaws creating ICRGS Board and making Drs. H. Morris and J. Morris ex-officio members of the Board of Trustees.

Respectfully submitted,
Eileen Turner - Corporate Secretary/Acting Board Secretary

Appendix B

Handbook for Effectiveness Assessment

Graduate School

Institute for Creation Research

March, 2008

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1. What is Effectiveness Assessment?

An operational definition of the effectiveness of the Graduate School can be stated this way:

"The ICR Graduate School is effective to the extent that it actualizes its mission and goals."

Assessment of the Graduate School's effectiveness is an on-going process that follows an annual cycle involving each organizational unit and consists of seven steps. These steps, along with the months in which they will be taken, are set forth in Section 4, beginning on page 4.

2. Why Assess Effectiveness?

In addition to using the results of the process to improve the effectiveness of each organizational unit, the Annual Effectiveness Assessment Report is reviewed by the CEO and its contents are used by him to inform the Strategic Planning and Budgeting process.

Further, the Graduate School assesses its effectiveness in order to document compliance with various external agencies including the Texas Higher Education Coordinating Board (THECB) and the Commission on Colleges of the Southern Association of Colleges and Schools (SACS).

The SACS Core Requirement pertaining to effectiveness assessment follows:

"2.5 The institution engages in ongoing, integrated, and institution-wide research based planning and evaluation processes that (1) incorporate systematic review of institutional mission, goals, and outcomes; (2) result in continuing improvement in institutional quality; and (3) demonstrate that the institution is effectively accomplishing its mission. **(Institutional Effectiveness)**"

The Effectiveness Assessment System of the Graduate School is designed to generate, organize, utilize, and report evidence that complies with these expectations.

3. The Program Outcomes Model

The Program Outcomes Model consists of four components: (1) Inputs, (2) Processes, (3) Outputs, and (4) Outcomes.

Inputs include such resources as administration, faculty, staff, students, curriculum, library, technologies, and policies/procedures, while **processes include such activities and services** as advertising, admission, orientation, registration, and instruction. **Outputs include such results** as numbers of students recruited, taught, retained and completed, numbers of classes taught, numbers of learning resources utilized, while **outcomes include such benefits to students as** new knowledge gained, skills increased, values changed, and behaviors modified.

While each of these components is both essential to the achievement of Graduate School effectiveness and is interdependent with each of the others, effectiveness is best assessed by measuring outcomes. If outcomes meet minimum criteria for success, it can be assumed that the inputs, processes, and outputs are acceptable. However, if minimum criteria for success are not met, then a search can be conducted to find the reasons. Once the reasons are identified, then these findings can be used to address adjustments which will correct the deficiencies.

4. Annual Effectiveness Assessment Cycle

The Graduate School offers only one degree program with four minors, and has a relatively small number of administrators and faulty members, so it is possible for effectiveness assessment to be designed and managed by 'the Committee of the Whole"; that is, each administrator and each faculty member can be involved in each phase of the design and management of the assessment process.

The Initial and Continuing Cycle

In May, 2008 and each May thereafter, utilizing the latest version of the Effectiveness Assessment Process adopted by the Committee of the Whole, the organizational units in the Graduate School will affirm/revise their purpose statements that are compatible with the mission of the Graduate School, then describe their intended outcomes, establish their criteria for success, and identify the kinds/sources of data /information for measuring success.

From June, 2008 through January, 2009, and each equivalent calendar segment thereafter, the Dean will oversee the collection of effectiveness assessment data and the compilation of results.

In February, 2009 and each February thereafter, the Dean will assemble the data/information, determine the extent to which the success criteria have been met, and compose an annotated version of the Annual Effectiveness Assessment Report. The Committee of the Whole will edit the annotated version and produce the final draft.

In March, 2009, and each March thereafter, the final draft of the annotated version of the Annual Effectiveness Assessment Report will be delivered to the CEO for review prior to his initiation of the planning and budgeting cycle.

In April, 2009 and each April thereafter, the Committee of the Whole will review the entire Effectiveness Assessment Process and revise it as deemed appropriate.

5. Designing and Installing an Effectiveness Assessment System for Your Organizational Unit

A. Composing a Purpose Statement

The first step is to compose a purpose statement for your organizational unit that is compatible with the mission statement of the Graduate School.

Following is the stated mission of the Graduate School:

> The Institute for Creation Research Graduate School (ICRGS) is the formal education arm of the Institute for Creation Research (ICR). ICR has a three-fold mission to research, educate, and communicate Truth involving the study and promotion of scientific creationism, Biblical creationism, and related fields. The ICRGS program provides graduate-level training in science education with minors in the natural sciences that are particularly relevant to the study of origins in an online environment.
>
> The purpose of the ICRGS is (1) to prepare science teachers and other individuals to understand the universe within the integrating framework of Biblical creationism using proven scientific data, and (2) to prepare our students for leadership in science education. A clear distinction is drawn between scientific creationism and Biblical creationism but it is the position of the Institute that the two are compatible and that all genuine facts of science support the Bible.
>
> The programs and curricula of the Graduate School, while similar in factual content to those of other graduate colleges, are distinctive in one major respect: ICR bases its educational philosophy on the foundational truth of a personal Creator-God and His authoritative and unique revelation of truth in the Bible, both Old and New Testament. ICR maintains that scientific creationism should be taught along with the scientific aspects of evolutionism in tax-supported institutions, and that both scientific and Biblical creationism should be taught in Christian schools.

Following are the organizational units for which purpose statements will need to be composed:

Department of Science Education
Department of Astro-Geophysics
Department of Biology
Department of Geology

Office of Admission and Registrar
Learning Resources
Office of the Dean

Following are some questions to consider in composing the purpose statement for your organizational unit:

Who do you serve?
What are the primary functions of your unit?
What are your core activities?

Following is a sample purpose statement for an instructional unit:

The purpose of the **Science Education Department** is to prepare students for employment as middle-school and high school science teaches. The curriculum features courses in education to help the students develop their skills, abilities, and resources needed to design and manage learning experiences.

Following is a sample purpose statement for an administrative unit:

The purpose of the **Registrar's Office** is to serve the students and employees of the Graduate School by receiving and processing applications for admission, processing and reporting student enrollment, maintaining registered student records, receiving and reporting grades, and processing student transcript information.

B. Describing Intended Outcomes; Establishing Criteria for Success

The second step is to describe the outcomes for your organizational unit that are compatible with the purpose statement of your organizational unit.

Following are some items to consider in describing academic outcomes:

- Minimum skills and competencies required for employment (as identified by employers, advisory committee members, or professional associations)
- Criteria and student competencies set forth by **State authorization agencies , accrediting commissions, or licensing and certification boards**
- Departmental documents and course contents
- Minutes from faculty meetings

Following is a sample intended academic outcomes statement:

Graduates of the masters degree program in Science Education will make a minimum score of 80% on the Texas teacher licensing examination in science.

Following are some items to consider in describing administrative outcomes:

- Compliance with external standards or regulations, established professional standards, "Standards of Good Practice"
- Reasons why end-users can/must avail themselves of the services you offer
- Results you expect after providing your services
- Evidences of effectiveness and efficiency
- End-user satisfaction

Following is a sample of an intended administrative outcome statement:

Learning resource support services will receive a minimum score of four on a five-point scale from both faculty members and students on the Learning Resources Effectiveness Assessment survey.

Each organizational unit should describe between three and five outcomes to be assessed in the initial Effectiveness Assessment Cycle.

C. Identifying Kinds/Sources of Data/Information to Measure Success

The third step is to identify the kinds of data/information that can be used as evidence to determine the extent to which the organizational unit outcomes have/have not been achieved, then identify specific, available sources for the necessary data/information.

Following are some items to consider in identifying kinds/sources of data/information to measure success:

- Kinds of data/information can be test score results, formal (but subjective) evaluations by experts, opinions, reports from external agencies,
- Sources of data/information can be end-users and take the form of current internal reports/surveys, newly designed internal reports/surveys, external reviews

Following is a sample of a kind/source of data/information for an academic outcome statement:

The *Praxis Series* assessments that measure both the academic content, teaching pedagogy, and assessment skills of students.

Following is a sample of a kind/source of data/information for an administrative outcome statement:

Student survey in which questions about effectiveness outcomes are asked.

D. Compiling Results

The fourth step is to collect the data/information needed to measure the success of each outcome statement and determine the extent to which each outcome was achieved.

The Dean will be responsible for compiling the data/information needed to measure each of the outcome statements.

E. Demonstrating Use of Results

The fifth step is to demonstrate that the results have actually been used to change each organizational unit for the better.

Completing this step involves determining the extent to which each outcome was achieved and determining the actions to be taken in order to improve the organizational units where outcomes were not achieved.

6. The Annual Effectiveness Assessment Report

Once the levels of success in achieving each of the outcomes have been determined and the actions to be taken in order to improve the chances for success in achieving the desired outcomes in the future have been specified, The Annual Effectiveness Assessment Report will be drafted by the Dean and edited by the Committee of the Whole (membership includes the Dean, Department Chairs, Registrar, and Librarian). The Report will be distributed to the CEO to be used as a reference in his review of the strategic plan.

The Table of Contents of the Annual Effectiveness Assessment Report follows:

- Purpose of the Report
- Process followed in developing the Report
- Effectiveness of the Office of the Dean; Uses of Results
- Effectiveness of the Academic Departments; Uses of Results
    - Science Education
    - Astro-Geophysics
    - Biology

    - Geology
- Effectiveness of the Office of the Director of Admission, Uses of Results
- Effectiveness of the Office of the Registrar; Uses of Results
- Effectiveness of the Library; Uses of Results
- Comments
- Contributors and their Roles

7. Review/Revision of the Effectiveness Assessment Process

Following submission of the Annual Effectiveness Assessment Report to the CEO, the Committee of the Whole will review each step in the Effectiveness Assessment Process, and make those changes that are deemed appropriate. Following completion of the revisions, the Dean will produce an edited version of the Handbook for Effectiveness Assessment and lead the Committee of the Whole in the next iteration of the Effectiveness Assessment Process.

Appendix C

Faculty Research and Publication

The information in this Appendix contains a review of the ICRGS scientific research and a listing of the recent faculty publications.

Appendix C
Faculty Research and Publication

Faculty Research 2008 – 2002

Radioisotope Dating and the Age of the Earth (RATE)

Dr. Austin was a principal investigator in the RATE Research Program (Radioisotopes and the Age of the Earth). He conducted and supervised laboratory preparation and isotopic analysis of Grand Canyon diabase from Arizona and Beartooth Amphibolites from northern Wyoming. The radioisotope data and the analysis of isochron methodology was published in 2003 and 2005. Oral presentation was made at professional meetings.

As a member of the Radioisotopes and the Age of the Earth (RATE) team, Dr. Baumgardner led the project on C-14 that documented the presence of C-14 in a suite of samples from major U.S. economic coal beds that, in terms of geological age, spanned a large fraction of the fossil-bearing portion of the geological record. In all cases these coal samples displayed C-14 levels well above the laboratory's standard background value, confirming a pattern already firmly established in the radiocarbon literature. The project also documented for the first time the presence of C-14 in a suite of diamond samples, likewise at levels exceeding the laboratory standard background value. These results were published in the 2005 book *Radioisotopes and the Age of the Earth: Results of a Young-Earth Creationist Research Initiative.*

Dr. Humphreys worked as a project leader with the Radioisotopes and the Age of the Earth (RATE) research initiative (1997-2005) to develop a new dating method based on radiogenic helium diffusion, and used the method to show that radioactive zircons in Precambrian "basement" granites are much younger (thousands of years) than their billion-year Uranium-Lead ages would indicate. Dr. Humphreys worked with RATE colleagues on other radioisotope projects, particularly on the carbon 14 project, which found radiocarbon in the deepest and allegedly oldest sources of natural carbon, thus showing they are only thousands, not millions or billions of years old. See publications list items marked "RATE."

Dr. Vardiman served as the Research Coordinator and Senior Editor for the RATE Project from 1997 to 2005. The project was composed of two phases—a 3-year literature review and hypothesis phase and a 5-year research phase. Dr. Vardiman coordinated the plans and activities of eight researchers to conduct research on the age of the earth. Two detailed technical books, one technical survey book, numerous articles and two DVDs were produced during the project reporting on the results. Three of the major findings of the project were that: (1) A large amount of radioactive decay has occurred, (3) Nuclear decay processes were accelerated during episodes in earth history, and (3) Conventional radioisotope dates are therefore incorrect by large factors.

RATE II

Dr. Vardiman is serving as Program Manager for the follow-up research not completed during the RATE Project. Because of changes in personnel and the location of offices and developing graduate online science education courses, limited progress has been made on this additional effort begun in 2006. The efforts have mostly centered on collecting additional data on meteorites, radiohalos, helium diffusion in zircons, isochron discordance, and radiocarbon in diamonds to extend and bolster the findings of the original RATE project.

GENE

(2005-2006) As part of the GENE research initiative, Dr. Baumgardner was one of the key developers of the population genetics computer model known as Mendel's Accountant. This program is designed to track hundreds of millions of distinct mutations, each with its own effect on fitness, generation after generation in a large population in the presence of selection and environmental variations. The program analyzes how these mutations either are eliminated by selection or drift or else move toward fixation and how the composite fitness of the population changes with time. With some 4- input parameters available, a user can address an incredibly broad diversity of scenarios relating to the processes of mutation and selection in populations of many different types of organisms. The program has a user-friendly interface that makes problem specification easy and provides automatic graphical output. It can be freely downloaded from the web and runs on a laptop computer. It is not only a versatile research tool but can also be readily utilized in biology classes to help students explore for themselves basic principles of population genetics. A detailed description of this computer model was published in 2007 in the journal. *Scalable Computing Practice and Experience.*

Dr. Criswell did a review of mitochondrial genomes descending from prokaryote ancestors is also underway with sequence analysis showing a lack of homology between prokaryotes and mitochondrial ribosomes and genomes. An abstract of this was published in January, 2008 *Answers Research Journal* and a full article will be written in 2008.

FAST

Dr. Austin is the program manager for the "FAST Research Program, a five-year program managing seven principal investigators doing research on flood-activated sedimentation and tectonics centering field projects in the southwestern United States. Administration of this research program will probably extend into 2012.

EPIPHANY

Dr. Vardiman is studying precipitation distributions in Yosemite National Park under the EPIPHANY Program to explain how an ice age could have begun and ended in the Sierra Nevada during a short period of time. He has developed plans to conduct simulations of precipitation in Yosemite using a conventional numerical climate model with warm sea-surface temperatures in the eastern Pacific Ocean and surges of cold meltwater during deglaciation at the end of the ice age. A technical paper on Dr. Vardiman's research plans has been accepted for presentation to the 6th International Conference on Creationism in the summer of 2008.

COSMOS

Cosmology: Dr. Humphreys continued development of a young-universe creationist cosmology based on Einstein's theory of General Relativity. Dr. Humphreys used it to explain "quantized" redshifts of galaxies and the "Pioneer Anomaly," a previously unexplained small deceleration in the trajectories of distant NASA spacecraft. As part of the latter research, found a new solution (called a "metric") of Einstein's gravitational field equations. Because the Einstein equations are very complex, such solutions are rare and only come along every few decades. This solution provides a good foundation for creation cosmology. See his publications list items marked "COSMOS".

CLIMATE

(2002-2004) As a member of the ocean modeling group at Los Alamos National Laboratory, funded by the U.S. Department of Energy Climate Change Program, Dr. Baumgardner was a developer for the next-generation global ocean model known as HYPOP. This model is slated to replace an earlier one our group developed known as POP that has been part of the U.S. Community Climate System Model which produced some of the main U.S. results for the recent Intergovernmental Panel on Climate Change (IPCC) report on global climate change.

Faculty Publications 2008 - 2002

Research activity evidence listed in reverse chronological order for last five years:

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Appendix D

Position Description: Resumes of Applicants for Full-time Faculty Position in Science Education

The information in this Appendix contains a specimen of the "Employment Opportunity" solicitation that was posted on February 10, 2008 among various job boards. Three resumes have been received (included in the appendix), one of whom has been interviewed as of the submission of the THECB response documents.

Employment Opportunity – Science Teacher Educator

Job Title	**Assistant Professor**
Job Posted	2/10/2008
Job Closing Date	Until position filled
Division/Department	Science Education
Location	Dallas, TX
Salary	Commensurate with qualifications and experience
Major Job Duties	The successful applicant will teach online courses in the Masters in Science Education Program, play a role in planning and implementing science labs for graduate school credit and CEU's, participate in public speaking at conferences, contribute to web design and update of current courses, and participate in research
Required Education and Experience	Earned doctorate in a field directly related to science or science education from a regionally accredited university.
Preferred Education and Experience	Training in science teaching methodologies, research experience resulting in peer-reviewed publications; technology skills including web development, a teaching certificate and three + years experience teaching 6-12 science.
Special requirements	Applicant must have knowledge of and be committed to young earth creation science and the Bible. A working knowledge of curriculum philosophies, instructional strategies and authentic assessment are necessary to be successful.
Required Document	Submit a cover letter addressing all qualifications, a vita, five references, and transcripts showing degrees.
Send Application To	Material can be submitted on-line at pnason@icr.edu or mailed to: Patricia Nason, Chair of Science Education; Institute for Creation Research Graduate School, 1806 Royal Lane; Dallas, TX 75229

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Curriculum Vitae

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EDUCATION

Denison University **B.S.** Biology	Granville, OH 1974
University of Cincinnati College of Medicine **Ph.D.** Cell Biophysics	Cincinnati, OH 1979
University of Pennsylvania School of Medicine Postdoctoral Fellow Cell Biophysics	Philadelphia, PA 1979-1982
Dallas Theological Seminary	Dallas, TX 1991-1993
Palmer Theological Seminary **M. Div.**	Philadelphia, PA 1995

PROFESSIONAL EXPERIENCE

University of Cincinnati College of Medicine Cincinnati, OH

- Researched subcellular biophysical effects of calcium ionophores
- Instructor of nursing students in pharmacology

University of Pennsylvania School of Medicine Philadelphia, PA

- Member of Pennsylvania Muscle Institute
- Researched subcellular biophysical effects of hypertension
- Created portal hypertension model
- Developed immunoflourescent antibodies to intermediate filaments
- Discovered increase in intermediate filament population in hypertensive vascular smooth muscle
- Instructor of physiology to medical and nursing students

Trinity Christian School Cedar Hill, TX

- Chairman High School Science Department
- Taught Biology, AP Biology, Chemistry, Forensic Science, Anatomy & Physiology
- Chair, Academic Division of ACSI certification
- Developed and instituted Forensic Science course

Lighthouse Christian Academy Dallas, TX

- Chairman, Science Department
- Taught High School Biology, Chemistry, Physics

Faith Christian School Grapevine, TX

- Chairman, upper school History Department
- Taught World History, U.S. History, AP U.S. History, Bible
- Designed interdepartmental curriculum for English and History
- Co-developed Old and New Testament curriculum
- Head Coach, varsity soccer

AWARDS AND HONORS

Palmer Theological Seminary Church History Award	1988
PBS Interview: Youth Ministry on the Lower Sioux Reservation	1991
Who's Who Among American Teachers	2002,2003

AFFILIATIONS

Pennsylvania Muscle Institute
National Science Teachers Association

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PUBLICATIONS

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(316) 634 – 0909

EDUCATION:

1992 - 1999	Doctor of Philosophy: Entomology Kansas State University Manhattan, Kansas Graduated: May 1999 (cum. GPA: 3.912)
1990 - 1993	Master of Science: Entomology Kansas State University Manhattan, Kansas Graduate: March 1993 (program GPA: 4.0)
1983 - 1987	Bachelor of Science: Biology McPherson College McPherson, Kansas Graduated: May 1987; Cum Laude

WORK EXPERIENCES:

2004 - present	Newman University Adjunct Faculty Member Courses taught: Biology, Chemistry, and Environmental Science
2004 - present	Director Sedgwick County Rural Water District #1 Sedgwick County, Kansas
2002 - present	Science Department Chair Trinity Academy Wichita, Kansas

2001 - present	Science Instructor Trinity Academy Wichita, Kansas Courses taught: College Biology, College Chemistry, Anatomy and Physiology, Chemistry, Biology, Advanced Physics, and Environmental Science
1993 - 2001	Science Instructor and Science Club Advisor U.S.D. 323 Rock Creek Westmoreland, Kansas Courses taught: Chemistry, AP Chemistry, Chemistry In the Community, Environmental Science, and Physics
1990 - 1997	Graduate Research Assistant Department of Entomology Kansas State University Manhattan, Kansas
1988-1990	Science Instructor U.S.D. 259 Wichita Wichita, Kansas Courses taught: Human Physiology and Anatomy, Chemistry, Biology, and Life Science

HONORS:

2005	Outstanding American Teacher National Honor Roll
2004	ACSI Exemplary Program Award: Splashing In the Platte
2004	Who's Who Among America's Teachers
1997 and 1999	Outstanding Teacher Merit Pay: U.S.D. 323 Rock Creek
1996	Who's Who Among America's Teachers
1993	Roger Cletus Smith M.S. Award in Entomology

	Gamma Sigma Delta Research Award - Master's Outstanding Student Research Presentation: The Kansas (Central States) Entomological Society
1992	The Honor Society of Phi Kappa Phi The Honor Society of Agriculture: Gamma Sigma Delta

PROFESSIONAL SOCIETIES AND COMMITTEES:

Entomological Society of America

Sigma Xi

Phi Kappa Phi

Gamma Sigma Delta

Kansas Association of Teachers of Science

2005-2006	Kansas State Science Standards Writing Committee
1998 - 1999	Kansas State Science Standards Writing Committee
1992	Curriculum Committee Department of Entomology, Kansas State University
1992	Burlington Northern Faculty Achievement Award Committee College of Agriculture, Kansas State University

LICENSES AND CERTIFICATIONS:

Kansas State Board of Education:
Endorsements - Biology 7-12
Chemistry 7-12
Physics 7-12

Association of Christian Schools International (ACSI)
Endorsements – Biology, Chemistry, and Physics

DOCTORAL RESEARCH:

Title:

European Corn Borer, *Ostrinia nubilalis* (Hübner), and Mechanical Disruption of Sap Flow Through Corn Stalks (*Zea mays)*

Technology and methodologies recently developed to study plant-water relationships were used to elucidate how internal stalk feeding by the European corn borer affects sap and nutrient flows within the corn plant. This project integrated the disciplines of Agronomy (Evapo-Transpiration Studies), Plant Physiology, and Entomology.

MASTER'S RESEARCH:

Title:

A Comparative Analysis of Chemical and Cultural-based Management Techniques for the Suppression of Alfalfa Weevil, *Hypera postica,* (Gyllenhal) (Coleoptera: Curculionidae) Populations in Kansas

This research project focused on determining the efficacy and economic benefit of using combinations of cultural-based and chemical management strategies to control the alfalfa weevil. Conclusions were based on how the treatments affected alfalfa weevil larval populations and various plant quality and growth parameters. The alfalfa weevil is the most damaging pest that attacks alfalfa.

ADDITIONAL TRAINING AND SKILLS:

1999	Physics Educators Workshop. PASCO Scientific, Inc. San Juan College, Farmington, NM.
1998	Small Scale and Advanced Placement Chemistry, Colorado State University, Ft. Collins, CO.
1997	Teacher Expectations and Student Achievement (TESA) - USD 323 Rock Creek, St. George, KS
1996	Basic Water Analysis - Nonpotable Sources. Hach, Inc. Loveland, CO
1996	Science Educator Workshop. Hach, Inc. Loveland, CO

1992	Formal Grant Writing - Kansas State University, Manhattan, KS
1992	Technical Writing - Kansas State University, Manhattan, KS
1993 - present	Electronic water quality and environmental monitoring

PAPERS PRESENTED:

Nicholson, J. 2005. Creationism, Intelligent Design, and Evolution: What's the fuss? Association of Christian Schools International Kansas City Educator Convention, Overland Park, KS.

Nicholson, J. 2004. Splashing In the Platte. Association of Christian Schools International Dallas/Ft. Worth Teachers' Convention, Dallas, TX.

Nicholson, J. 2004. Splashing In the Platte. Association of Christian Schools International Kansas City Educator Convention, Overland Park, KS.

Nicholson, J. 2002. Ecosystem Models: An Alternative Assessment for Ecology. Association of Christian Schools International Great Plains Convention, Wichita, KS.

Nicholson, J. 1992. Meanderings through integrated insect pest management. McPherson College, McPherson, KS, Invited Speaker.

Nicholson, J., R.A. Higgins, and J.O. Fritz. 1992. Economic viability and efficacy of cultural-based alfalfa weevil management strategies. Kansas LP-Gas Association, Hutchinson, KS.

Nicholson, J., R.A. Higgins, and J.O. Fritz. 1992. Effects of cultural and chemical control practices on alfalfa weevil, *Hypera postica* (Gyllenhal) (Coleoptera: Curculionidae), larval populations and alfalfa forage quality in Kansas. North Central Branch - Entomological Society of America, Kansas City, MO.

Nicholson, J., R.A. Higgins, and J.O. Fritz. 1991. Cultural and chemical management of the alfalfa weevil, *Hypera postica* (Gyllenhal) (Coleoptera: Curculionidae) in Kansas. Entomological Society of America Annual Meetings, Reno, NV.

Nicholson, J. 1991. Insecticides - beyond the sprayer. Annual Meeting Kansas Association of Teachers of Science, Rock Springs 4-H Camp, Junction City, KS.

Nicholson, J. and R.A. Higgins. 1991. Preliminary Results of the Cultural Control of the Alfalfa Weevil in Kansas. Kansas LP-Gas Association, Salina, KS.

Higgins, R.A., O. Caceres, R. Espinal, Y. Zhu, and J. Nicholson. 1991. New projects in corn, alfalfa and stored grain insect management at Kansas State University. 67th Annual Meeting Kansas (Central States) Entomological Society.

Nicholson, J. and R.A. Higgins. 1990. Current Research on the Cultural Control of the Alfalfa Weevil at Kansas State University. Kansas LP-Gas Association, Hays, KS.

Higgins, R.A. and J. Nicholson. 1990. Current Research on Alfalfa Pests at Kansas State University. Kansas Forage and Grassland Council, Manhattan, KS.

POSTERS PRESENTED:

Nicholson, J., M. Brunson, M. Gentzler, F. Hett, and J. White. 2004. A Regional Examination of How Anthropomorphic and Environmental Variables Impact Water Availability and Quality in the Platte River Watershed. Rocky Mountain National Park Research Conference, Estes Park, CO.

Nicholson, J., R.A. Higgins, and J. Ham. 1998. Factors influencing sap flow reductions in field corn. North Central Branch - Entomological Society of America, Sioux Falls, SD.

Nicholson, J., R.A. Higgins, and J. Ham. 1997. Impact of European corn borer, *Ostrinia nubilalis,* and mechanically caused internal stalk damage on sap flow in corn, *Zea mays.* Entomological Society of America Annual Meeting, Nashville, TN.

Nicholson, J., R.A. Higgins, and J. Ham. 1997. Effects of stalk damage on sap flow in corn. Annual Meeting Kansas Cooperative Extension Service - Agriculture Experiment Station, Manhattan, KS.

Nicholson, J., R.A. Higgins, and J. Ham. 1995. Further developments in assessing the application of sap flow technology to European corn borer research. Entomological Society of America Annual Meeting, Las Vegas, NV.

Nicholson, J., R.A. Higgins, and J. Ham. 1993. Proposed usage of heat balance sap flow technology for understanding stress caused by stalk-boring insects. Entomological Society of America Annual Meeting, Lexington, KY.

Nicholson, J., R.A. Higgins, and J.O. Fritz. 1993. The effects of cultural and chemical alfalfa weevil management strategies on alfalfa yield, quality, and profitablity. Annual Meeting Kansas Cooperative Extension Service - Agriculture Experiment Station, Manhattan, KS.

Nicholson, J., R.A. Higgins, and J.O. Fritz. 1993. Selected alternatives to insecticide management of the alfalfa weevil. 69th Annual Meeting Kansas (Central States) Entomological Society, Lincoln, NE.

Nicholson, J., R.A. Higgins, and J.O. Fritz. 1992. Economic comparison of selected cultural and chemical alfalfa weevil, *Hypera postica* (Gyllenhal) (Coleoptera: Curculionidae) management strategies. Entomological Society of America Annual Meeting, Baltimore, MD.

Nicholson, J., R.A. Higgins, and J.O. Fritz. 1992. Non-traditional and traditional alfalfa weevil control in Kansas. Annual Meeting Kansas Cooperative Extension Service - Agriculture Experiment Station, Manhattan, KS.

CURRENT RESEARCH:

A regional examination of how anthropomorphic and environmental variables impact water availability and quality in the Platte River watershed (National Park Service Research Permit Number: ROMO-2006-SCI-0040)

This project focuses on developing a greater awareness of how man and the environment impact the availability and quality of water in the Platte river watershed. As part of the Environmental Science course at Trinity Academy, students study the geography, historical development, past and current land use patterns, and the availability and quality of water in the Cache la Poudre, South Platte, and Platte rivers. Students annually determine river flow rates and measure water quality parameters at designated locations along these rivers and the sub-alpine head water lake of the South Fork of the Cache la Poudre River, Poudre Lake. This lake is located at Milner Pass within the borders of Rocky Mountain National Park. Students compare results to those of previous years, as well as between sample locations, in an effort to determine what factors impact the water quality of the Platte river system.

Investigator Annual Reports for 2003 – 2006 are available at http://science.nature.nps.gov/research/ac/search/iars/IarSearch;jsessionid=6816029B9BD9A129EA6F6A3E5BD0D60A search Rocky Mountain National Park and Nicholson

OTHER PUBLICATIONS:

Nicholson, J. 1992. Propane-powered flamer used in KSU Department of Entomology research in reducing alfalfa weevil egg populations. Kansas LP-Gas News. 32:18.

WORKSHOPS:

Nicholson, J. 1999. Kansas State Science Standards. Wolf River Regional Education Center. Hiawatha, Kansas.

RADIO INTERVIEWS:

Agriculture Today, KKSU. 1992. Cultural Control of the Alfalfa Weevil.

Steve Deckard, Ed. D.
Professor of Graduate Education
909 Wellington Drive
Forest, VA 24551
434-525-5857

EDUCATIONAL BACKGROUND

Ed.D.	**Argosy University,** (Curriculum and Evaluation), 5/93
M. S.	**University of Illinois,** (Teaching of Biological Sciences and General Science), 8/80
BA	**McKendree College,** Biology, 5/75. Education Certification.

Additional studies:

Northern Illinois University, Graduate work in science and education (1981-1985)
Ohio University, (1976)
Vincennes University, (1976)
Parkland College, (1978)
Beloit College, (1983)
University of Missouri, (1990)

Ph.D.	**Vision International University,** Christian Education, 6/97 California Graduate School of Theology, 1987. Berean College, 1988-1989.

TEACHING/ADMINISTRATIVE & CONSULTING EXPERIENCE

2006-2007 Consultant to the Chief Operations Officer & Academic Dean at ICR (Regarding organizational structure and the implementation of graduate distance programs in science education, geophysics, astro-geophysics, and biology).
2004-Present: Professor of Graduate Studies in Educational Leadership – Liberty University, Lynchburg, VA 24502.

2000-2004 Vice President of Academic Affairs Vision International College and University, Ramona, CA. Duties included:

- Curriculum Review and Development
- Faculty Development Supervision and Training
- Advisement to the President on all Academic and Spiritual Matters
- Academic Program Development (Related to Apologetics & Educational Leadership)
- Writing Curriculum & Textbooks (Implemented within Vision International Network)
- Publishing numerous articles under the banner of VICU
- Supervising the academic and office staff in the absence of the President
- Editing & Approving administrative documents including the administrative manual, catalog, faculty handbook, and student handbook
- Conducting various seminars for both recruitment & general education of the student body and faculty
- Accreditation Review and Development (Positioning Vision for further and future accreditation with various agencies)
- *Specific accomplishments:* Obtaining VETAB accreditation an international accreditation recognized by the Commonwealth countries. Developing and implemented a joint graduate program with Newport University & Newport International University.

Adjunct Professor: Newport University, Newport Beach, CA

Consultant, Adjunct Professor: National University, Azusa Pacific University, and ICR.

1998-2000 Vice President of Academic Affairs, Trinity Bible College

- Led the faculty and college through two accreditation visits: NCA, AABC, (served as the Chair for the NCA visit).
- Led faculty & college through state approval visits.
- Developed & implemented successful student programs.
- Created & presented long-term strategic plans for college's Board of Regents.
- Coordinated the development of a distance education program.
- Served as Chair of the Academic Affairs Committee, Institutional Strategic Curriculum Planning Committee & faculty meetings.
- Prepared, managed, and implemented annual department budgets. Initiated cost-effective programs and controls of expenditures.
- Responsible for managing all aspects of the college's academic programs involving student records, registration, and various academic departments, including recruiting, hiring, managing, coordinating, and evaluating 40 faculty and staff.
- Served as Chair of the Academic Affairs Committee, Institutional Strategic Curriculum Planning Committee & faculty meetings.

1991-Present Associate Professor of Science Education, ICR

- Responsible for developing and implementing the science education curriculum and providing instruction to graduate students. Directed Student Discovery Days Program (a research and teaching program). Supervised and advised graduate students. Evaluated faculty teaching skills and competency. Produced writings in Impact Articles and professional journals derived from ICR research (five years full-time & several years summer school, still employed as adjunct and occasional consultant).

1990-1993 Assistant Professor of Education and Science, The King's College
- Supervised, coordinated, and evaluated students in classroom instructional experiences. Developed cooperative groups and implemented techniques to ensure student involvement.
- Evaluated students' cognitive learning skills and their ability to comprehend material. Supervised and coordinated staff members in the GRE test center.

1989-1990 Director of Housing, McKendree College
- Supervised, scheduled, coordinated, and evaluated 12 Resident Assistants and Resident Directors. Prepared, managed, and implemented an annual departmental budget for student housing.
- Directed and implemented programs for the Intramural Department and Student Activity Center.

1996-1998 Adjunct Faculty Member, National University

1994-1996 Adjunct Faculty Member, Bethany College

1988-1998, Adjunct Faculty Member, Azusa Pacific University

1988-1989 Junior High Educator, West Covina Christian School

1984-1987 Instructor, Kishwaukee Community College

1975-1983 Secondary Biology Teacher, Illinois School Districts

CERTIFICATIONS
- California Community College: Life Certifications in Biological Sciences, Professional Education, Supervision, and Chief Administrative Officer
- Association of Christian Schools International: Administrative Certificate (3-90 to 3-92, 2007-2012)
- State of Illinois: Secondary Biology Teaching Certification
- State of California: Notary Public License
- Berean College, Pastoral Licensing Program
- Licensed with Harvest Fellowship

PROFESSIONAL RECOGNITIONS
- Marquis Who's Who in the World (2007, 24th Edition)
- Research Grant, The Alexander Foundation, 2001
- Dissertation of Merit, University of Sarasota
- Marquis Who's Who in America: (2000, 2001, 2007, 2008, 54-55 and 61-62 Editions)
- Marquis Who's Who In Science and Engineering (2004-2005, 8th Edition)
- Marquis Who's Who in the West (1998-1999, 26th Edition)
- Certificate of Appreciation for Service as Chair of Board for Creation Education Resources Board (1994-1998).

SCHOLARLY ACTIVITY

Publications:

David DeWitt, Marcus Ross, and Steve Deckard, (2007). *Building Consistency: An Educational Model for Promoting a Biblical Creation Worldview.* Paper presented at First Conference on Geology, July 26-28, Cedardville University, Cedarville, OH.

Deckard, S., & Tompkins, A. (2006, Fall) *Trials & tribulations encountered during the development & teaching of a dual-delivery format research methods course.* Teacher Educators Journal, http://www.ateva.org/electronic%20journal.htm.

Deckard, S. (Ed.). (2004). *Worldview studies and Biblical creationism. The Institute for Worldview Studies*: Ramona, CA: Vision International University. www.vision.edu/Research/IWS/

Deckard, S. W., Berndt, C., Filakouridis, M., Iverson, T., & Dewitt, D. (2004). College students' attitudes toward creation and evolution compared to their worldview. *Worldview Studies and Biblical Creationism.* Ramona, CA: Vision International University, Retrieved August 4, 2005, from Vision International University Web site: http://www.vision.edu/iws/

Deckard, S., (2003). Foods, science and the Bible. Vision International University, Institute for Worldview Studies. Retrieved August 4, 2005, from Vision International University Web site: http://www.vision.edu/iws/

Deckard, S., Berndt, C., Filakouridis, M., Iverson, T., & DeWitt, D. (2003). Role of educational factors in college students' creation worldview. *Technical Journal* 17, 1.

Deckard, S. & DeWitt, D. (2003). *Worldview studies book one: Developing a Creator-centered worldview.* Lightning Source.

Deckard, S. W., DeWitt, D. A. & Cargo, S. (2003). Effects of YEC apologetics on student worldview. *Proceedings of the Fifth International Conference on Creationism,* Pittsburgh, PA.

Deckard, S. W., Henderson, T., & Grant, D. (2003). The importance of teachers' worldview in relationship to student understanding of creation and evolution. *Christian Education Journal.*

Deckard, S. & DeKoven, S., (2002). *Research writing made easy: A guide to writing college papers: The masters thesis, the doctoral dissertation and the doctoral project.* Vision Publishing.

Deckard, S. (2002). *Homes schooling laws all fifty states.* Vision Press, 10th edition.

Deckard, S., (2001). Creation science or animism: A conflict in worldviews? Ramona, CA: Vision International University, Institute for Worldview Studies Retrieved August 4, 2005, from Vision International University Web site: http://www.vision.edu/iws/

Deckard, S. W. (1998). *Creationist Worldview Test* (Version CWT-01). Nehemiah Institute, Lexington, KY.

Deckard, S. (1998, Summer). The entangled roots of evolutionary theory and U. S. public education. Education Newsline, NACE.

Deckard, S. & Sobko Gregory, (1998). Toward the development of an instrument for measuring a Christian creationist worldview. *Proceedings of the Fourth International Conference on Creationism.*

Deckard, S. (1997, May). Deception and the last days. *Southern California Christian Times.*

Deckard, S. (1997). Integration of the ICR tenets of young earth creationism into a framework for understanding the book of Revelation.

Deckard, S. (1997). *PEERS Results*. Nehemiah Institute, Lexington, KY.

Deckard, S. *(1997).* The capabilities of modern science in the formation of a modern worldview, *CRSQ*, 33:257-261.

Deckard, S., (1997, Autumn). A preliminary theoretical analysis of selected concepts in three creation science textbooks. *Journal of Research on Christian Education.*

Deckard, S. & Richard L. Overman, Bryan A. Schneck, Candance B. Dixon, and Robert Brook. (1995). Methodology for analysis of science materials from a creationist worldview. *CRSQ*, 32:25-27.

Deckard, S. Good Science Newsletter, 1994.

Deckard, S. (1986). A theoretical analysis of three science textbooks. University of Sarasota, Sarasota, FL.

Henderson, T., Deckard, S., & DeWitt, D. (2003). Impact of a young-Earth creationist apologetics course on student creation worldview. *Technical Journal* 17:1

ICR Impact Articles: (can be viewed at www.icr.org)

Deckard, S., & Smithwick, D., (2002, May). High school students' attitudes towards creation and evolution compared to their worldview. *Impact Article* 347:i-iv.

Deckard, S. (1998, December). A call to arms for conservative Christian science educators, *Impact Article* 306:i-iv.

Overman, R.L. & Deckard, S. (1997, October). Origins beliefs among American science teachers (revised). *Impact article* 292:i-vi.

Deckard, S. (1996, August). Biology textbooks worldview development and the creation/evolution controversy, *Impact Article*, 278:i-iv.

Deckard, S., Barnett, J. & Overman, R., (1996, November). Implementing, a creationist based field trip, *Impact Article* 281:i-iv.

Deckard, S. *(1995, December).* An educational step in the right direction, *Impact Article*, 270:i-iv.

Deckard, S. *(1994, September).* A practical model for integrating science and faith, *Impact Article*, 255:i-iv.

Deckard, S. *(1992, October).* The new age and global education, *Impact Article*, 232: i-iv.

Website: Sample of publications can be viewed: vision.edu/IWS/ and research interests are summarized.)

Presentations

Deckard, S., & Pantana, J. (11/9/2007). Brain-based Learning Theory: An Online Course Design Model. Virginia Association of Science Teachers (VAST), Williamsburg, VA.

Tompkins, A., Deckard, S., & Pantana, J. (9/14/2007). Brain-based Learning Theory: An Online Course Design Model. Virginia Educational Research Association (VERA), Charlottesville, VA.

Deckard, S. (7/20/2007). Overheated: A Biblical Creationist Perspective on Environmentalism & Global Warming. Presented to Costa Mesa Creationist Group, and presented on the Web (Darwinisdead.com as live broadcast.

Deckard, S. (7/18/2007). Overheated: A Biblical Creationist Perspective on Environmentalism & Global Warming. Presented at the ICR Graduate School.

Deckard, S. (1/4/2007) The Use of Endnotes in Conducting Educational Research, Liberty University, Lynchburg, VA.

Deckard, S. (10/7/2006). Curriculum Design and Learning Theory, SASTE Conference.

Deckard, S. & Black, E. (10/7/2006). Evolution/Creationism Worldviews, SASTE Conference, Athens, GA .

Deckard, S. (8/7/2006). Clearing-Up measurement confusion regarding student attitudes toward science & a YEC worldview. Presented to the ICR faculty and staff.

Deckard, S. (8/4/2006). ICRGS distance education plan & vision. Presented to ICRGS Administration.

Deckard, S. (7/31/2006). YEC-WEM and it's implications for education. Presented to the ICR faculty and staff.

Deckard, S. (7/26/2006). Using Moodle to teach science in a distance education format. Presented to the faculty and administration at ICR.

Watson, S., Pantana, J. & Deckard, S. (11/19/2005). Teaching Statistics in High School. Virginia Association of Science Teachers (VAST), Roanoke, VA.

Deckard, S., (9/15/2005). Developing a Creator-based Worldview. Workshop to be Presented to the Liberty University Faculty.

Deckard, S., Sones, R., Spear, H., & Watson, S. (2005, August 11). Writing for Professional Publication, Liberty University, Faculty Development Seminar.

Deckard, S. & DeWitt, D. (2004, October 15-16). *Effects of a history of life course on student views of science*. Seminar Presented at the AETS Mid-Atlantic Regional Conference, Roan Mountain, Tennessee.

Deckard, S. (2004, October 23-24). Creation/Evolution and student attitudes toward science. Association Seminar Presented at the Education of Science Teachers (AETS), Gainesville, Fl.

Deckard, S. (2/2-8/2003). Developing a Creator-Centered Worldview for Christian Education. Vision International College & University Leadership Conference.

Deckard, S. (1994). Methodology for Analysis of Science Materials from a Creationist Worldview. Presented at Christian Heritage College, Summer, 1994.

Deckard, S. (7/15/2003) Role of Educational Factors in College Students' Creation Worldview. Presented to the ICR faculty and staff.

SERVICE: PROFESSIONAL

Committees and Boards - University

- Faculty Welfare Committee (2006-2008)
- School of Education Graduate Committee (2004-2008)
- School of Education General Committee (2004-2008)
- Graduate Center for Research and Evaluation (2004-2007)
- Faculty Senate: General Education Committee, (2004-2006)
- School of Education Teacher Licensure Committee (2004-2005)
- Library Committee (1997-2000)
- Academic Affairs (1998-2000, Chair)
- Faculty Development Committee (1990-1993)
- NCA accreditation committee (Chair, 1998-2000)
- Administrative Council (1999-2000)
- Admissions Committee (1998-2000)
- Financial Aid Review (1998-2000)
- Academic Catalog Committee (1998-2000)
- Athletics Committee (1998-2000)
- General Education (1998-2000)
- Spiritual Life (1998-2000)
- Self-Study Steering Committee (1998-2000)
- Distance Education (1998-2000)
- Unclear Policy Subcommittee (1998-2000)

Accreditation & State Education Work

- **CA BPPVE**
- **ND state department of Education**
- **TRACS**
- **ATS**
- **NCA**
- **SACS**
- **DETC**
- **NCATE**

Thesis and Dissertation Committees

Chairs:

Currently In Process:

- Michael Bryant (2/2007)
- Jim Fyock (8/2006)

Completed:

- Cook, Karen, (5/5/2007). Georgia Public School Board Members Beliefs Concerning the Inclusion of Creationism in the Science Curriculum
- Miller, Harlie (3/26/2007). High School Athletic Eligibility Policies: A Study of Athletic Directors Perspectives in Two N. C. Public Schools.
- Abreena Tompkins (3/23/2007). Brain-Based Learning Theory: An Online Course Design Model, Chair.
- Flanigan, T. M. (2006). The Perceived Effectiveness of a Beginning Teacher Mentoring Program in Central Virginia,
- McShea, K. (2006). A Comparison of the Critical Thinking Skills of Public, Christian, Private and Home Schooled Students
- Two undergraduate honors thesis committees (Liberty University Spring, 2004).
- Calcamuggio. J. (2003). The Fruit Shall Be for Meat, and the Leaf for Medicine: A Creationist view of the History of Herbal Medicines.
- Vang, V. (2002). Hmong: From Animism to Christianity.
- King, T. (2002). Studies in Systematic Theology.
- Kidson. R. (2002) Divine Teachings Triumphs: A Christian School Guidebook.
- Jolly, R. (2000). The Mediterranean Gecko.
- Overman, R. (1997). A Comparison of Origin Beliefs and Moral Views.

Developmental

- Developed EDUC 715 Quantitative Research Methods DLP Course (2007)
- Developed EDUC 740 Principles and Ethics of Leadership DLP Course (2007)
- Developed EDUC 871 Investigations in Curriculum Change DLP Course (2007)
- DLP 101 (2 week Course Development Training). 3/19-4/1/2007.
- Served as advisor to 60 plus undergraduate students (2004-2006).
- Developed, taught & maintained Blackboard based doctoral course EDUC 740: Principles & Ethics of Leadership (2004-2007).
- Developed, taught & maintained Blackboard based doctoral course EDUC 708: Quantitative & Qualitative Research Methods (2005-2007).
- Taught & maintained Blackboard course EDUC 745: Systems Analysis (2005-2007).
- Taught & maintained Blackboard course EDUC 771: Curriculum Theory (2005-2007).
- Taught & maintained Blackboard course EDUC 871: Investigations in Curriculum Change (2005-2007).
- Developed and Maintained the Institute for Worldview Studies (2001-Present).
- Developed several Doctoral and Masters Theological programs for Vision International University and Newport University (2001-2004).
- Wrote Study Guide for BI 401 (Biblical Creationism)
- Wrote Study Guide for ED 405 Educational Psychology
- Wrote the program for a Certificate in Creation Studies
- Wrote "Writing Made Easy" Manual for ICRGS Faculty (4/01)
- Reviewed/Edited/Implemented an agreement for Affiliate Campuses for VIU

and NU (2001-2004)

Committees and Boards - Non-University

- Chair of Board, Creation Research Resources (1994-1998)
- Nehemiah Institute – Served on Advisory Board (1999-2006)

SERVICE: COMMUNITY

- Consultant to ICRGS Regarding Distance Education Program (7/2/-8/2007)
- Serve as Reviewer for Christian Perspectives in Education (2007)
- Foundations of Education Core Coordination Work (3/18, 22/2007)
- Supervisor of Doctoral Comprehensive Exam Testing (9/5/2006 to Spring 2007)
- ABC Leader for TRB. Teacher for the Genesis Adult Bible Class (9/10/2006 to present)
- Chaired SOE Faculty Promotions Committee (Fall 2006)
- Consultant to ICRGS Regarding Distance Education Program (7/2/-8/2006)
- ABC speaker: 5/14-21/2006: Developing a Dynamic Worldview.
- ABC Leadership Training (attended 4 one hour training sessions) March/April 2006
- Graduate Open House (Spoke with potential students) (3/30/2006)
- SOE Special Music: SOE Awards 4/28/2006
- Taught Genesis Adult Sunday School (TRBC) 9/04/05 & 10/30/05
- Special Music: SOE Awards 5/2/2005
- Pulpit Supply, 1998-Present, averaging 6-8 a year
- Graduation speaker (1997)
- Supervised student thesis work as chair and reader, 1993-Present
- Supervised several dissertations, three years, acted as both chair and reader
- Supervised student teachers, three years, both elementary and secondary
- Speaker at ACSI Conference, 1997.
- Speaker: Creationism/Apologetics – Application to the World Today, Bismarck, ND, 1/15/1999
- Chapel Speaker Trinity Bible College: The Cry From the City 9/3/1999
- Chapel Speaker Trinity Bible College: Voices of Compromise 1/21/2000
- Chapel Speaker Trinity Bible College: Developing A Christian-Creator Based Worldview 3/15/1999

SERVICE: COMMUNITY MEMBERSHIPS

- American Center of Law and Justice (ACLJ): 4/2006 to present
- National Pro-Life Association (2005-2007)
- The China Mission Board (2007)

PROFESSIONAL DEVELOPMENT

- Virginia Association for Science Teachers (Attended annual meeting) 11/9-11/2007
- VERA Workshops (Attended 6 at the 2007 annual meeting) 9/13-14/2007
- Advanced Workshop for ILRC 5/23/2007
- Digital Commons Training Session 5/23/2007

- Laptop Training for Faculty T60's 5/21/2007
- Dissertation Defense, Scott Trent, A Descriptive Study of the Effect of Traditional and Year-Round Calendars on Student Achievement (3/26/2007).
- Dissertation Defense, JoAnna Oster, Factors of Teacher Turnover in Church-related Schools in a State Association of Christian Schools (3/25/2007).
- Dissertation Defense, Douglas Osborn, Developing Oral Reading Fluency: Effects of Daily Use of Word Walls and Daily Independent Silent Reading on Oral Reading Fluency Development of Second Grade Students (3/22/2007).
- Dissertation Defense, Christopher Pritchett, School Personnel Perceptions of Research-based Instructional Strategies, As Outlined in School Improvement Plans of Selected Alabama School Districts, 3/21/2007.
- Dissertation Defense, By Toni S. Oakes, Effect of Short Internships on Student Self-Concept, 3/2/2007.
- Dissertation Defense, By Jessica Talada, The Relationship Between Oral Reading Fluency and Comprehension, 2/19/2007.
- Dissertation Defense, By Bill Kamm, The Relationship Between Participation in Service Learning Projects and the Youth Leadership Life Skills Development 2/16/2007.
- Best Practices Review – Course Development for DLP, Presented by Dr. David Nemitz, CAFÉ, 2/15/2007
- LiveText Training: Liberty University 1/18/2007
- Seminar: Use of Endnotes and other Library Related Research Tools. Graduate Education Student Access to Integrated Learning Resource Center Liberty University, 1/3/2007.
- Attended and Commented on: Dissertation Defense, By Glenna Dunn, Proportional Process Conflict in Undergraduate Cooperative Learning Groups, 11/2006.
- Attended Conference: Southeastern Association for the Science Teacher Education (SASTE) 10/06-07/2006
- Attended Conference: Association of Teacher Educators in Virginia VACTE/ATE-VA, 10/6/06
- SPSS Workshop: Liberty University, 8/9/2006
- Thousands Not Billions – One day Conference – Roanoke, VA 5/20/2006
- Faculty Portfolio Development 5/18/2006
- PointCast Software Training 5/17/2006
- Smart Classroom Training 5/17/2006
- Becoming Less Positive about Positivism: A Journey into Qualitative Methods, Faculty Seminar at Liberty University, by Dr. Rob Palkovitz, 2/23/2006.
- Workshop: The Role of Research at a Christian University 11/11/2005
- Virginia Association of Science Teachers Conference 11/19/2005
- Grant Writing Seminar 10/22/2005
- VATE/ATE Annual Conference 9/28-29/2005
- Workshop: Security Awareness 8/11/05
- Workshop: Improving Your Blackboard Course Structure (Blackboard 215) 8/11/05
- Workshop: Molecular Evidence for Creation (Creation) 8/11/05
- Workshop: Writing for Professional Publication 8/11/05
- Workshop: How to be a Reader/Mentor for Dissertations 8/12/04

- Workshop: Demystifying Qualitative Research 8/12/04
- Workshop: Foundations for Effectiveness in Advising at Liberty 8/12/04
- Workshop: Introduction to the Integrated Learning Resource Center 8/12/04
- Workshop: Blackboard Basics 7/19/04
- Workshop: Blackboard Content: 7/21/04
- Faculty Orientation: 8/9-11/04
- Seminar: Comparative Education German Schools to American Schools (6/22/05).
- Conference on Creationism: 2005 Creation Mega conference 7/17-22/2005
    - Sessions attended
        - What's the Best Evidence that God Created
        - The History and Impact of the book. "The Genesis Flood"
        - How Our Textbooks Mislead Us: An Expose of Error and Fraud
        - Distant Starlight: Not a Problem for a Young Universe
- Workshop: Assignment Manager 5/18/05
- Workshop: Distance Learning Transition – Dr. Karen Parker 5/18/2005
- Conference: Southeastern Association for the Education of Science Teachers (SAETS), 10/23-24/2004.
- Conference: Association for the Education of Science Teachers (AETS), 10/16-17/2004.
- Conference: Association of Teacher Educators in Virginia VACTE/ATE-VA, 10/8/04
- Teaching and Writing: Faculty Workshop, National University (2002)
- Vision International College & University Leadership Conference, 2/2-8/2003
- Florida Council of Private Colleges Two day workshop on new Florida laws, 2/20-21/03
- Church Management and Tax Conference (awarded 6 CPE credits) Fall (2002)
- Notary School Spring (2001) (one day training for Notary license)
- Teaching & Writing Workshop for faculty (National University Fall 2001)
- Taylor-Johnson Temperament Analysis Training (One Day) (1999)
- North Central Association Annual Conference (Three Days) (1999)
- North Dakota Conference on Economic Development (1999)
- Christian Worldview Conference (1999)
- Faculty Orientation 5/22/1997 National University
- Teacher by Design Conference (October, 17 1997)
- Strategies for Success Westchester Community College (1993)

MEMBERSHIPS

- American Educational Research Association (2004-2008)
- Virginia Educational Research Association (VERA) 2007-2008)
- Southeastern Association for the Science Teacher Education (SASTE) (2005-2007)
- Virginia Association of Science Teachers (VAST) (2004-2008)
- Virginia Association of College Teacher Educators (VACTE) (2004-2007)
- Association of Teacher Educators in Virginia (2004-20007)
- National Association for Research in Science Teaching (2004-2006)
- Society for the Scientific Study of Religion (2003-2005)
- ASCD (1992-1994)

Courses Taught at Liberty University (9/04 to 1/08)
(Total number of sections taught listed in parenthesis)

Undergraduate:

EDUC 125 – Introduction to Education (4)
EDUC 360 – Foundations of Education (6)

Graduate:

EDUC 500 Advanced Educational Psychology (3)
EDUC 518 Understanding Educational Research and Assessment (1)
EDUC 708 Quantitative and Qualitative Methods of Research (9)
EDUC 715 Quantitative Research Methods (1)
EDUC 740 Leadership Principles and Ethics (12)
EDUC 741 Theories of Educational Leadership (1)
EDUC 745 Systems Analysis (5)
EDUC 771 Curriculum Theory (5)
EDUC 871 Investigations in Curriculum Change (5)

Chart of Semester and number of sections taught for the above listed courses

Course Number	Su 2004	Fall 2004	Sp 2005	Su 2005	Fall 2005	Sp 2006	Su 2006	Fall 2006	Sp 2007	Su 2007	Fall 2007	Sp 08
EDCU 125		4										
EDCU 360		3	3									
EDUC 500		1	1	1								
EDUC 518											1	
EDUC 708		1	1	1	1	1	1	1	1	1		
EDUC 715											1	
EDUC 740	1	1	1	1	1	1	1	2	1	1	1	
EDUC 745						1	1	1	1	1		
EDUC 771					1	1	1	1	1			
EDCU 871					1	1	1	1	1			
EDUC 741												1

Appendix E

Comparison of Program Titles

College	Degree Title	Major
Baylor University	Master of Science in Education	Selected field
Institute for Creation Research Graduate School	Master of Science	Science Education
Rice University	Master of Arts in Teaching	Selected field
Texas A & M University - Commerce	Master of Science	Secondary Education
Texas Christian University	Master of Education	Science Education
Texas State University-San Marcos	Master of Education	Secondary Education
Texas Tech University	Master of Education	Science and Mathematics Education
University of Houston	Master of Science	Science Education
University of Texas at Dallas	Master of Arts in Teaching	Science Education
Wayland Baptist University	Master of Education	Science Education

Appendix F

Comparison of Program Purposes

College	Sci Ed Program Titles	Major
Baylor University	**Master of Science in Education**	**Selected field**

Graduate programs in the School of Education seek to prepare students for professional roles in teaching, administration, counseling, instructional technology, health, human performance, leisure studies, and related areas. Each program emphasizes the development of an eclectic understanding of educational processes and systems as well as an expertise in a specific area. The balance between theory, research and practice leads to the development of a professional educator able to implement a broad range of instructional programs in a variety of settings.

Institute for Creation Research Graduate Sch	**Master of Science**	**Science Education**

The Master's Degree Program in Science Education at ICRGS prepares teachers to use effectively the skills of learning and teaching to promote higher level thinking among students so the learner can draw valid scientific conclusions relating to the evolution and creation worldviews. This program enhances knowledge, skills, and abilities in science and pedagogy of science teachers and is aimed toward the middle, secondary, and collegiate education but is appropriate for elementary teachers, lecturers, and administrators.

Rice University	**Master of Arts in Teaching**	**Selected field**

Rice University seeks to attract talented and creative individuals who will play leadership roles in revitalizing both the theory and the practice of American education at the secondary level (Grades 8-12). Increasing public concern about the quality of American schools has recently provoked a flurry of reforms which are changing both the teaching and curricula of the traditional secondary school. The Rice teaching program offers an opportunity for a wide range of gifted individuals to acquire the skills necessary to teach young people in a manner which is exciting, relevant, and profoundly rewarding

Texas A & M University - Commerce	**Master of Science**	**Secondary Education**

Curriculum & Instruction Masters Program
At the graduate level, we offer advanced programs in supervision, curriculum, and instruction which extend the knowledge and intellectual maturity of the student. The curriculum, moreover, offers educational preparation emphasizing specialized skills and creative independence enabling graduates to function at a high level of performance as

Classroom teachers (Bilingual/ESL, Pre-K - 4th, Mid-Level, or Secondary)
Supervisors of Instruction
Curriculum Specialists
Courses are designed to provide the graduate student with opportunities for growth in the following area:

Greater depth and understanding of curriculum and instruction
A more clearly defined philosophy
An interest in and knowledge of research in education
To accomplish these goals, departmental faculty members are committed to teaching effectiveness, scholarly interaction with students, and on-going curriculum assessment.

Texas Christian University	**Master of Education**	**Science Education**

The M.Ed. with a major in Science Education prepares teachers to meet the growing demand for improved K-12 science instruction and to assume leadership roles in science education. This program includes extensive study in two academic units, the College of Education and the College of Science & Engineering.

College	Sci Ed Program Titles	Major
Texas State University-San Marcos	**Master of Education**	**Secondary Education**

The College of Education prepares students for careers in the education field. Through its three departments, Curriculum and Instruction (CI), Educational Administration and Psychological Services (EAPS), and Health, Physical Education and Recreation (HPER), the College of Education prepares teachers, principals, superintendents, school counselors, school psychologists, diagnosticians, as well as professionals in health, exercise science, sports management, recreation and leisure services.

Texas Tech University	**Master of Education**	**Science and Mathematics**

Science and Mathematics Education is an academic program in the Department of Curriculum and Instruction. The undergraduate program prepare creative, reflective and innovative professional educators with high moral and ethical standards who view themselves as agents of change, who are committed to the welfare of children, and who have the understanding, attitudes and skills necessary for effective teaching of science and mathematics in early childhood (EC) through 12th grade classrooms.

University of Houston	**Master of Science**	**Science Education**

The program is designed to meet the needs of those whose responsibility it is to improve scientific literacy among many age groups. It promotes the broad goals of Science Education, which aim to develop content knowledge, inquiry skills, attitudes, and interest in science, and how science, technology, and society influence one another. The program stresses high quality instruction through the use of a variety of teaching skills, instructional strategies, management techniques, and assessment processes that relate to science classrooms, laboratories, and field trip settings.

Classroom teachers in the elementary, middle, and high schools as well as individuals from non-traditional settings (such as the zoo, arboretum, museum, and planetarium) are representative of the population for whom the program is designed.

University of Texas at Dallas	**Master of Arts in Teaching**	**Science Education**

Our graduate programs are designed to prepare pre-kindergarten through community college level teachers. Our programs focus on providing teachers with the research, critical thinking, and life-long learning skills essential for leaders in today's schools based on a foundation of content knowledge in the sciences and mathematics.

Wayland Baptist University	**Master of Education**	**Science Education**

The Master of Education degree is designed to enhance the preparation and leadership of individuals within the education profession and those entering teaching. The focus of the Master of Education is curriculum, instruction, and leadership. Students engage in academic and professional studies focused on teaching and leadership. The degree program is a minimum of thirty-six semester credit hours with a professional core and a professional emphasis. The objectives of the degree are:

1. To enhance the knowledge base and skills necessary for effective teaching, leadership, and professional development.
2. To integrate theory with practice to enrich the quality of instruction and teaching and foster continuous improvement of the educational process.
3. To develop skills for analyzing decision-making and action based on a thoughtful reflection on pertinent data and current research.

Appendix G

Comparison of Admission Criteria

Presentation of Selected Elements

College	Undergraduate Preparation	GPA Scores	GRE Results	Other Criteria
Baylor University	Education or related field	Minimum grade-point averate from accredited institution	Satisfactory score	Acceptance by the Baylor University Graduate School
Institute for Creation Research Graduate School	significant number of hours in upper-division science or science education courses	satisfactory, especially science, in upper dividision or graduate work	When requested	Agreement with ICR purpose, goals, and Tenets; submission of essay as a writing sample
Rice University	graduate degree in a major subject field	3.0 or higher	At or above the 70th percentile	Passing scores on the THEA test
Texas A & M University - Commerce	bachelor's degree equivalent to degrees granted by Texas A&M University	Overall 2.75 or 3.0 on the last 60 undergraduate hours	A satisfactory score on the aptitute portion of the test	
Texas Christian University	Bachelor's degree from an acceptable regionally accredited institution	3.0 in either the last 60 hours of undergraduate work or in all undergraduate work	Not mentioned generally, but found in some programs.	An essay stating reasons for applying to the graduate program (200 words or less).
Texas State University-San Marcos		Minimum of 2.75 on the last 60 hours of undergraduate work	Score of 900 on verbal and quantititative combined	
Texas Tech University		Competetive	Each score is considered separately, with percentile scores viewed by broad major.	Criteria subject to change. Complete description available in the Certification Office.
University of Houston			GRE or GMAT	The criteria for admission to a particular program are developed by the faculty of these programs.
University of Texas at Dallas	Bachelor's degree from a regionally accredited college	3.0 or better on upper-division work.	Current satisfactory scores; each degree program sets its own criteria for level	Narrative outlining academic and other interests
Wayland Baptist University	Bachelor's degree from a regionally accredited institution	3.0 or higher on the last 60 graded hours; if less than that, conditions apply. (see other)	May be used	If GPA is 2.7-2.999, must submit a writing sample; 2.5-2.699 probationary; writing sample required

Appendix H

Comparison of Instructional Delivery Systems

Showing Online and ITV Availability and Hyperlinks to Information About the Programs

Baylor University	
Online	Oct. 26, 2006 article: Internet courses not in vogue at BU "Baylor remains committed to encouraging community learning and continues not to offer online courses" Does use Blackboard for podcasts (audio) Blackboard student use. And offers for sale a Blackboard Backpack as "an application designed for students to facilitate easier and convenient access to resources normally available through Blackboard."
Links	http://www.baylor.edu/Lariat/news.php?action=story&story=42656
	http://www3.baylor.edu/arts_sciences_techctr/classroom/Blackboard%207%20Academic%20Podcasting.pdf
	http://www.baylor.edu/lib/stutech/news.php?action=story&story=43565
ITV	for teacher training
Link	

Institute for Creation Research Graduate School	
Online	Moodle All courses offered online.
Links	
ITV	no
Link	

Rice University	
Online	"As of now, we offer one online course, the Web-Delivered CFP® Certification Education Program."
Links	http://www.gscs.rice.edu/scs/WebCFP.asp?SnID=1655726333
ITV	(nothing found on the website)
Link	

Texas A & M University - Commerce

Online	In the spring of 2008, several online courses are offered in Curriculum and Instruction and Educational Leadership. (as well as other curriculm areas; no science)
Links	http://www.tamu-commerce.edu/itde/webcourses/
ITV	Instructional Technology Program. "Some courses within these programs may be offered exclusively at a single campus location or via a single delivery mode. For example, programs may contain courses offered only on the Commerce, Mesquite, Navarro, or public school campus and some courses may be offered only via a traditional, ITV, or on-line format."
Link	http://www.tamu-commerce.edu/edl/ETEC/

Texas Christian University

Online	Available in Master of Liberal Arts. "Beyond the classroom, MLA students may enroll in online courses. Each semester at least two new courses are developed specifically for Distance Learning and selected existing courses are offered as well. With the development of the MLA Online Program, students may matriculate through the entire program electronically."
Links	http://www.mla.tcu.edu/catalog.htm
ITV	(not readily found on website)
Link	

Texas State University-San Marcos

Online	Uses Blackboard for online courses. (will not be available for Fall 2008 courses.} Have online courses in several departments, including education and Biology.
Links	https://blackboard.its.txstate.edu/bin/login.pl?show_header=no&new_loc=/bin/frame.pl%3Fitem%3Dmy_inst%261202776839&auth_type=SYSTEM&course_id=
ITV	Through Instructional Technologies Support Department. Videoconferencing
Link	http://www.its.txstate.edu/services/itv.html

Texas Tech University

Online	Through Division of Outreach and Distance Education. Uses Moodle. No courses listed in Education or sciences.
Links	https://www.courseportal.ode.ttu.edu/moodle_navigation.php
ITV	Education 201 iTV Room Operational Procedures Handbook
Link	http://www.educ.ttu.edu/howto/itv_201_handbook.pdf

University of Houston

Online	Online M.Ed. In Physical Education. Sugarland Campus: "The UH System includes the four universities, a public broadcast educational television station, and the largest university distance learning program in Texas, as well as other components. Each degree at UHSSL is sponsored by one of the four universities." Educational Technology program. A number of courses offered online for M.Ed.
Links	http://www.coe.uh.edu/mycoe/hhp/onlinemed/why.cfm
	http://www.uhsa.uh.edu/fb/degreeprograms/master.htm
	http://www.coe.uh.edu/IT/descriptions.cfm
ITV	Through Information Technology Department. Offers a variety of technological services.
Link	http://www.uh.edu/infotech/about_us/about_us.php

University of Texas at Dallas

Online	Through UT Telecampus. Uses Blackboard. Offers M.Ed. in Curriculum and Instruction; "Only the M.Ed. with Writing Focus I has an on-campus attendence requirement. " A number of other departments involved. No science courses except nursing and dental.
Links	http://www.telecampus.utsystem.edu/catalog.aspx
ITV	Support through Telecampus. Course development services, including Interactive Multimedia Development. Not specifically ITV.
Link	http://www.telecampus.utsystem.edu/facultyresources/coursedevelopment.aspx

Wayland Baptist University

Online	Master of Education offered online. Uses Blackboard. Two options described on Virtual Classroom site. The Virtual Campus offers two types of online learning experiences. One of these enables current students to complete any of the on-site programs in which they are engaged by taking individual classes online. The other type of online learning format is that of the Online Degree Program.
Links	http://www.wbu.edu/academics/online_programs/DPO/med.htm
	http://www.wbu.edu/academics/online_programs/default.htm
ITV	Education programs expanding onto Web, technology to meet needs . "Besides branching into online education, the Division of Education is also pursuing options of delivery through interactive television (ITV) technology. Currently, connectivity exists between the Plainview campus and other WBU campuses in Amarillo, Lubbock and San Antonio as well as the Region 17 Education Service Center in Lubbock."
Link	http://www.wbu.edu/news_and_events/2007/educationonline.html

Appendix I

Comparison of Curricula

The information in this Appendix is presented in two reports.

The first is a one-page cross tabulation that displays, for each generically named ICR course requirement, the number of matching courses that were identified in the other nine colleges.

The second is a report that shows, for each generically named ICR course requirement, all of the specific matching courses in the other nine colleges, along with the course descriptions.

Comparison of ICR Courses with Nine Other Colleges
Crosstabulation by Generic Course

Dept	Generic Course	Total	Baylor	ICR	Rice	TAM	TCU	TSU	TTU	UH	UTD	Wayland
SE		4		1	1	1			1			
	Psychology	13	2	1	1	1	2	2	1	1	1	1
	Science Curriculum	12	1	1	1	1	1	1	2	2	1	1
	Science Instruction	12	2	1		2	1	1	1	1	2	1
	Science Education Research	11	1	1	1	1	1	1	1	1	2	1
	Implementation and Assessment	14	2	1		1	2	1	2	1	2	2
	SE Special Topics	5	1	1			1	1			1	
AG	Astronomy	13	1	1	1	1	3	1	1	2	2	
	Astronomy Lab	5		1	1	1	1	1				
	Geochronology	6	1	1	1				1	1	1	
	Paleoclimatology	2		1						1		
	Cosmology	9	1	1	1	1	1	1	1	1	1	
	AG Special Topics	8		1	1		1	1	1	1	1	1
BI	Biological Origins	8	1	1	1	1	1	1			1	
	Biological Origins Lab	4	1	1			1				1	
	Anatomy	10	1	1	1	1	1	1		1	1	1
	Anatomy Lab	3		1		1	1					
	Paleontology	10	1	1	1	1	1	1	1	1	1	1
	Paleontology Field Investigations	8	2	1	1			1		2		1
	Ecology	11	1	1	1	1	1	1	1	1	1	1
	Molecular Biology	12	1	1	1	1	1	1	1	1	1	1
	BI Special Topics	12	1	1	4	1		1	1	1	1	1
GE	Natural Disasters	4	1	1	1	1						
	Geochronology	6	1	1	1				1	1	1	
	Paleontology	10	1	1	1	1	1	1	1	1	1	1
	Paleontology Field Investigations	6	2		1			1		1		1
	Geological History	10	1	1	1		1	1	2	1	1	1
	Field Geology	9	1	1	1		1		1	1	2	1
	GE Special Topics	7		1	1	1	1			1	1	1
SC	History and Nature of Science	13	2	1		1	2	1	2	2	1	1
	SC Special Topics	1		1								
	Research Paper	2		1								1
	Comprehensive Exam	1		1								
	TOTALS	261	30	32	26	21	27	22	23	27	28	20

Comparison of Course Content at Selected Colleges With Science Education Programs at ICR

Department General	Course General			Quarter Hours	Semes Hours
College	Department	Course#	Course Name		
Science Education	**Psychology**				
Baylor University	Educational Psychology	EDP 5332	Human Growth and Development	4.5	3
Processes and stages of human growth and development: physical, social, emotional, and intellectual. The impact of social, political, and economic factors on individuals and families is explored.					
	Educational Psychology	EDU 5333	Psychology Of Learning		
Philosophical and historical roots of theories of learning. Major constructs of current theories and their application in instructional, administrative, and counseling settings.					
Institute for Creation Research Graduate School	Science Education	SE501	Advanced Educational Psychology: Understanding the Learner	4.5	3
Survey of principles of developmentalism with an emphasis on skills that apply to successful science teaching. Topics include the importance of developmentalism; intellectual, social, moral, emotional, and spiritual development; ethnicity and cultures; individual uniqueness; cognitive psychology: constructing knowledge, thinking skills; behavioral approaches to learning; motivation; brain research and multiple intelligence. Note: There is an observation component (lab) to this course.					
Rice University	Education	EDUC 505	Educational Psychology		
The goal of this course is to introduce students to a psychological understanding of teaching and learning through an overview of principles, issues, and related research in educational psychology. The course will examine theories of learning, complex cognitive processes, cognitive and emotional development, motivation, and the application of these constructs of effective instruction, the design of optimum learning environments, assessment of student learning, and teaching in diverse classrooms. It is a general overview of the field and requires no prior preparation. Required for certification. Enrollment limited to students with junior status and higher. Graduate/Undergraduate					
Texas A & M University - Commerce	Educational Curriculum and Instruction	EDCI 652	Research on the Learner		
Three semester hours. A study of significant research in the cognitive and metacognitive learning process of young children and implications for instructional strategies.					
Texas Christian University	Education	EDUC 60213	Advanced Educational Psychology		
The learning process and methods of application to the individual learner.					
	Education	EDUC 50143	Theories of Human Development		
Selected theories of human behavioral, social, and emotional development.					
Texas State University-San Marcos	Curriculum and Instruction	CI 5313	Human Growth and Development I	4.5	3
Training for teachers (elementary or secondary), counselors, supervisors, and administrators to improve their professional effectiveness through the direct study of individual students according to an organizing framework of scientific knowledge of human growth and development; emphasis on the physical processes, the affective processes, and peer relationships.					
	Curriculum and Instruction	CI 5314	Human Growth and Development II	4.5	3
For teachers (elementary or secondary), counselors, supervisors, and administrators to increase their understanding of the motivation, the developmental level, and the abilities of individual students by a direct study of individuals in the classroom; emphasis on increasing scientific knowledge of culture, self-development, and self-adjustive areas of development.					
Texas Tech University	Psychology	EPSY 5332	Educational Psychology	4.5	3
Emphasis on the application of educational psychological principles to teaching at all levels.					
University of Houston	Educational Psychology	EPSY 6330	Human Growth and Development	4.5	3
An introductory survey of current developmental theories and research with emphasis on the affective, social, and intellectual areas.					
University of Texas at Dallas	Education	ED 3339	Educational Psychology	4.5	3
This course will introduce the theoretical foundation underlying various teaching strategies and provide a framework for understanding student development. Emphasis will be on application of theories in actual teacher behavior.					
Wayland Baptist University	Education	EDUC 5381	Child and Adolescent Development and Learning	4.5	3
Characteristics of children's development are reviewed and how these developmental passages impact the student's ability to learn and grow developmentally. Emphasis is placed on the impact of various factors on student achievement and learning.					

Comparison of Course Content at Selected Colleges With Science Education Programs at ICR

Department General	Course General				
College	Department	Course#	Course Name	Quarter Hours	Semes Hours
Science Education	**Science Curriculum**				
Baylor University	Education	EDC 6310	Seminar in Curriculum and Instruction		
Elementary and secondary education examined particularly with regard to curriculum and curriculum issues, trends, and development.					
Institute for Creation Research Graduate School	Science Education	SE502	The Science Curriculum	4.5	3
Study of curricular trends in science education in the US. Examination of philosophical implications of various approaches to curriculum design. Evaluation of current science curricula. Topics: NSES; progressivism, cognitive, traditional, behavioral, and structure of the disciplines curriculum approaches; process skills, behavioral objectives, inter- and intra-disciplinary, inquiry and assessment approaches, hands-on science, societal trends and issues. Includes individual/group scope and sequence project.					
Rice University	Education	EDUC 420	Curriculum Development	4.5	3
Integration of theory with practice as students observe a mentor teacher, identify issues of developing and implementing curriculum with a diverse student body, and create curriculum for the Summer School for Grades 8 through 12. Students must be admitted to the Teacher Preparation Program and committed to student teaching in Summer School. Required for certification.					
Texas A & M University - Commerce	Secondary Education	SED 513	The Secondary School Curriculum	4.5	3
Focuses on descriptions and analyses of models of curriculum theory and curriculum development. Specific emphasis will be placed on philosophical and social forces which affect the design, implementation, and assessment of the curriculum. Particular attention will be given to practical applications of curriculum design and evaluation and leadership efforts necessary for overcoming individual and organizational resistance to change.					
Texas Christian University	Education	EDUC 60013	Curriculum Theory		
Addresses general principles and practices of curriculum development and curriculum change; organizational patterns for developing curriculum and implementing change.					
Texas State University-San Marcos	Curriculum and Instruction	CI 5333	The Secondary Curriculum	4.5	3
A brief history of curriculum development with special emphasis on the Texas curriculum program; basic principles and techniques of curriculum construction and implementation; aims and purposes of the curriculum as a function in perpetuating and improving democratic ideals; and attention to significant research in curriculum development.					
Texas Tech University	Instruction	EDCI 5371	Curriculum and Instruction in Sciences and Math Education	4.5	3
This course guides exploration of science and mathematics curricula: what it is, who writes it, who makes decisions about it, who field tests it, what content should be learned, and how teachers can prepare for proper enactment.					
	Instruction	EDSE 5320	Developing Curricula in Secondary Schools	4.5	3
Foundations, principles, and issues of curriculum in secondary level schools.					
University of Houston	Curriculum and Instruction	CUIN 6371	Models of Teaching		
Empirical and theoretical examination of models of teaching based upon studies of teacher roles and role behaviors.					
	Curriculum and Instruction	CUIN 6360	Principles of Curriculum Development	4.5	3
Principles of curriculum and organization and the selection and evaluation of instructional materials. Rationale underlying major positions on those issues.					
University of Texas at Dallas	Science	SCI 5325	Integrated Science for Teachers	4.5	3
Investigation of science standards using pedagogical models of best practice applicable to a variety of learners in diverse contexts. Inquiry-based investigations feature various topics in physical, earth and life sciences – with a hands-on emphasis on the latest scientific research and educational application. Courses are offered online only. (May be repeated to a maximum of 9 hours as topics cycle through earth, life and physical sciences.)					
Wayland Baptist University	Education	EDUC 5322	Science in the Elementary School		
Development of skills in preparing hands-on activities which are utilizing an inquiry and discovery approach to the teaching of elementary science. Methods of teaching science to bilingual and diverse students and as well as microteaching of lessons from units which they design.					

Comparison of Course Content at Selected Colleges With Science Education Programs at ICR

Department General	Course General			Quarter Hours	Semes Hours
College	Department	Course#	Course Name		
Science Education	**Science Instruction**				
Baylor University	Education	EDC 5303	Models of Teaching and Learning	4.5	3
Teaching-learning situations. Emphasis on learning techniques, methods, and materials of instruction, functions of the different subject matter areas. Special projects assigned to each student.					
	Education	EDC 5375	Courseware Development		
Examines technology-driven instructional systems. After reviewing existing systems, participants will design and develop technology-based course materials. An emphasis will be placed on the use of authoring languages and/or applications to present course material and to track student interaction.					
Institute for Creation Research Graduate School	Science Education	SE503	Planning Science Instruction: Methods	4.5	3
Planning and developing instruction that maximizes and supports learning through the use of the 5-E approach including active participation of students. Topics include: lab investigations (scientific method), discrepant events, brainstorming, cooperative learning, mind mapping, scientific inquiry, the use of technology, cooperative learning; simulations, authentic assessment, interactive lectures, student projects. Variety of strategies required to be used in lesson plans.					
Texas A & M University - Commerce	Secondary Education	SED 521	Models of Teaching in the Secondary School	4.5	3
Includes a study of the research, philosophy, and learning theory underlying current models of instruction. Practical alternative teaching strategies effective in accommodating students with diverse learning styles will be discussed as well as classroom management and the implications of whole-brain research and multiple intelligences for secondary/middle school teaching. Particular attention will be given to the teacher as an agent and manager of change.					
	Curriculum and Instruction	EDCI 664	Advanced Methods of Secondary Science Education		
Texas Christian University	Education	EDUC 60333	Theory and Pedagogy of Science		
This course considers the application of theories of teaching to the learning of science in school classrooms. As such, it utilizes a confluence of theory and evidence about how people learn science and how environments are best constructed to promote learning. This course examines current theories of science teaching in light of their assumptions and related empirical evidence.					
Texas State University-San Marcos	Curriculum and Instruction	CI 5363	Strategies for Improving Secondary Teaching	4.5	3
Analysis of teaching concepts as they apply to the development and improvement of teaching strategies appropriate for implementing selected objectives and content by the secondary teacher. Micro teaching sessions, including video tape recording, will be required.					
Texas Tech University	Instruction	EDCI 5310	Instructional Theory and Design	4.5	3
Applications of contemporary educational theory and design procedures to secondary education, including models of teaching, enhancement of self-concept, and adolescent needs and interests.					
University of Houston	Curriculum and Instruction	CUIN 6373	Instructional Design	4.5	3
Study and application of a systems approach to the design of classroom instruction with emphasis on theoretical and empirical considerations.					
University of Texas at Dallas	Education	ED 4361	Classroom Management Grades 8 - 12 Classroom Management Grades 8 - 12	4.5	3
A systematic approach to managing the total classroom environment. Emphasis will be given to practical applications of the research in instructional design, instructional management, and strategies in behavioral management. The domains and competencies for the Pedagogy and Professional Development TExES are examined. A minimum of 20 clock hours of field experience is required and a prerequisite for a grade in this course.					
	Education	ED 5305	Teaching of Science	4.5	3
Developing appropriate teaching strategies and curriculum units in Science for Grades 4 -12. Curriculum tracks Texas Essential Knowledge and Skills. A minimum of 20 clock hours of field experience is required and prerequisite for a grade.					
Wayland Baptist University	Education	EDUC 5305	Instructional Techniques		
In-depth study of accountability models. Different instructional techniques are investigated and proficiency is developed in the use of instructional models.					

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Department General	Course General			Quarter Hours	Semes Hours
College	Department	Course#	Course Name		
Science Education	**Science Education Research**				
Baylor University	Education	EDU 5335	Research In Education		
Historical, descriptive, and experimental inquiry. Emphasis on interpretation of research. Use of references and resources; the problem; expression of hypotheses; research design; organizing the review of literature; gathering data; statistical analysis of data; reporting and discussing findings; drawing conclusions. Writing style will be applied to the student's major field of study.					
Institute for Creation Research Graduate School	Science Education	SE504	Research In Science Education	4.5	3
Survey of the basic principles of science education research through analysis of research in science education. Topics include: interpreting science education research; qualitative and quantitative research designs; formulating a research problem, collecting data, using research tools, communicating the results; historical research; evaluation research; case studies, action research, and statistical techniques. Students will conduct interviews, surveys, observations; collect and analyze data as class project. Students design proposal for research paper to be completed before graduation.					
Rice University	Education	EDUC 596	Field-based Studies In Teaching And Learning		
Study of field-based ethnographic research on teaching and learning. Includes seminar, independent research projects, ethnographic research methods, and directed case studies. Open to upperclassmen and graduate students, particularly those in education, sociology, anthropology, and psychology. Offered as needed. (hours variable)					
Texas A & M University - Commerce	Secondary Education	SED 595	Research Methodologies	4.5	3
Provides a study of research methodologies with appropriate practical application in relevant problem solving. Specific research types, including action research, will be emphasized. The student is required to demonstrate his or her competence in the investigation and formal reporting of a problem.					
Texas Christian University	Education	EDUC 70953	Research In Education		
Students are expected to gain an appreciation of the complexities of the research process, ways of conducting research, and a sense of the power and constraints of the various perspectives within which educational questions are pursued.					
Texas State University-San Marcos	Curriculum and Instruction	CE 5390	Research Seminar in Education	4.5	3
Study of problems in the education of children in the schools. Topics include basic research procedures needed in the preparation of thesis or other research reports and development or skill in reading, analysis, and application of educational and behavioral research. A research paper is required of each student. CI 5390 must be completed prior to the semester or the comprehensive exam.					
Texas Tech University	Instruction	EDSE 5380	Action Research I	4.5	3
Fundamentals of quantitative and qualitative design. Students write a literature review and design an original action research project.					
University of Houston	Educational Psychology	EPSY 6310	Introduction to Educational Research	4.5	3
The scientific method applied to educational problems; systematic applications of hypothesis formation and decision making through elementary research design principles, survey procedures, and historical analysis.					
University of Texas at Dallas	Science Education	SCE 5305	Evaluating Research in Science Education	4.5	3
Examination of selected topics in the methodological and philosophical foundations of science education as applied to contemporary issues affecting today's students. Topics include current research on hands-on/inquiry teaching, concept mapping, student misconceptions, learning/teaching styles, alternative assessment, gender differences, learning environments, action research, and knowledge transfer to provide a context for the history of science literacy and educational literacy; quantitative and qualitative research methods; and professional writing techniques. Prerequisite: one semester teaching experience in science or consent of instructor. Also offered through the MAT-SE online strand.					
	Science Education	SCE 5308	Research Design and Methodology	4.5	3
Application of the methodological and philosophical foundations of research in science education pertaining to an individual research question. Topics include educational research ethics and design, measuring instruments and data manipulation, methodological rigor, evidence-based conclusions, and publication genres to support the development of a professional presentation and formal research paper. Also offered through the MAT-SE online strand.					
Wayland Baptist University	Education	EDUC 5302	Research Methods and Data Analysis		
Development of research skills and the interpretation of research results.					

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Department General	Course General			Quarter Hours	Semes Hours
College	Department	Course#	Course Name		
Science Education	**Implementation and Assessment**				
Baylor University	Education	EDC 5321	Contemporary Curriculum		
Contemporary philosophies and practice for designing and implementing the school's instructional program for administrators, supervisors, and teachers. In addition to placing an emphasis on the changing philosophies and patterns for implementing the curriculum, stress will also be given to current innovations and experimentation in curriculum.					
	Education	EDC 5348	Issues in Curriculum and Instruction		
Designed essentially for administrators, supervisors, and curriculum coordinators, this course investigates and analyzes current issues in curriculum theory and development with particular attention to curriculum revision and reform.					
Institute for Creation Research Graduate School	Science Education	SE505	Implementing and Assessing Science Teaching	4.5	3
Application and evaluation of content knowledge, instructional and assessment skills in the learning environment. Assessment of effectiveness in the classroom setting. Self-critique of video-taped instruction implementing the 5-E learning cycle. Topics include: effective communication, formative and evaluative assessment strategies (applied), positive feedback, reflective evaluation, engaging students. Note: this course has a practicum - the student is required to apply what s/he has learned as a graduate student as ICRGS while in the field.					
Texas A & M University - Commerce	Secondary Education	SED 514	514. Management and Curriculum Development for Diverse Learners	4.5	3
Contains the professional body of knowledge necessary for effective teaching. This course emphasizes methods of organizing and managing a classroom based on an understanding of diverse environments. Teacher skills which have been proven to be effective in supporting diversity in the classroom will be developed. The content of this course will include classroom management strategies, curriculum and lesson planning, teaching models, assessment models, and certification issues. Students will exhibit an understanding of the Texas teacher competencies as outlined on the Professional Development portion of the TExES test. Enrollment is limited to students accepted into the Alternative Certification Program (ACP).					
Texas Christian University	Education	EDUC 60313	Educational Assessment		
Characteristics of tests, constructs, scoring, interpreting, evaluation, and test-taking skills as a form of problem-solving are included.					
	Education	EDSE 50023	Effective Teaching and Classroom Implementation		
As a part of the effective teacher model, this course will focus on instructional design and implementation, motivation of students to promote and enhance learning in the classroom; management issues pertinent to student behavior and learning outcomes; and preparation of a variety of formal and informal assessment strategies.					
Texas State University-San Marcos	Curriculum and Instruction	CI 5306	Evaluative Techniques for the Classroom Teacher	4.5	3
An in-depth study of the objectives of evaluation, teacher-made tests, interpretation of standardized test results, self-evaluation, program evaluation, school evaluation, socio-metric techniques and their use, and reporting to parents.					
Texas Tech University	Instruction	EDSE 5377	Science Curriculum and Instruction	4.5	3
A study of evolving science curriculum with emphasis on innovative practices, methodology, organization for instruction, and evaluation.					
	Instruction	EDCI 5372	Assessment Issues in Science and Math Education	4.5	3
This course guides exploration of current issues related to assessment, multiple dimensions of assessment, and the processes of assessment in mathematics and science education.					
University of Houston	Curriculum and Instruction	CUIN 6378	Instructional Evaluation	4.5	3
Development of understanding and skills for evaluating student progress, student achievement, and instructional effectiveness in the classroom setting. Emphasis on collecting information, former judgments, and making instructional decisions.					
University of Texas at Dallas	Education	ED 5370	Classroom Management	4.5	3
Designed to expand the skills of teachers and prospective school leaders with conceptual and human-interaction skills necessary for classroom and school improvement. Emphasis on innovative school reform and classroom management.					
	Education	ED 3371	Curriculum and Instruction in the Natural Sciences	4.5	3
Curriculum design and methods of instruction in the natural sciences. A minimum of 20 clock hours of field experience is required and a prerequisite for a grade in this course.					

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Department General	Course General			Quarter Hours	Semes Hours
College	**Department**	**Course#**	**Course Name**		
Wayland Baptist University	Education	EDUC 5328	Instructional and Assessment Strategies II		

The course is an extension of EDUC 5305 and includes planning, instructional strategies and assessments that are applicable to higher order teaching. Assessment trends in the secondary schools are examined and stu- dents develop skills in writing assessments. Enrichment curriculum is examined for the secondary school. Students will examine areas for the state license test.

	Education	EDUC 5301	Advanced Principles and Practices in Education		

Development of skills related to the teaching learning process. Students develop knowledge of educational psychology and apply this knowledge to the schools and individual classrooms.

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College	**Department**	**Course#**	**Course Name**		
Science Education	**SE Special Topics**				
Baylor University	Education	EDP 5V95	Special Problems in Education		
Designed to meet the individual needs of graduate students. May be repeated.					
Institute for Creation Research Graduate School	Science Education	SE510	Special Topics in Science Education		
Hands-on courses offered as the need arises for various topics in Science Education.					
Texas Christian University	Education	EDUC 60810	Seminar: Special Topics in Science		
May be repeated up to 13 hours.					
Texas State University-San Marcos	Curriculum and Instruction	CI 5376	Problems in Secondary Education	4.5	3
A workshop in innovative techniques or materials offered either on campus or off campus in approved sites. Designed to give secondary classroom teachers college credit for in-service type training; course gives an opportunity for teachers to upgrade their skills and knowledge.					
University of Texas at Dallas	Science Education	SCE 5V06	Special Topics in Science Education		
May be repeated for credit to a maximum of 9 hours.					

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Department General	Course General			Quarter Hours	Semes Hours
College	Department	Course#	Course Name		
Astro/Geophysics	**Astronomy**				
Baylor University	Geology	GEO 4313	Astronomy	3	2
A brief history of astronomy developments followed by a survey of the dimensions, motions, and interrelationships of bodies in our solar system. Additional emphasis is given to galaxies, stellar evolution, and cosmology					
Institute for Creation Research Graduate School	Astro/Geophysics	AG501	Planetary And Stellar Astronomy	6	4
A survey of planetary and stellar astronomy, including aspects of the sky, time, coordinates, telescopes, and observational techniques. The structure and origin of the universe will be studied.					
Rice University	Astronomy	ASTR 403	Astronomy For Teachers	4.5	3
Learn how to teach astronomy concepts as specified by the state of Texas. Methods to help students master content, including lab activities suitable for K-9 classrooms and as field trips. Topics vary with each offering. Graduate/Undergraduate Equivalency: EDUC 589.					
Texas A & M University - Commerce	Physics	Phys 561	Astronomy Problems		
This is a basic non-mathematical course designed to introduce public school teachers to current concepts in astronomy. Topics covered include motions of the earth, stellar evolution, stellar classes and spectroscopy, telescopes and observatories, galaxies and cosmology.					
Texas Christian University	Physics	PHYS 1340	Astronomy: Solar System	4.5	3
A study of the solar system. Topics included are a study of the sun, the planets and their satellites, the comets, and other components of the solar system. Some aspects of telescopes and ancient astronomy will be included also.					
	Physics	PHYS 1350	Astronomy: Stars and Galaxies	4.5	3
A study of the universe beyond the solar system. Topics included are a study of the stars and star clusters, nebulae, galaxies, and an introduction to some aspects of cosmology.					
Texas State University-San Marcos	Physics	PHYS 1312	Astronomy: Solar System	4.5	3
A study of the solar system. Topics included are a study of the sun, the planets and their satellites, the comets, and other components of the solar system. Some aspects of telescopes and ancient astronomy will be included also.					
Texas Tech University	Physics	PHYS 5372	Astronomy for Teachers	4.5	3
Inquiry-based course in solar system, stellar, and galactic astronomy. Discusses history of human understanding of the universe.					
University of Houston	Physics	PHYS 1306	Introductory Astronomy - Stellar and Galactic Systems	4.5	3
Introduction to optics, atomic physics, nuclear physics, and current astrophysical measurement techniques; stellar structure and evolution; galactic structure and evolution; cosmology.					
	Physics	PHYS 1305	Introductory Astronomy - The Solar System	4.5	3
Introduction to history and development of astronomy from pre-Greek times through the modern eras. Keller's laws, Newton's laws, recent experimental results from planetary and interplanetary probes, origin and evolution theories for the solar system					
University of Texas at Dallas	Physics	Phys 3380	Astronomy	4.5	3
An essentially descriptive course outlining the current views of the universe and the sources of data supporting those views. The solar system and its origin, stars, galaxies, pulsars, quasars, black holes, nebulae and the evolution of the universe. Opportunity to use a U.T. Dallas telescope is provided					
	Science	SCI 5326	Astronomy: Our Place in Space	4.5	3
This course focuses on developing student understanding of our planet fits within a larger astronomical context. Topics will include common misconceptions in astronomy, scale in the solar system and beyond, phases of the moon, seasons, navigating the night sky, our sun as a star, properties and lifecycles of stars, galaxies, and cosmology.					

Comparison of Course Content at Selected Colleges With Science Education Programs at ICR

Department General	Course General				
College	Department	Course#	Course Name	Quarter Hours	Semes Hours
Astro/Geophysics	**Astronomy Lab**				
Institute for Creation Research Graduate School	Astro/Geophysics	AG501L	Planetary and Stellar Astronomy Lab	3	2
One week lab course offered on the campus of the University of South Carolina Lancaster (USCL) during the summer quarter. Access to the observatory of the Charlotte Amateur Astronomy Club which features a 24-inch Newtonian reflector, a 16-inch Cassegrain reflector, and a 6-inch Alvin Clark refractor. Topics include: lenses and telescopes, spectroscopy, earth's orbital velocity, sunspots, The Hertzsprung - Russell diagram, RR Lyrae stars, The Crab Nebula, Pulsars, structure of the Milky Way, the Hubble Relation, and quasars.					
Rice University	Astronomy	ASTR 430	Teaching Astronomy Laboratory	4.5	3
Methods and facilities of observational astronomy for public education. Students will help train beginners in the use of telescopes and carry out a modest observational program. The course requires one public talk and internship work. Topics vary with each offering.					
Texas A & M University - Commerce	Physics	PHYS 1411(L)	Astronomy of Solar System (lab)		
One two-hour laboratory per week, including night telescope viewing sessions					
Texas Christian University	Physics	PHYS 20083	Introductory Astronomy (lab)		
Three hours lecture and one 2-hour laboratory per week. Stars, galaxies, stellar evolution, and cosmology. Laboratory assignments may be scheduled in the evening.					
Texas State University-San Marcos	Physics	PHYS 1140	Introductory Laboratory in Astronomy	3	2
An introduction to the constellations, the uses of telescopes, and other material relating to the study of stars and planets.					

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Department General	Course General			Quarter Hours	Semes Hours
College	Department	Course#	Course Name		
Astro/Geophysics	**Geochronology**				
Institute for Creation Research Graduate School	Astro/Geophysics	AG502	Geochronology and Laboratory	6	4

A review, critique, and evaluation of methods and assumptions used to calculate the age of rocks and estimate the age of the earth, especially from radioisotope dating methods. Topics covered are: Biblical chronology, scientific evidence for a young earth, the basics of radioactive decay and radioisotope dating, rubidium-strontium dating, potassium-argon dating, samarium-neodymium dating, uranium-thorium-lead dating, radiohalos and fission tracks, radiocarbon dating, and an accelerated decay model within a Biblical young-earth history. The laboratory requires original data on rubidium-strontium, potassium-argon, samarium-neodymium, uranium-lead, and carbon-14 to be downloaded, plotted, and interpreted using IsoPlot 3.0 which is an add-on to Excel. (Cross referenced with GE 502).

University of Houston	Geology	GEOL 6369	Isotope Geochronology	4.5	3

Commonly used radiogenic isotopic systems and their applications in geochronology, petrology, and tectonics.

University of Texas at Dallas	GeoSciences	GEOS 5356	Isotope Geochemistry		

Synthesis of the elements in stars and chronologies for the galaxy. Isotope systematics in meteorites, abundance anomalies, cosmogenic nuclides, and solar system chronologies. The development of the modern multi-collector mass spectrometer. Mass fractionation laws, double spiking techniques, and high precision isotope ratio measurements. Isotope geochemistry of noble gases and radiogenic nuclides as pertaining to the composition and history of the mantle and crust. Application of stable isotopes to studies of diagenesis and water-rock interaction, groundwater management, paleoceanography and secular variations in the isotopic composition of seawater. High-temperature and, where applicable, lowtemperature water-rock interactions pertaining to the origin of igneous rocks. The evolution of radiogenic Sr in sea water. Radiometric age dating as applied to the solution of geologic problems.

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Department General	Course General			Quarter Hours	Semes Hours
College	**Department**	**Course#**	**Course Name**		
Astro/Geophysics	**Paleoclimatology**				
Institute for Creation Research Graduate School	Astro/Geophysics	AG503	Paleoclimatology and Laboratory	6	4

Descriptions and methods for evaluating current, past, and future climates: Paleoclimate reconstruction, climate and climatic variation, dating methods, ice cores, marine sediments and corals, non-marine geological evidence, pollen analysis, dendrochronology, documentary data, and paleoclimate models. The laboratory requires proxy variables from multiple sources to be downloaded, plotted, and interpreted using Excel.

University of Houston	Geology	GEOL 6368	Paleoclimate And Global Change	4.5	3

Natural and anthropogenic global climate change, paleoclimates and paleogeography, evolution of the atmosphere, greenhouse effect, ozone depletion, ocean-atmosphere coupling, solar activity, Milankovitch cycles, effects of global change on agriculture, water resources and energy use.

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Department General	Course General			Quarter Hours	Semes Hours
College	Department	Course#	Course Name		
Astro/Geophysics	**Cosmology**				
Baylor University	Physics	PHY 6351	Cosmology		
Cosmology: extragalactic distance determinations; relativistic cosmological models; galaxy formation and clustering; thermal history of the universe, microwave background; cosmological tests, advanced topics in general relativity.					
Institute for Creation Research Graduate School	Astro/Geophysics	AG504	Creation Cosmology and the Big Bang Theory	4.5	3
OuThis course teaches the basics of cosmology, outlines the big-bang theory, and contrasts it with several creationist cosmologies. It touches on areas of science such as orbital mechanics, astronomy, relativity, and quantum mechanics, but not in great detail. It emphasizes concepts with a minimum of mathematics. Topics include: history of cosmology, stars and galaxies, a cosmic center, space and time, special relativity, curved space and general relativity, black and white holes, time dilation, Big Bang models, and Biblical models.					
Rice University	Astronomy	ASTR 552	Astrophysics II: Galaxies & Cosmology	4.5	3
The physics of interstellar matter; structure of the Milky Way and other normal galaxies; physical cosmology and high-red shift phenomena. Graduate/Undergraduate Equivalency: ASTR 452					
Texas A & M University - Commerce	Physics	Phys 1412	Introduction to Stars and the Universe	6	4
A descriptive survey of astronomy with emphasis on modern developments in stellar and galactic astronomy and the role of physical science in the measurement and interpretation of astronomical data. Included are studies of structure and evolution of stars and galaxies and of current cosmological theories. One two-hour laboratory or night telescope viewing session per week.					
Texas Tech University	Physics	PHYS 3302	Cosmophysics: The Universe as a Physics Lab	4.5	3
This course deals with topics from astrophysics, cosmology, and cosmic ray physics of interest to all physicists.					
University of Houston	Physics	PHYS 7309	Gravitation and Cosmology	4.5	3
Physics in flat and curved spacetime, Einstein's theory of general relativity, experimental tests, gravitational waves, black holes, cosmology, quantum gravity and supergravity.					
University of Texas at Dallas	Physics	PHYS 5395	Cosmology	4.5	3
The course is an overview of contemporary cosmology including: cosmological models of the universe and their parameters; large scale structure of the universe; dark matter; cosmological probes and techniques such as gravitational lensing, cosmic microwave background radiation, and supernova searches; very early stages of the universe; dark energy and recent cosmic acceleration.					

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Department General	Course General				
College	Department	Course#	Course Name	Quarter Hours	Semes Hours
Astro/Geophysics	**AG Special Topics**				
Institute for Creation Research Graduate School	Astro/Geophysics	AG510	Special Topics In Astro/geophysics	4.5	3
Hands-on courses offered as the need arises for various topics in Astro/Geophysics.					
Rice University	Astronomy	ASTR 600	Advanced Topics In Astrophysics	4.5	3
Lecture/seminars which treat topics of departmental interest. Not offered every year.					
Texas Christian University	Physics and Astronomy	PHYS 70743	Advanced Topics In Astrophysics		
Regularly scheduled course on advanced topics in astronomy and astrophysics, including the following: Stellar Atmospheres: Basic methods and applications of radiative transfer. Theory and interpretation of astronomical spectra: line profiles, LTE and non-LTE line formation, abundances, model atmospheres, curve-of-growth. Stellar Interiors: Solution of the equations of stellar structure, analytic approximations and theory relating to equilibrium stellar models, nucleosynthesis in massive stars, final phases of stellar evolution. Galactic Structure: The interstellar medium, galaxy kinematics, interacting galaxies, evolution and classification of galaxies, extragalactic radio sources, quasars, cosmological models.					
Texas State University-San Marcos	Physics	Phys 4320	Selected Study in Physics	4.5	3
Topics are chosen in theoretical and experimental areas of current interest in physics with specific topic to be discussed agreed upon prior to registration. May be repeated once with different emphasis and professor for additional credit.					
Texas Tech University	Physics	PHYS 5300	Special Topics	4.5	3
Topics in semiconductor, plasma, surface, particle physics, spectroscopy, and others. May be repeated in different areas.					
University of Houston	Physics	PHYS 5397	Selected Topics in Physics for High School Teachers	4.5	3
May not be counted toward a degree in the College of Natural Sciences and Mathematics. May be repeated for credit when topics vary. Modern topics in atomic, nuclear, solid state, or space physics. Application of modern technology to teaching high school physics.					
University of Texas at Dallas	Physics	PHYS 5V49	Special Topics In Physics		
Topics may vary from semester to semester. (May be repeated for credit to a maximum of 9 hours.)					
Wayland Baptist University	Physical Science	PSCI 5421	Problems in Physical Science		
deals with research topics in physical science. Course hours may vary up to six hours credit.					

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Department General	Course General			Quarter Hours	Semes Hours
College	Department	Course#	Course Name		
Biology	**Biological Origins**				
Baylor University	Biology	1305	Modern Concepts Of Bioscience	4.5	3
An introductory course on the unifying principles common to all levels of biological organization; cell biology and general physiology are emphasized. Required of all biology majors					
Institute for Creation Research Graduate School	Biology	BI501	Biological Origins	4.5	3
A survey focusing on the various theories of biological origin and diversification. Students will evaluate current theories of origins beginning with the origin of life and proceeding through the origin of cells, species, and man. All theories are reviewed in light of contemporary biological knowledge. Emphasis is placed on distinguishing between observation, hypothesis, evidence, and confirmation as applied to evaluating origins paradigms and their implications.					
Rice University	BioSciences	BIOS 122	Fundamental Concepts In Biology	4.5	3
Biological topics of current interest, covering advances in biotechnology, human health, agriculture, and the environment. Topics focus on the underlying biology, but may also include the social/political/economic impact. Each session is taught by an expert in that field with the assistance of a class coordinator.					
Texas A & M University - Commerce	Biosciences	BSc 451	Science: Past and Future	4.5	3
Major people, discoveries, and the evolution of fundamental concepts and theories through time are examined through literature, research, and hands-on inquiry based investigations. Science topics and themes are chosen to emphasize broad concepts in the Texas and national science standards.					
Texas Christian University	Biology	BIOL 30803	History of Biology		
The course traces the origin and historical development of basic concepts in biology, including the background and the work of persons who significantly contributed to the understanding and formulation of biological concepts.					
Texas State University-San Marcos	Biology	BIOL 4408	Science Processes and Research.		
Students will analyze research design, design research, interpret data, and communicate results. Stress on broad-field structure and integration of major science concepts and science knowledge. Should be taken the semester prior to student teaching. Required for those seeking 8-12 Life Sciences and Science teacher certification. May not count as one of the four upper-level Biology courses required of general Biology majors, or one of the three upper-level Biology courses required of Biology minors.					
University of Texas at Austin	Biology	BI380T	Current Concepts in Biology		
Designed for beginning graduate students seeking a review of modern biological concepts. With consent of instructor, may be repeated for credit when the topics vary.					
University of Texas at Dallas	Biology	BIOL 2311	Introduction to Modern Biology I	4.5	3
Presentation of some of the fundamental concepts of modern biology, with an emphasis on the molecular and cellular basis of biological phenomena. Topics include the chemistry and metabolism of biological molecules, elementary classical and molecular genetics, and selected aspects of developmental biology, physiology (including hormone action), immunity, and neurophysiology.					

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Department General	Course General			Quarter Hours	Semes Hours
College	**Department**	**Course#**	**Course Name**		
Biology	**Biological Origins Lab**				
Baylor University	Biology	BIO 1105	Modern Concepts of Bioscience Laboratory		

Laboratory experiments illustrating modern concepts in the biological sciences, with special emphasis on cell biology and general physiology.

Institute for Creation Research Graduate School	Biology	BI501L	Biological Origins Laboratory	1.5	1

An intensive one-week course designed to instruct Middle and High School teachers on how to integrate laboratory exercises into their curriculum. Instruction is based on teacher development in all phases of laboratory protocols with an emphasis on new developments in biotechnology and bioinformatics useful in Middle School and High School classrooms. Students in the course participate in 10 laboratory modules designed to increase skills in teaching observation, hypothesis, evidence, and confirmation when applied to the evaluation of origins, ethics, and their implications.

Texas Christian University	Biology	BIOL 70950	Assigned Problems in Biology		

Each of the assigned projects requires a minimum of 50 clock hours of field, laboratory or library work for each semester hour of credit.

University of Texas at Dallas	Biology	BIOL 2281	Introductory Biology Laboratory		

Introductory lectures discuss the theoretical and historical aspects of the experiments carried out in the laboratory. Laboratory experiments introduce the student to bioinformatics, basic alignment analyses, BLAST and literature searches, and construction of phylogenetic trees. Laboratory experiments include microscopy, microbial techniques, yeast genetics, and the electrophoretic behavior of normal and mutant proteins. DNA related experiments include isolation (nuclear and mtDNA), amplification, restriction digests, electrophoresis, plasmid mapping, and transformations. Students present posters of their long-term investigations at the end of the semester

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Department General	Course General			Quarter Hours	Semes Hours
College	Department	Course#	Course Name		
Biology	**Anatomy**				
Baylor University	Biology	BIO 2401	Human Anatomy And Physiology I	4.5	3
An introductory course examining the organization of the human body and mechanisms for maintaining homeostasis. Topics include basic metabolism and skeletal, muscular, nervous, endocrine, and immune systems. Emphasis is placed on the integration of systems as they relate to normal health. Designed for students who will pursue a career in nursing, dietetics, and other areas. Will not apply toward requirements needed for a major in biology.					
Institute for Creation Research Graduate School	Biology	BI502	Comparative Vertebrate Anatomy	4.5	3
In this class comparative vertebrate anatomy will be taught using texts and resources from a variety of origin philosophies. Scientific knowledge so gained will enable the student to evaluate the origin theories as presented. To be taken concurrently with BI 502L.					
Rice University	BiioSciences	BIOS 329	Animal Biology And Physiology	4.5	3
The evolution and systematics of the animal kingdom with consideration of functional anatomy, comparative physiology, behavior, medical implications and resource management.					
Texas A & M University - Commerce	Biological Sciences	BSc 422	Comparative Vertebrate Anatomy	6	4
The lecture material in this course explore the evolution of vertebrate structure and design among vertebrate taxa. Emphasis is placed on the integument, skeletal, muscular, digestive, urogenital, respiratory, circulatory and nervous systems. Laboratory dissections, using the dogfish and the cat as models, are used to complement the lecture material.					
Texas Christian University	Biology	BIOL 30404	Comparative Vertebrate Anatomy		
Two hours lecture and two laboratory periods per week. A comparative study of the morphology systems of chordates.					
Texas State University-San Marcos	Biology	BIOL 2404	Human Physiology and Anatomy		
A course on human physiology covering the various organ systems. Principles of molecular biology, cell and tissue structure, anatomy and relationship of structure and function are stressed. May not be credited toward a Biology major or minor.					
University of Houston	Biology and Biochemistry	BIOL 1334	Human Anatomy and Physiology	4.5	3
Structure and function of the human body. (Lab course accompanies)					
University of Texas at Austin	Biology	BI384K	Ecology, Evolution, and Behavior		
Basic concepts and methods of laboratory and field analysis in various fields of biology; systematics and ecology of natural populations. Lectures, conference discussions, and laboratory work, depending on topic. May be repeated for credit when the topics vary. Some topics are offered on the credit/no credit basis only; these are identified in the Course Schedule. Topic 18: Biomechanics and Vertebrate Functional Morphology. EEB. Functional analysis of organismal design in ecological and evolutionary contexts. Three lecture hours a week for one semester.					
University of Texas at Dallas	Biology	BIOL 3455	Human Anatomy and Physiology with Lab I	6	4
First of a two-course sequence providing a comprehensive study of the basic principles of human physiology in conjunction with a detailed, model-based human anatomy laboratory and computer-assisted physiology experiments. Examination of structure-function relationships includes a survey of human histology and skeletal, muscular, neural, and sensory organ systems.					
Wayland Baptist University	Biology	BIOL 3408	Human Anatomy and Physiology I		
Structure and function of the human body, its major organs, and its skeletal, muscular, and neural systems. Lecture three hours, laboratory three hours.					

Comparison of Course Content at Selected Colleges With Science Education Programs at ICR

Department General	Course General			Quarter Hours	Semes Hours
College	Department	Course#	Course Name		
Biology	**Anatomy Lab**				
Institute for Creation Research Graduate School	Biology	BI502L	Comparative Vertebrate Anatomy Laboratory	1.5	1
	We will be concentrating on the structures of the various vertebrate classes. To enable practical application there will be weekly teaching adventures involving an evaluation of origin issues. We will concentrate on known facts and consider which module of origins the facts fit best. To be taken concurrently with BI 502				
Texas A & M University - Commerce	BioSciences	BSc 422 (L)	Comparative Vertebrate Anatomy (lab)		
	Laboratory dissections, using the dogfish and the cat as models, are used to complement the lecture material.				
Texas Christian University	Biology	BIOL 30404 (L)	Comparative Vertebrate Anatomy (lab)		
	two laboratory periods per week				

Comparison of Course Content at Selected Colleges With Science Education Programs at ICR

Department General	Course General			Quarter Hours	Semes Hours
College	Department	Course#	Course Name		
Biology	**Paleontology**				
Baylor University	Biology	BIO 4430	Vertebrate Paleontology	4.5	3
Evolutionary history and biogeography of vertebrate animals, based primarily on fossil evidence. Laboratory activities include study of fossil material, field excavations, and visits to museums. (Cross-listed as GEO 4430)					
Institute for Creation Research Graduate School	Biology	BI503	Principles and Patterns in Paleontology	4.5	3
Comparisons of criteria used to classify fossils and extant forms are analyzed in Systematic Paleontology for patterns used to propose and defend models for the origin and history of major taxonomic groups. (Cross-reference with GE 503) BI 503L to be taken concurrently.					
Rice University	BioSciences	BOS 334	Evolution	4.5	3
Principles of biological evolution. Topics include natural selection, adaptation, molecular evolution, formation of new species, the fossil record, biogeography, and principles of classification.					
Texas A & M University - Commerce	Biosciences	BSc 404	Vertebrate Biology	4.5	3
This course takes a systematic approach to understanding vertebrate evolution, diversity and biology. It will follow the development of each vertebrate taxon through the fossil record from late Cambrian to the present. Major trends in ecological adaptations are described along with their underlying structural and physiological modifications. Thus, the purpose of this course is to understand the origin and evolution of vertebrate phyla and to learn about basic vertebrate biology.					
Texas Christian University	Geology	GEOL 50543	Sedimentary Environments And Facies		
Three hours of lecture per week. Facies analysis and facies models applied to the problem of interpreting stratigraphic sequences and reconstructing paleogeography.					
Texas State University-San Marcos	Geology	GEOL 3440	Paleontology and Biostratigraphy		
Identification of ancient invertebrate faunas and their applications in reconstruction of paleoenvironments, paleogeography, and the means by which "time" correlations can be effected in sedimentary strata. Field intensive course, 1 full day in the field per week. Course will be offered alternating summers. (may no longer be offered)					
Texas Tech University	Geology	GEOL 5311	Micropaleontology		
Lectures and labs are designed to acquaint the student with basic lab techniques, morphology, and classification within the major microfossil groups, and to demonstrate the usefulness and importance of microfossils as biostratigraphic and paleoecologic tools.					
University of Houston	Geology	GEOL 3376	Life of the Geologic Past	4.5	3
Survey of the history of life on earth as interpreted from the fossil record.					
University of Texas at Dallas	GeoSciences	GEOS 1304	History of Earth and Life	4.5	3
Introduction to the history of the Earth. The history of life and an introduction to the principles of paleontology, stratigraphy and global change will be discussed. All topics will be discussed in the context of the tectonic evolution of North America. Field trip.					
Wayland Baptist University	Biology	BIOL 4406	Vertebrate Natural History and Taxonomy	4.5	3
Variation and selection, systematics and taxonomy, environmental and genetic influences, zoogeography, behaviour, reproduction, feeding specializations, and population dynamics of the vertebrate groups are emphasized. The recording of field observations and practice in the collection and preparation of study specimens of vertebrates are encouraged during field studies. Lecture three hours, laboratory three hours.					

Comparison of Course Content at Selected Colleges With Science Education Programs at ICR

Department General	Course General			Quarter Hours	Semes Hours
College	Department	Course#	Course Name		
Biology	**Paleontology Field Investigations**				
Baylor University	Geology	GEO 5333	Modern/Ancient Depositional Environments I Prerequisite		
Field study of depositional systems and facies. Course participants will examine modern depositional environments varying from fl uvial, deltaic, beach, and near shore systems to modern barrier and fringing reefs along the Gulf and Atlantic coasts and in the Caribbean. These depositional environments will be used to interpret ancient sedimentary facies examined in the field during the last portion of the course					
	Biology	BIO 4430 (L)	Vertebrate Paleontology (lab)		
Laboratory activities include study of fossil material, field excavations, and visits to museums					
Institute for Creation Research Graduate School	Biology	BI503L	Paleontology Field Investigations	1.5	1
Collect and identify fossils, especially from the Ice Age; participate in hands-on workshops; investigate fossil evidence relating to origins. Must be taken concurrently with BI 503 or after completion of BI 503.					
Rice University	BioSciences	BIOS 213	Intro Lab Mod Ecology and Evolutionary Biology		
Experimental, laboratory, and field studies of natural history, ecology, evolution, and animal behavior. Computer simulations of population genetics					
Texas State University-San Marcos	Biology	BIOL 5403	Earth Science II		
The description and interpretation of earth phenomena considered from the standpoint of geology and oceanography. Includes field observations, methods of sampling and interpretation of data related to the physical environment					
University of Houston	Biology	BIOL 4272	Cellular and Developmental Biology Laboratory		
Experimental aspects of cellular and developmental biology, using techniques at both the molecular and cellular levels.					
	Geology	GEOL 1176	Historical Geology Laboratory		
Weekend field trip may be required; cost to be defrayed by student. Supplementary to lecture; study of rocks, fossils, and maps.					
Wayland Baptist University	Biology	BIOL 4406 (L)	Vertebrate Natural History and Taxonomy (lab)		
The recording of field observations and practice in the collection and preparation of study specimens of vertebrates are encouraged during field studies.					

Comparison of Course Content at Selected Colleges With Science Education Programs at ICR

Department General	Course General				
College	Department	Course#	Course Name	Quarter Hours	Semes Hours
Biology	**Ecology**				
Baylor University	Biology	BIO 3303	Ecology		
Lectures and discussions that illustrate the basic concepts in evolutionary, behavioral population, community, ecosystem, and conservation ecology.					
Institute for Creation Research Graduate School	Biology	BI504	Advanced Ecology and Laboratory	6	4
A model is presented for how the biosphere is designed and structured and how it functions. Communities, ecosystems, and biomes are examined to see how they fit the model. Mankind's role in managing the earth is discussed and evaluated. Possible solutions to various environmental problems are evaluations. Field work is integrated with coursework.					
Rice University	BioSciences	BIOS 433	Advanced Ecology	4.5	3
Students will develop a critical understanding of the discipline of ecology through a combination of lectures and discussion that span a range of topics. With the instructor's help, students will use current papers to stimulate debate on the theories, philosophies and methods of the study of populations, communities, and ecosystems					
Texas A & M University - Commerce	Biosciences	BSc 307	Ecology	6	4
This course introduces students to the basic ecology: Flow of energy and matter in ecosystems, species diversity, communities, species interactions, and population biology.					
Texas Christian University	Biology	BIOL 50103	Terrestrial Ecosystems		
Concepts, principles, and mechanisms of the function of terrestrial ecosystems, including ecophysiology of component species, nutrient cycling, energy flow, ecosystem stability and global ecology.					
Texas State University-San Marcos	Biology	BIOL 4416		4.5	3
The ecological relationships that exist between organisms and those relationships that exist between organism and environment. Laboratory sessions will be devoted to literature review and/or specific ecological problems. This course or BIO 4454 is required of all biology majors.					
Texas Tech University	Biology	BIOL 5309	Advanced Ecology	4.5	3
A detailed examination of the structural and functional relationships underlying the organization of populations, communities, and ecosystems.					
University of Houston	Biology and Biochemistry	BIOL 4368	Ecology	4.5	3
Current concepts of the interrelationships between organisms and the environment.					
University of Texas at Austin	Biology	CI384C	Introduction to Ecology, Evolution, and Behavior I		
EEB. Designed for beginning graduate students in ecology, evolution, and behavior. A review of modern biological concepts and techniques relating to ecology, evolution, and behavior. Three lecture hours and one discussion hour a week for one semester.					
University of Texas at Dallas	Geography	GEOG 3301	Cultural Ecology	4.5	3
Human communities adapt to their environments by means of their technologies and organizations, which in turn reshape the environment, in on going cycles. Cultural ecology, closely related to human ecology and cultural geography, is the study of such relationships. This course provides an introduction to the basic concepts of cultural ecology, with particular emphasis on the relations between land and the human population it sustains and the differentiation of urban and rural society.					
Wayland Baptist University	Biology	BIOL 3407	Ecology		
Basic ecological principles and concepts that relate to structure and function of aquatic and terrestrial ecosystems with emphasis on the nature of populations, communities, and ecosystems. One weekend field trip will be required in this class. Lecture three hours, laboratory three hours.					

Comparison of Course Content at Selected Colleges With Science Education Programs at ICR

Department General	Course General			Quarter Hours	Semes Hours
College	Department	Course#	Course Name		
Biology	**Molecular Biology**				
Baylor University	Biology	BIO 4308	Cell And Developmental Biology		
The mechanisms that regulate the development of multicellular organisms, from nematode to humans, will be examined using biochemical, genetic, and cell biological approaches. The course will investigate the role that gene regulation, cell-cell communication, cell adhesion, cell motility, signal transduction, and intracellular trafficking play in the commitment, differentiation and assembly of stem cells into specialized cell types and organs.					
Institute for Creation Research Graduate School	Biology	BI505	Advanced Cell and Molecular Biology	4.5	3
A survey of the molecular processes governing inheritance and an investigation into the variation of these processes and their limits. Special consideration is given to current molecular topics related to the origin of biochemical pathways.					
Rice University	BioSciences	BIOS 545	Advanced Molecular Biology And Genetics	4.5	3
Molecular and genetic aspects of the regulation of gene expression as seen in simple prokaryotic systems and the model eukaryotic systems used for studies of development.					
Texas A & M University - Commerce	Biosciences	BSc 431	Eukaryotic Cell Biology	4.5	3
This course is the study of advanced knowledge of the eukaryotic cell including contemporary concepts of membranes, signal transduction mechanisms, messengers and receptors, extracellular structures, cell adhesions and attachment proteins, cell cycle and regulation, protein synthesis, sorting and targeting, cytoskelton and cell movements.					
Texas Christian University	Biology	BIOL 50324	Techniques In Cell And Molecular Biology		
Survey of techniques central to molecular and cellular biology, including centrifugation, chromatography, electrophoresis, spectrophotometry and radioisotopes.					
Texas State University-San Marcos	Biology	BIOL 3300	Cell and Molecular Biology		
Fundamentals of structure and function of prokaryotic and eukaryotic cells. Course includes cell and organelle structure, basic biochemistry, principles of thermodynamics and energy transformation, nucleic acid and protein synthesis, enzyme kinetics, cell motility and cell signaling.					
Texas Tech University	Biology	BIOL 5302	Advanced Cell Biology	4.5	3
Structure and function of cells with introduction to modern techniques for cell study. Course is offered to graduate students with no formal training in cell biology.					
University of Houston	Biology and Biochemistry	BIOL 4374	Cell Biology	4.5	3
Composition, organization, and function of cells at the molecular level.					
University of Texas at Austin	Biology	BI395J	Molecular Biology		
MIC. Same as Chemistry 395J and Molecular Biology 395J. Detailed consideration of prokaryotic and eukaryotic mechanisms of DNA replication and transcription; posttranscriptional processing of transcription products; and mechanism and regulation of the translation of messenger RNAs.					
	Biology	BI389K	Advanced Cell Biology		
EEB. Biology 389K and Zoology 388M (Topic 1: Advanced Cell Biology) may not both be counted.					
University of Texas at Dallas	Biology	BIOL 3301	Classical and Molecular Genetics	4.5	3
The phenomenon of heredity, its cytological and molecular basis; gene expression and transfer of genetic information, with major focus on bacterial and model eukaryotic systems; genetic recombination and chromosome mapping; tetrad analysis; mutations and mutagenesis; genetic interactions; application of recombinant DNA techniques to genetic analysis.					
Wayland Baptist University	Biology	BIOL 44087	Cell and Molecular Biology		
- A study of cellular structure and function at the molecular level. Membranes, organelles, bioenergetics, nucleic acid structure and function, regulation of gene expression, the cell cycle, and the modern genetic engineering will be emphasized. Lecture three hours, laboratory three hours.					

Comparison of Course Content at Selected Colleges With Science Education Programs at ICR

Department General	Course General				
College	Department	Course#	Course Name	Quarter Hours	Semes Hours
Biology	**BI Special Topics**				
Baylor University	Biology	BIO 5100	Seminars in Biology		
Topics of current interest in various subdisciplines of biology. Topics change each semester. Involves presentation of seminars by enrolled graduate students. May be repeated only with changes in topics.					
Institute for Creation Research Graduate School	Biology	BI510	Special Topics in Biology	4.5	3
Hands-on courses offered as the need arises for various topics in Biology.					
Rice University	BioSciences	BIOS 561	Topics in Evolution	3	2
Review and discussion of the literature on current research in evolution					
	BioSciences	BIOS 590	Special Topics in Biochemistry and Cell Biology	1.5	1
Development of specific topic areas at the graduate level.					
	BioSciences	BIOS 541	Special Topics in Ecology and Evolutionary Biology	1.5	1
	BioSciences	BIOS 542	Special Topics in Ecology and Evolutionary Biology	1.5	1
Texas A & M University - Commerce	Biological Sciences	BSc 597	Special Topics		
One to four semester hours. Organized class. May be repeated when topics vary.					
Texas State University-San Marcos	Biology	BIO 4350	Special Topics in Biology.	4.5	3
Selected advanced topics in biology. May be repeated for credit. Prerequisites will be determined by topic and faculty offering the course.					
Texas Tech University	Biology	BIOL 4301	Topics in Biology	4.5	3
Special areas of current interest not commonly included in other courses. Content normally different each time offered. May be repeated for credit toward degree requirements if content is different.					
University of Houston	Biology	BIOL 6297	Selected Topics in Biology		
Cr. 2-3 per semester or more by concurrent enrollment. May be taken for a maximum of six semester hours.					
University of Texas at Dallas	Biology	BIOL 4V00	Special Topics in Biology		
(1-6 semester hours) May be repeated as topics vary (9 hours maximum).					
Wayland Baptist University	Biology	BIOL 5420	Problems in Biology		
deals with research topics in biology. May be taken for six hours credit.					

Comparison of Course Content at Selected Colleges With Science Education Programs at ICR

Department General	Course General			Quarter Hours	Semes Hours
College	**Department**	**Course#**	**Course Name**		
Geology	**Natural Disasters**				
Baylor University	Geology	GEO 1401	Earthquakes And Other Natural Disasters	4.5	3

Survey of the natural disasters afflicting mankind. The course examines the causes and impact upon society of earthquakes, volcanoes, landslides, subsidence, and floods. One Saturday field trip required

Institute for Creation Research Graduate School	Geology	GE501	Natural Disasters	4.5	3

Analysis of some of the most extraordinary geologic events that have affected the earth's surface including displacement processes (earthquakes, landslides, storm surges, and tsunamis), nozzle and penetration events (caldera and summit eruptions, pluton intrusion, piping failure of natural dams, meteor impacts), and energetic (debris avalanches, debris flows, hyper-concentrated river floods, and pyroclastic flows). Focus is on eye-witness reports allowing geological classification and quantitative description. Mechanical analysis employs force vectors, energy balance, and work budgets with only occasional use of calculus. Probability analysis addresses potential threat to humans. This course is also appropriate for science educators needing broad experience with surface geologic processes.

Rice University	Earth Science	ESCI 108	Crises Of The Earth	4.5	3

Geological and environmental crises have affected Earth throughout history. Included are meteorite impacts, global extinctions, volcanic eruptions, earthquakes, tsunamis, effect of humans on environment, as well as an overview of historical perspectives, scientific background, and development of these processes, the development of predictive scenarios, and society's adaptations to such hazards.

Texas A & M University - Commerce	Environmental Science	EnvS 104	Earthquakes, Hurricanes, and Other Natural Disasters	4.5	3

Scientific principles and case studies of natural disasters, including those related to geological, meteorological, biological, cosmological, and man-made hazards and disasters.

Comparison of Course Content at Selected Colleges With Science Education Programs at ICR

Department General	Course General			Quarter Hours	Semes Hours
College	Department	Course#	Course Name		
Geology	**Geochronology**				
Baylor University	Geology	GEOL 4338	Biostratigraphy		
Stratigraphic units, with major emphasis on environmental interpretations and on the importance and limitations of using selected fossil groups in providing a chronological basis for detailed facies analyses. Consists of both field and laboratory studies.					
Institute for Creation Research Graduate School	Geology	GE502	Geochronology with Lab	6	4
A review, critique, and evaluation of assumptions and evidences for the age of the earth and its rock layers. Particular emphasis will be placed on surveying the use of the radioisotope dating methods, especially potassium-argon, rubidium-strontium, samarium-neodymium and uranium-thorium-lead, to expose the fatal problems with them. Special emphasis will also focus on the results of the RATE (Radioisotopes and the Age of the Earth) research project, including helium diffusion in zircon, fission tracks, radiohalos, discordant isochron 'ages', and radiocarbon in supposedly ancient organic materials and diamonds, that together indicate that nuclear decay was grossly accelerated during a recent catastrophic event in earth history and that the earth is therefore young. A thorough analysis of all the evidence indicating the age of the earth will be undertaken.					
Rice University	Earth Science	ESCI 324	Earth's Interior	6	4
Formation of Earth and solar system, Earth differentiation and geochronology. Structural seismology and the composition of Earth's interior. Density, Earth's gravity, and the geoid. Heat flow and Earth energetics. Earth's core and magnetic field. Mantle convection and plate tectonics. Oceanic and continental crust.					
Texas Tech University	Geology	GEOL 5420	Geological Correlation		
Principles and methods of correlation of stratigraphic units with the geological time scale including chronostratigraphy, biostratigraphy, ecostratigraphy, sequence stratigraphy, event stratigraphy, chemostratigraphy, and related techniques.					
University of Houston	Geology	GEOL 6369	Isotope Geochronology	4.5	3
Commonly used radiogenic isotopic systems and their applications in geochronology, petrology, and tectonics.					
University of Texas at Dallas	GeoSciences	GEOS 5356	Isotope Geochemistry		
Synthesis of the elements in stars and chronologies for the galaxy. Isotope systematics in meteorites, abundance anomalies, cosmogenic nuclides, and solar system chronologies. The development of the modern multi-collector mass spectrometer. Mass fractionation laws, double spiking techniques, and high precision isotope ratio measurements. Isotope geochemistry of noble gases and radiogenic nuclides as pertaining to the composition and history of the mantle and crust. Application of stable isotopes to studies of diagenesis and water-rock interaction, groundwater management, paleoceanography and secular variations in the isotopic composition of seawater. High-temperature and, where applicable, lowtemperature water-rock interactions pertaining to the origin of igneous rocks. The evolution of radiogenic Sr in sea water. Radiometric age dating as applied to the solution of geologic problems.					

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Department General	Course General			Quarter Hours	Semes Hours
College	**Department**	**Course#**	**Course Name**		
Geology	**Paleontology**				
Baylor University	Biology	BIO 4430	Vertebrate Paleontology	4.5	3
Evolutionary history and biogeography of vertebrate animals, based primarily on fossil evidence. Laboratory activities include study of fossil material, field excavations, and visits to museums. (Cross-listed as GEO 4430)					
Institute for Creation Research Graduate School	Geology	GE503	Principles and Patterns in Paleontology	4.5	3
Comparisons of criteria used to classify fossils and extant forms are analyzed in Systematic Paleontology for patterns used to propose and defend models for the origin and history of major taxonomic groups. (Cross-reference with BI 503) GE 503L to be taken concurrently.					
Rice University	BioSciences	BOS 334	Evolution	4.5	3
Principles of biological evolution. Topics include natural selection, adaptation, molecular evolution, formation of new species, the fossil record, biogeography, and principles of classification.					
Texas A & M University - Commerce	Biosciences	BSc 404	Vertebrate Biology	4.5	3
This course takes a systematic approach to understanding vertebrate evolution, diversity and biology. It will follow the development of each vertebrate taxon through the fossil record from late Cambrian to the present. Major trends in ecological adaptations are described along with their underlying structural and physiological modifications. Thus, the purpose of this course is to understand the origin and evolution of vertebrate phyla and to learn about basic vertebrate biology.					
Texas Christian University	Geology	GEOL 50543	Sedimentary Environments And Facies		
Three hours of lecture per week. Facies analysis and facies models applied to the problem of interpreting stratigraphic sequences and reconstructing paleogeography.					
Texas State University-San Marcos	Geology	GEOL 3440	Paleontology and Biostratigraphy		
Identification of ancient invertebrate faunas and their applications in reconstruction of paleoenvironments, paleogeography, and the means by which "time" correlations can be effected in sedimentary strata. Field intensive course, 1 full day in the field per week. Course will be offered alternating summers. (may no longer be offered)					
Texas Tech University	Geology	GEOL 5311	Micropaleontology		
Lectures and labs are designed to acquaint the student with basic lab techniques, morphology, and classification within the major microfossil groups, and to demonstrate the usefulness and importance of microfossils as biostratigraphic and paleoecologic tools.					
University of Houston	Geology	GEOL 3376	Life of the Geologic Past	4.5	3
Survey of the history of life on earth as interpreted from the fossil record.					
University of Texas at Dallas	GeoSciences	GEOS 3434	Paleobiology	6	4
History of life as documented by the fossil record. Basic concepts of Paleontology and Biostratigraphy followed by a review of major fossil groups and major events in the evolution of life, speciation, mass extinction, evolution of communities and ecosystems through geologic time. Paleontological methods to paleoenvironmental reconstruction. Field trip					
Wayland Baptist University	Biology	BIOL 4406	Vertebrate Natural History and Taxonomy	4.5	3
Variation and selection, systematics and taxonomy, environmental and genetic influences, zoogeography, behaviour, reproduction, feeding specializations, and population dynamics of the vertebrate groups are emphasized. The recording of field observations and practice in the collection and preparation of study specimens of vertebrates are encouraged during field studies. Lecture three hours, laboratory three hours.					

Comparison of Course Content at Selected Colleges With Science Education Programs at ICR

Department General	Course General			Quarter Hours	Semes Hours
College	Department	Course#	Course Name		
Geology	**Paleontology Field Investigations**				
Baylor University	Biology	BIO 4430 (L)	Vertebrate Paleontology (lab)		
Laboratory activities include study of fossil material, field excavations, and visits to museums					
	Geology	GEO 5333	Modern/Ancient Depositional Environments I Prerequisite		
Field study of depositional systems and facies. Course participants will examine modern depositional environments varying from fl uvial, deltaic, beach, and near shore systems to modern barrier and fringing reefs along the Gulf and Atlantic coasts and in the Caribbean. These depositional environments will be used to interpret ancient sedimentary facies examined in the field during the last portion of the course					
Rice University	BioSciences	BIOS 213	Intro Lab Mod Ecology and Evolutionary Biology		
Experimental, laboratory, and field studies of natural history, ecology, evolution, and animal behavior. Computer simulations of population genetics					
Texas State University-San Marcos	Biology	BIOL 5403	Earth Science II		
The description and interpretation of earth phenomena considered from the standpoint of geology and oceanography. Includes field observations, methods of sampling and interpretation of data related to the physical environment					
University of Houston	Geology	GEOL 1176	Historical Geology Laboratory		
Weekend field trip may be required; cost to be defrayed by student. Supplementary to lecture; study of rocks, fossils, and maps.					
Wayland Baptist University	Biology	BIOL 4406 (L)	Vertebrate Natural History and Taxonomy (lab)		
The recording of field observations and practice in the collection and preparation of study specimens of vertebrates are encouraged during field studies.					

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Department General	Course General			Quarter Hours	Semes Hours
College	Department	Course#	Course Name		
Geology	**Geological History**				
Baylor University	Geology	GEO5341	Cordilleran Tectonics	4.5	3
Geologic history of the North American Cordillera from Precambrian to present, based on analysis of stratigraphic, structural, paleomagnetic, and paleobiogeographic constraints.					
Institute for Creation Research Graduate School	Geology	GE504	Interpreting Earth History	4.5	3
Survey of the human quest to understand the earth's past. Overview of terminology and methodology for describing and interpreting earth history from geological and geophysically-inferred structures and processes. Analysis of uniformitarian and catastrophist approaches to interpreting earth history. Application of computational techniques to simulate geological and geophysical processes. Exploration of the limitations of both uniformitarian and catastrophist paradigms.					
Rice University	Earth Science	ESCI 324	Earth's Interior		
Formation of Earth and solar system, Earth differentiation and geochronology. Structural seismology and the composition of Earth's interior. Density, Earth's gravity, and the geoid. Heat flow and Earth energetics. Earth's core and magnetic field. Mantle convection and plate tectonics. Oceanic and continental crust.					
Texas Christian University	Geology	GEOL 30133	Historical Geology I		
This second semester of a two semester lab/lecture course continues with an in depth look at the details of the geological history of North America and the history of life on earth. Lectures focus on historical detail, while lab exercises and field trips focus on major groups of fossils in the lab and field. Microscope work and field trips are mandatory					
Texas State University-San Marcos	Geology	GEOL 1420	Historical Geology	4.5	3
A continuation of physical geology leading to consideration of the geologic history of the earth (with special emphasis on North America), the evolution of life, the continents through geologic time and the principles and procedures used in the interpretation of earth history.					
Texas Tech University	Geology	GEOL 1304	Historical Geology	4.5	3
A study of the history and evolution of the earth and life from the beginning of time to the present.					
	Geology	GEOL 5340	Advances in Historical Geology	4.5	3
Survey of currently important topics in earth processes and history for science educators, with an emphasis on how geologists interpret modern and past geologic events.					
University of Houston	Geology	GEOL 1376	Historical Geology	4.5	3
Geologic history of the earth; introduction to the uses of geological principles to interpret earth history.					
University of Texas at Dallas	GeoSciences	GEOS 4322	The Earth System	4.5	3
Planet Earth comprises a system of interacting spheres: atmosphere, hydrosphere, lithosphere and biosphere, all of which have played an important role in Earth processes and Earth history. This course examines these Earth systems and how their interactions over time have effected their evolving compositions, the evolution of life and Earth's climate. The short-term and long-term parts of the Carbon cycle provide the underlying theme for the study of the Earth System					
Wayland Baptist University	Earth Science	EASC 1403	Earth Science for Educators		
A study of the Earth, integrating elements of physical geology, oceanography, meteorology, planetary geology, and historical geology. Field trips may be included as one of the instructional tools. Lecture three hours, laboratory three hours. Prerequisite: Declared intention to become an elementary or middle school teacher.					

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Department General	Course General			Quarter Hours	Semes Hours
College	Department	Course#	Course Name		
Geology	**Field Geology**				
Baylor University	Geology	GEO 3344	Sedimentary Field Studies		
Field study of modern sediments and ancient sedimentary rocks. Physical and biological features of modern sedimentary environments are examined to provide the basis for interpreting ancient environments in the rock record. Offered during summer session.					
Institute for Creation Research Graduate School	Geology	GE505	Field Geology of California	3	2
Field explorations for science educators at extraordinary geologic features in Southern California . Visits and instruction occur at shore-face strata sequence (Torrey Pines State Reserve), ancient delta of the Colorado River (Anza-Borrego Desert State Park), leading edge of the North American Plate boundary (San Andreas fault, Mojave Desert, and Owens Valley), craton-deposited marine flood strata (Sierra Nevada Mountains, Inyo Mountains and Mojave Desert), supervolcano structure and deposits (Owens Valley, Long Valley Caldera, Mammoth volcanic center, and Mono Craters), intrusive igneous structures (Peninsular Ranges Batholith, Sierra Nevada Batholith, and Independence dikes), and glacial landforms (Yosemite National Park). Maps, reports and rocks are supplied for the student s pre-field study. Students write a paper that stresses geologic skills of observing, classifying, measuring, interpreting and reporting. The nine-day field trip is offered in August.					
Rice University	Earth Science	ESCI 515	Geophysical Field Work For Educators	4.5	3
This course consists of 2 weeks of geophysical field work and is designated for in-service K-12 teachers. Instructor permission required					
Texas Christian University	Geology	GEOL 70970	Special Problems		
Field or laboratory problems for graduate students in various aspects of geology. Fifty clock hours of laboratory, field or library work for each semester hour of credit.					
Texas Tech University	Geology	GEOL 3102	Field Methods in Structural Geology		
Topics include field structural analysis and an introduction to geologic mapping.					
University of Houston	Geology	GEOL 3101	Geologic Field Trip	1.5	1
Cost of field trip to be defrayed by student. Five- to seven-day field trip to areas of geologic interest (e.g., Big Bend National Park) taken over Spring Break. May be repeated for credit when content varies.					
University of Texas at Dallas	GeoSciences	GEOS 4606	Field Geology		
(Summer Field Camp) (6 semester hours) A four-week summer camp designed to provide both practical geological and geophysical experience. Geology students emphasize mapping in sedimentary, igneous, and metamorphic terrains. Geophysics students utilize seismic, potential field, and electrical methods to analyze a field area. Reports in professional form are required.					
	GeoSciences	GEOS 5304	Geosciences Field Trip	4.5	3
A study of the geology of a selected region within North America and the Caribbean followed by a field trip to the selected region in order to study the relationships of geologic features within that region. This course can only be used to partially satisfy the field experience requirement and breadth requirement for geosciences majors. Field trip course.					
Wayland Baptist University	Earth Science	EASC 4401	Field Geology		
A course focusing on field methodologies used in earth sciences, including sampling techniques, map construction, and analytical methods. A major portion of the course is taught off campus at various locations.					

Comparison of Course Content at Selected Colleges With Science Education Programs at ICR

Department General	Course General				
College	Department	Course#	Course Name	Quarter Hours	Semes Hours
Geology	**GE Special Topics**				
Institute for Creation Research Graduate School	Geology	GE510	Special Topics in Biology	4.5	3
Hands-on courses offered as the need arises for various topics in Geology					
Rice University	Earth Science	ESCI 524	Advanced Topics in Earth Structure and Deformation	4.5	3
Seminar topics may vary.					
Texas A & M University - Commerce	Earth Science	Esci 497	Special Topics		
One to four semester hours. Organized class. May be repeated when topics vary.					
Texas Christian University	Geology	GEOL 30003	Honors Seminar		
Reading assignments and discussions on topics of great importance in geology.					
University of Houston	Geology	GEOL 6397	Selected Topics in Geology	4.5	3
May be repeated for credit when topics vary. Current topics in geology and geophysics.					
University of Texas at Dallas	GeoSciences	GEOS5V08	Special Topics in Geosciences		
Courses dealing with a variety of topics including new techniques and specific problems in rapidly developing areas of the science. Hours vary depending on course requirements.					
Wayland Baptist University	Earth Science	EASC 5409	Selected Topics in Geology		
Covers an examination of different aspects of the earth including various systems and processes.					

Comparison of Course Content at Selected Colleges With Science Education Programs at ICR

Department General	Course General			Quarter Hours	Semes Hours
College	Department	Course#	Course Name		
Supplementary Courses	**History and Nature of Science**				
Baylor University	Education	EDC 5391	Social Foundations of Education		

This course will provide students the opportunity to encounter several highly influential books, ideas, and individuals from the fields of Social Foundations of Education and Curriculum. As an interdisciplinary, Foundations course, the instructor will assist students as they consider the field of education from a broad liberal arts perspective.

	Education	EDC 6301	The History of American Education		

A study of primary source documents written by those who shaped American education as an institution. Includes discussion of social, cultural and historic infl uences.

Institute for Creation Research Graduate School	Supplementary Courses	SC506	The History and Nature of Science	4.5	3

Study of historical science and survey of literature of major philosophers of science reveals clashes in perception throughout history. Individuals will discover how interpretation of the meaning of the nature of science has affected science as well as the science education system. Special emphasis on the ability to inquire as a skill both scientists and teachers need to develop

Texas A & M University - Commerce	Secondary Education	SED 528	528. Philosophy of Education	4.5	3

Includes a study of systematic philosophies of education and their views of the learner, learning process, curriculum, instruction, and leadership. Particular attention will be given to the use of philosophical techniques and concepts for solving problems.

Texas Christian University	Education	ECUC 70033	Scientific Inquiry and the Nature of Science		

The Nature of Science is a hybrid arena consisting of aspects of the philosophy, history and sociology of science along with elements of the psychology of scientific observations all targeting the complete understanding of how science actually functions. This course is designed for individuals who are interested in learning more about the methods and goals of science, the role of scientists and the place of science in society science and how philosophical issues can and should be reflected in science teaching and learning. We will read and discuss selections from the works of major philosophers of science and commentaries on science education from a philosophical perspective. Throughout this course we will explore the content of the nature of science and use that knowledge as a guide in improving science instruction and developing philosophically appropriate science curricula.

	Education	ECUC 60253	Historical and Philosophical Foundations of Education.		

Philosophic positions and the implications of these viewpoints on one's approach to and resolution of educational issues and questions will be examined.

Texas State University-San Marcos	Curriculum and Instruction	CI	Philosophical Foundations of Education	4.5	3

An overview of the field of educational philosophy as related to the spectrum of human events and the educative process in particular. Designed for master's degree students without previous graduate work in philosophy or philosophy of education.

Texas Tech University	Instruction	EDSE 5305	Issues and Reform in American Secondary Schooling	4.5	3

Purpose, role, contemporary issues, and reform trends in American secondary schooling. Historical, philosophical, sociological, and ideological foundations of education. Examination of multiple contexts that influence schooling and roles of teaching.

	Instruction	EDSCI 6320	Curriculum Theory: Inquiry	4.5	3

Antecedents of contemporary curriculum paradigms; relationships among curriculum, instruction, and society; tactics and models of curriculum analysis and criticism.

University of Houston	Curriculum and Instruction	CUIN 7388	Teaching Nature of Science and Inquiry		

Fixed category observation systems used for study of classroom interaction. Field-based observations of classroom interaction are a required part of course.

	Cultural and Urban Studies	CUST 6370	Cultural Foundations of American Education	4.5	3

Analysis of social, political, and economic forces that have contributed to the unique role of education in the history of the United States.

Comparison of Course Content at Selected Colleges With Science Education Programs at ICR

Department General	Course General			Quarter Hours	Semes Hours
College	**Department**	**Course#**	**Course Name**		
University of Texas at Dallas	Science Education	SCE 5301	Critical Issues in Science Education	4.5	3

Examination of classic issues in science and technology and the relationships developed between them. Topics include population and population growth, food and food sources, energy and energy sources, water needs/solutions, diseases and cures, housing – safe and adequate, environmental issues – personal and political, and security – local and global. Also offered through the MAT-SE online strand

Wayland Baptist University	Education	EDUC 5312	Topics in Education		

Emphasis is placed on current research and case studies of current issues in education. Course may be taken as a class or as an individual project and may be repeated.

Comparison of Course Content at Selected Colleges With Science Education Programs at ICR

Department General	Course General			Quarter Hours	Semes Hours
College	**Department**	**Course#**	**Course Name**		
Supplementary Courses	**SC Special Topics**				
Institute for Creation Research Graduate School	Supplementary Courses	SC510	Special Topics in Biology	4.5	3

Hands-on courses offered as the need arises for various topics in Supplementary Courses.

Comparison of Course Content at Selected Colleges With Science Education Programs at ICR

Department General	Course General			Quarter Hours	Semes Hours
College	**Department**	**Course#**	**Course Name**		
Supplementary Courses	**Research Paper**				
Institute for Creation Research Graduate School	Supplementary Courses	SC580	Research Paper	3	2

After identifying a topic and developing a proposal in SE 504, students will complete a formal paper that is comparable to a refereed journal article, and must be in journal-submission form before it can be accepted. The paper must present a study in the field of Science Education or the scientific discipline in which students are pursuing their minors.
Contents of the latest edition of The Publication Manual of the American Psychological Association and the ICR Instructions for Preparation and Submission of the Science Education Paper will govern format (including quotations, footnotes, endnotes, bibliographical references, tables and illustrations, etc.).

Wayland Baptist University	Education	EDUC 5366	Topical Research in Education		

Development of an in-depth, research-based paper centering on a self-selected topic in education and an oral presentation to a faculty panel. This course serves as a capstone course and may be taken in lieu of the comprehensive examination.

Comparison of Course Content at Selected Colleges With Science Education Programs at ICR

Department General	Course General			Quarter Hours	Semes Hours
College	Department	Course#	Course Name		
Supplementary Courses	**Comprehensive Exam**				
Institute for Creation Research Graduate School	Supplementary Courses	SC581	Comprehensive Examination	0	0

A final oral examination will be administered through a conference call after students have completed the program of study and all other requirements for graduation. Members of the examining committee will include representatives from the Department of Science Education and from the Department in which students pursued minors. Students will be given a general study guide prior to the oral examination. Its contents will include questions pertaining to the courses taken the Science Paper. Students must pass the comprehensive examination in order to graduate.

Appendix J

Comparison of Graduation Requirements

The following report is a presentation of the specific hour and course graduation requirements of the nine colleges compared, side by side with the hour and course graduation requirements of the ICR Graduate School.

The left side of the report shows the specific courses that are required by the compared colleges. Course titles that are shaded are those for which there are matching ICR courses.

The right side of the report shows the specific courses that are required by ICR Graduate School. The column headed “Primary Match” indicates courses from the required list of the compared college that match. The column headed “Secondary Match” indicates courses from the compared college that are not on the required list but do match the specified ICR course requirement.

ICR Science Education Courses Required and Offered at the Nine Compared Colleges

School	SE501 Psychology		SE502 Curriculum		SE503 Instruction		SE504 Research		SE505 Impl/Asses	
	Require	Offer	Require	Offer	Require	Offer	Require	Offer	Require	Offer
Baylor	x	x		x	x	x	x	x	x	x
Rice		x	x	x				x		
TAM		x	x	x	x	x	x	x		x
TCU	x	x	x	x	x	x	x	x	x	x
TSU		x		x		x		x		x
TTU		x	x	x	x	x		x	x	x
UH	x	x	x	x		x	x	x	x	x
UTD	x	x		x	x	x	x	x	x	x
Wayland	x	x		x		x	x	x	x	x
# Required	5		6		6		6		6	
		9		9		8		9		8

Institute for Creation Research Graduate School
Master of Science in Science Education
Compared with Programs at Selected Texas Universities

Baylor University

Degree:	Master of Science
Major:	Education
Total Hours:	36

Degree Plan

Required courses 15 semester hours

EDC 5321	Contemporary Curriculum
EDC 5303	Models of Teaching
EDC 5348	Issues in Curriculum and Instruction
EDP 5335	Research in Education
EDC 5391	Social Foundations of Education

Electives 6 semester hours from the following; must include three hours technology

EDC 5370	Technology and Fundamentals
EDC 5372	The Instructor and Technology
EDC 5374	Curriculum and Instruction
EDC 5375	Courseware Development
EDC 5376	Multimedia Development
EDP 5332	Human Growth and Development
EDC 5317	Special Techniques in Secondary Schools
EDP 5333	Psychology of Learning
EDP 5334	Statistical Methods
EDP 5340	Measurement and Evaluation

Other Electives: 15 semester hours from Cognate Area

Compr. Exam?
Research Paper?
Thesis? yes

ICR Graduate School

Degree:	Master of Science
Major:	Science Education
Total Hours:	36 (54 quarter hours)

Degree Plan

Required courses 15 semester hours (22.5 quarter hours)

		Primary Match	Secondary Match
SE501	Adv Educ Psych: Understanding the Learner	EDP 5333	EDP 5332
SE502	The Science Curriculum		EDC 6310
SE503	Planning Science Instruction: Methods	EDC 5303	EDC 5375
SE504	Research In Science Education	EDP 5335	
SE505	Implementing and Assessing Science Teaching	EDC 5321	EDC 5348

Research Project 2 semester hours (3 quarter hours)

SC580	Research Paper
SC581	Comprehensive Exam

Electives 3 or more semester hours (4.5 quarter hours) from the following:

SC506	The History and Nature of Science	EDC 5391	EDC 6301
SE510	Special Topics in Science Education		EDP 5V95
	Courses in the minor		

Other Electives: 16 semester hours (24 quarter hours) from the department of the minor

Compr. Exam? yes
Research Paper? yes
Thesis? no

Institute for Creation Research Graduate School
Master of Science in Science Education
Compared with Programs at Selected Texas Universities

Rice University

Degree:	Master of Arts
Major:	Teaching
Total Hours:	36

Degree Plan

Required courses Unstated: from the following areas:

a	school educational theory
b	teaching strategies
c	educational practice
d	evaluation

Electives Unstated; Supervised teaching including the following areas:

e	design and implementation of courses
f	teaching
g	evaluation

Other Electives: Unstated; Graduate or upper-level courses in the relevant teaching field(s)

Compr. Exam?
Research Paper?
Thesis? yes

ICR Graduate School

Degree:	Master of Science
Major:	Science Education
Total Hours:	36 (54 quarter hours)

Degree Plan

Required courses 15 semester hours (22.5 quarter hours)

		Primary Match	Secondary Match
SE501	Adv Educ Psych: Understanding the Learner		EDUC 505
SE502	The Science Curriculum	c - EDUC 420	
SE503	Planning Science Instruction: Methods	b	
SE504	Research In Science Education		EDUC 596
SE505	Implementing and Assessing Science Teaching	e	

Research Project 2 semester hours (3 quarter hours)

SC580	Research Paper
SC581	Comprehensive Exam

Electives 3 or more semester hours (4.5 quarter hours) from the following:

SE506	The History and Nature of Science	a
SE507	Special Topics	
	Courses in the minor	

Other Electives: 16 semester hours (24 quarter hours) from the department of the minor

Compr. Exam? yes
Research Paper? yes
Thesis? no

Institute for Creation Research Graduate School
Master of Science in Science Education
Compared with Programs at Selected Texas Universities

Texas A&M University

Degree:	Master of Science
Major:	Secondary Education
Total Hours:	36

Degree Plan

Required courses 12 semester hours

Sed 513	The Secondary School Curriculum
Sed 521	Models of Teaching in the Secondary School
Sed 528	The Philosophy of Education
Sed 595	Research Methodologies

Electives 6 to 12 semester hours
selected in consultation with advisor

Other Electives: 12 to 18 semester hours
graduate-level elective courses outside Sed

Compr. Exam?
Research Paper?
Thesis? yes (or not in Option II)

ICR Graduate School

Degree:	Master of Science
Major:	Science Education
Total Hours:	36 (54 quarter hours)

Degree Plan

Required courses 15 semester hours (22.5 quarter hours)

		Primary Match	Secondary Match
SE501	Adv Educ Psych: Understanding the Learner		EDCI 652
SE502	The Science Curriculum	Sed 513	
SE503	Planning Science Instruction: Methods	Sed 521	
SE504	Research In Science Education	Sed 595	
SE505	Implementing and Assessing Science Teaching		Sed 514

Research Project 2 semester hours (3 quarter hours)

SC580	Research Paper
SC581	Comprehensive Exam

Electives 3 or more semester hours (4.5 quarter hours)
from the following:

SE506	The History and Nature of Science	Sed 528	
SE507	Special Topics		
	Courses in the minor		

Other Electives: 16 semester hours (24 quarter hours)
from the department of the minor

Compr. Exam? yes
Research Paper? yes
Thesis? no

Institute for Creation Research Graduate School
Master of Science in Science Education
Compared with Programs at Selected Texas Universities

Texas Christian University

Degree:	Master of Education
Major:	Science Education
Total Hours:	36

Degree Plan

Required courses 18 semester hours (must take EDUC 50333)

EDUC 60333	Theory and Pedagogy in Science Instruction
EDUC 60253	Historical & Philosophical Foundations
EDUC 50143	Theories of Human Development
EDUC 60013	Curriculum Theory
EDUC 70953	Research in Education
EDUC 60810	Seminar: Special Topics in Science
EDUC 50003	Diversity in Education
EDUC 60313	Educational Assessment

Electives

Other Electives: 12 semester hours science content courses

Compr. Exam? oral with thesis
Research Paper?
Thesis? yes

ICR Graduate School

Degree:	Master of Science
Major:	Science Education
Total Hours:	36 (54 quarter hours)

Degree Plan

Required courses 15 semester hours (22.5 quarter hours)

		Primary Match	Secondary Match
SE501	Adv Educ Psych: Understanding the Learner	EDUC 50143	EDUC 60213
SE502	The Science Curriculum	EDUC 60013	
SE503	Planning Science Instruction: Methods	EDUC 60333	
SE504	Research In Science Education	EDUC 70953	
SE505	Implementing and Assessing Science Teaching	EDUC 60313	EDSE 50023

Research Project 2 semester hours (3 quarter hours)

SC580	Research Paper
SC581	Comprehensive Exam

Electives 3 or more semester hours (4.5 quarter hours) from the following:

SE506	The History and Nature of Science	EDUC 60253	EDUC 70033
SE507	Special Topics	EDUC 60810	
	Courses in the minor		

Other Electives: 16 semester hours (24 quarter hours) from the department of the minor

Compr. Exam? yes
Research Paper? yes
Thesis? no

Institute for Creation Research Graduate School
Master of Science in Science Education
Compared with Programs at Selected Texas Universities

Texas State University--San Marcos

Degree:	Master of Arts OR Master of Education
Major:	Secondary Education
Total Hours:	36

Degree Plan

Required courses 24 semester hours; courses not stated

Electives

Other Electives: 12 to 15 semester hours
academic minor or composite program

Compr. Exam?
Research Paper?
Thesis? for Master of Arts only

ICR Graduate School

Degree:	Master of Science
Major:	Science Education
Total Hours:	36 (54 quarter hours)

Degree Plan

Required courses	15 semester hours (22.5 quarter hours)	**Primary Match**	**Secondary Match**
SE501	Adv Educ Psych: Understanding the Learner		CI 5313-14
SE502	The Science Curriculum		CI 5333
SE503	Planning Science Instruction: Methods		CI 5363
SE504	Research In Science Education		CI 5390
SE505	Implementing and Assessing Science Teaching		CI 5306

Research Project 2 semester hours (3 quarter hours)

SC580	Research Paper
SC581	Comprehensive Exam

Electives 3 or more semester hours (4.5 quarter hours) from the following:

SC506	The History and Nature of Science		CI 5372
SE507	Special Topics		CI 5376
	Courses in the minor		

Other Electives: 16 semester hours (24 quarter hours)
from the department of the minor

Compr. Exam? yes
Research Paper? yes
Thesis? no

Institute for Creation Research Graduate School
Master of Science in Science Education
Compared with Programs at Selected Texas Universities

Texas Tech University

Degree:	Master of Education
Major:	Science and Mathematics Education
Total Hours:	36

Degree Plan

Required courses 21 semester hours (? = Not found in catalog)

EDCI 5310	Instructional Design
EDSE 5300	?
EDSE 5305	Issues and Reform in Amer. Sec. Schooling
EDSE 5307	Seminar in Secondary Education
EDSE 5320	Developing Curricula in Secondary Schools
EDSE 5322	Managing Sec. School Learning Environments
EDSE 5330	?
EDSE 5331	?
EDSE 5377	Science Curriculum and Instruction

Electives

Other Electives: 15 semester hours

Compr. Exam?
Research Paper?
Thesis? optional

ICR Graduate School

Degree:	Master of Science
Major:	Science Education
Total Hours:	36 (54 quarter hours)

Degree Plan

Required courses 15 semester hours (22.5 quarter hours)

		Primary Match	Secondary Match
SE501	Adv Educ Psych: Understanding the Learner		EPSY 5332
SE502	The Science Curriculum	EDSE 5320	EDCI 5371
SE503	Planning Science Instruction: Methods	EDCI 5310	
SE504	Research In Science Education		EDSE 5380
SE505	Implementing and Assessing Science Teaching	EDSE 5377	EDCI 5372

Research Project 2 semester hours (3 quarter hours)

SC580	Research Paper
SC581	Comprehensive Exam

Electives 3 or more semester hours (4.5 quarter hours) from the following:

SE506	The History and Nature of Science	EDSE 5305	EDCI 6320
SE507	Special Topics		
	Courses in the minor		

Other Electives: 16 semester hours (24 quarter hours) from the department of the minor

Compr. Exam? yes
Research Paper? yes
Thesis? no

Institute for Creation Research Graduate School
Master of Science in Science Education
Compared with Programs at Selected Texas Universities

University of Houston

Degree:	Master of Education
Major:	Science Education
Total Hours:	36

Degree Plan

Required courses 12 semester hours (3+ from each area)

Historical/Cultural/Philosophical Foundations

CUIN 6360	Principles of Curriculum Development
ELCS 7365	Administration in Multicultural Settings
CUST 6311	Education in a Multicultural Society
HLT 6323	Cross-Cultural Aspects of Health
CUST 6360	Foundations of Educational Sociology
PEP 6321	Sport in Contemporary Society
CUST 6370	Cultural Foundations of American Education

Human Growth/Learning

EPSY 6330	Human Growth and Development
PEP 6340	Principles of Motor Learning
EPSY 6340	Principles of Human Learning

CUIN 6378	Instructional Evaluation
EPSY 6310	Introduction to Educational Research
EPSY 6300	Introduction to Educ. and Psych. Measurement
PEP 6305	Measurement in Health and Physical Education

Electives

Other Electives: 3 to 9 semester hours of coursework with approval from the student's advisor

Compr. Exam? yes (or thesis)
Research Paper?
Thesis?

ICR Graduate School

Degree:	Master of Science
Major:	Science Education
Total Hours:	36 (54 quarter hours)

Degree Plan

Required courses 15 semester hours (22.5 quarter hours)

		Primary Match	Secondary Match
SE501	Adv Educ Psych: Understanding the Learner	EPSY 6330	
SE502	The Science Curriculum	CUIN 6360	CUIN 6371
SE503	Planning Science Instruction: Methods		CUIN 6372
SE504	Research In Science Education	EPSY 6310	
SE505	Implementing and Assessing Science Teaching	CUIN 6378	

Research Project 2 semester hours (3 quarter hours)

SC580	Research Paper
SC581	Comprehensive Exam

Electives 3 or more semester hours (4.5 quarter hours) from the following:

SE506	The History and Nature of Science	CUST 6370	CUIN 7388
SE507	Special Topics		
	Courses in the minor		

Other Electives: 16 semester hours (24 quarter hours) from the department of the minor

Compr. Exam? yes
Research Paper? yes
Thesis? no

Institute for Creation Research Graduate School
Master of Science in Science Education
Compared with Programs at Selected Texas Universities

University of Texas at Dallas

Degree:	Master of Arts in Teaching
Major:	Science Education
Total Hours:	36

Degree Plan

Required courses

Undergraduate

ED 3314	American Public School
PSY/ED 3339	Educational Psychology
ED 4353	Secondary Reading in the Content Area
ED 4361	Classroom Management Grades 8-12
ED 3371	Curriculum and Instruction in Natural Science
ED 4694	Student Teaching

Graduate 9 semester houres

SCE 5301	Critical Issues in Science Education
SCE 5305	Evaluating Research in Science Education
SCE 5308	Research Design and Methodology

Electives

Other Electives:

Compr. Exam?
Research Paper?
Thesis? no (typically; thesis option available)

ICR Graduate School

Degree:	Master of Science
Major:	Science Education
Total Hours:	36 (54 quarter hours)

Degree Plan

Required courses 15 semester hours (22.5 quarter hours)

		Primary Match	Secondary Match
SE501	Adv Educ Psych: Understanding the Learner	PSY/ED 3339	
SE502	The Science Curriculum		SCI 5325
SE503	Planning Science Instruction: Methods	ED 4361	ED 5305
SE504	Research In Science Education	SCE 5305	SCE 5308
SE505	Implementing and Assessing Science Teaching	ED 3371	ED 5370

Research Project 2 semester hours (3 quarter hours)

SC580	Research Paper
SC581	Comprehensive Exam

Electives 3 or more semester hours (4.5 quarter hours) from the following:

SE506	The History and Nature of Science	SCE 5301	
SE507	Special Topics		SCE 5V06
	Courses in the minor		

Other Electives: 16 semester hours (24 quarter hours) from the department of the minor

Compr. Exam? yes
Research Paper? yes
Thesis? no

Institute for Creation Research Graduate School
Master of Science in Science Education
Compared with Programs at Selected Texas Universities

Wayland Baptist University

Degree:	Master of Education
Major:	Science Education
Total Hours:	36

Degree Plan
Required courses 18 semester hours

EDIT 5310	Microcomputer Applications
EDUC 5301	Advanced Principles & Practices in Education
EDUC 5302	Research Methods and Data Analysis
EDUC 5303	Multicultural Education
EDAD 5331	Organizational Behavior and Theory
EDUC 5366	Topical Research in Education

Electives 3 semester hours

EDUC 5380	Adult Development and Learning
EDUC 5381	Child and Adolescent Development & Learning

Other Electives:

Compr. Exam?
Research Paper? yes (EDUC 5366)
Thesis?

ICR Graduate School

Degree:	Master of Science
Major:	Science Education
Total Hours:	36 (54 quarter hours)

Degree Plan
Required courses 15 semester hours (22.5 quarter hours)

		Primary Match	Secondary Match
SE501	Adv Educ Psych: Understanding the Learner	EDUC 5381	
SE502	The Science Curriculum		EDUC 5322
SE503	Planning Science Instruction: Methods		EDUC 5305
SE504	Research In Science Education	EDUC 5302	
SE505	Implementing and Assessing Science Teaching	EDUC 5301	EDUC 5328

Research Project 2 semester hours (3 quarter hours)

SC580	Research Paper	EDUC 5366
SC581	Comprehensive Exam	

Electives 3 or more semester hours (4.5 quarter hours) from the following:

SE506	The History and Nature of Science		EDUC 5312
SE507	Special Topics		
	Courses in the minor		

Other Electives: 16 semester hours (24 quarter hours) from the department of the minor

Compr. Exam? yes
Research Paper? yes
Thesis? no

Appendix K
Scope and Sequence of the Program

The scope of the masters degree in Science Education is five-fold: (1) understanding the learner; (2) acquiring a knowledge base in science; (3) developing curricula, giving expression through instructional methodologies; (4) gaining knowledge in research processes, designing, successfully completing, and writing for publication a research project; and (5) delivering instruction and assessing outcomes.

Within this five-fold scope, courses are offered according to the following (optimum) sequence template. If scheduling challenges occur, The Chair of the Science Education Department, in consultation with other appropriate Graduate School personnel, will resolve them in ways that are most consistent with the template.

Understanding the Learner:

SE 501 Advanced Educational Psychology

Acquiring a knowledge base in science:

Students who pursue the Astro-Geophysics minor, will complete the following courses:

AG 501 Planetary and Stellar Astronomy
AG 501L Planetary and Stellar Astronomy Laboratory
AG 502 Geochronology and Laboratory
AG 503 Paleoclimatology and Laboratory
AG 504 Creation Cosmology and the 'Big Bang' Theory

Or

Students who pursue the Biology minor, will select 28.5 quarter units from the following list of courses:

BI 501, 501L Biological Origins, and Laboratory
BI 502, 502L Comparative Vertebrate Anatomy, and Laboratory
BI 503, 503L Principles and Patterns of Paleontology, and Laboratory
BI 504 Advanced Ecology and Laboratory
BI 505 Advanced Cell and Molecular Biology

Or

Students who pursue the Geology minor, will select 25.5 quarter units from the following list of courses:

GE 501, Natural Disasters,
GE 501L Natural Disasters Field Experience
GE 502 Geochronology with Laboratory
GE 503, Principles and Patterns in Paleontology,
GE 503L, Palentology Field Investigations
GE 504 Interpreting Earth History

Or

Students who pursue the General Science minor will complete the following courses, plus select another science course that will fulfill the 28.5 quarter unit requirement for a General Science minor.

GE 501 Natural Disasters
BI 504 Advanced Ecology and Laboratory
AG 501, 501L Planetary and Stellar Astronomy, and Laboratory

Developing Curricula, giving expression through instructional methodologies

SE 502 The Science Curriculum
SE 503 Planning Science Instruction: Methods

Designing, successfully completing, and writing for publication a research project

SE 504 Research in Science Education
SC 580 Science Paper
SC 581 Comprehensive Examination

Delivering instruction and assessing outcomes

SE 505 Implementing and Assessing Science Teaching

Appendix L
Prerequisites for Each Course

Science Education Courses

SE 501 Advanced Educational Psychology: Understanding the Learner

Prerequisite: Admission to the Graduate School

SE 502 The Science Curriculum

Prerequisites: Successful completion of SE 501 Advanced Educational Psychology;
Successful completion of courses in one of the minors

SE 503 Planning Science Instruction

Prerequisite: Successful completion of SE 502 The Science Curriculum

SE 504 Research in Science Education

Prerequisite: Successful completion of SE 503 The Science Curriculum

SE 505 Implementing and Assessing Science Teaching

Prerequisites: Successful completion of SE 504 Research in Science Education
Successful completion of SC 580 Science paper
Successful completion of SC 581 Comprehensive Examination

Astro-Geophysics Courses

AG 501 Planetary and Stellar Astronomy

Prerequisites: 6 semester hours of Calculus
8 semester hours of Physics, Calculus based, including laboratories
8 semester hours of Chemistry, including laboratories

Successful completion of SE 501 Advanced Educational Psychology

AG 501L Planetary and Stellar Astronomy Laboratory (must be taken concurrently with AG 501 Planetary and Stellar Astronomy)

AG 502 Geochronology with Laboratory

Prerequisites: 6 semester hours of Calculus
8 semester hours of physics, calculus based
8 semester hours of Chemistry, with laboratories
3 semester hours of Geology

AG 503 Paleclimatology with Laboratory

Prerequisites: 6 semester hours of Calculus
8 semester hours of Physics, calculus based, including laboratories
8 semester hours of Chemistry, including laboratories
3 semester hours of Meteorology

AG 504 Creation Cosmology and the 'Big Bang' Theory

Prerequisites: 6 semester hours of Calculus
8 semester hours of Physics, calculus based, including laboratories
8 semester hours of Chemistry, including laboratories
3 semester hours of Astronomy

Biology Courses

BI 501 Biological Origins

Prerequisites: 8 semester hours of general chemistry or biochemistry with laboratories

Successful completion of SE 501 Advanced Educational Psychology

BI 501L Biological Origins Laboratory

Prerequisite: Successful completion of BI 501 Biological Origins

BI 502 Comparative Vertebrate Anatomy

Prerequisites: 8 semester hours of Human Anatomy and Physiology or Vertebrate Zoology with laboratories

Successful completion of BI 501Biological Origins

Successful completion of BI 501L Biological Origins Laboratory

BI 502L Comparative Vertebrate Anatomy Laboratory (must be taken concurrently with BI 502 Comparative Vertebrate Anatomy)

BI 503 Principles and Patterns of Paleontology

Prerequisites: Successful completion of BI 502 Comparative Vertebrate Anatomy
Successful completion of BI 502L Comparative Vertebrate Anatomy Laboratory

BI 503F Paleontology field Investigations (must be taken currently with BI 503 Principles and Patterns of Paleontology)

BI 504 Advanced Ecology with Laboratory

Prerequisite: Successful completion of SE 501 Advanced Educational Psychology

BI 505 Advanced Cell and Molecular Biology

Prerequisites: 4 semester hours of Biochemistry or Molecular Biology with Laboratories

Successful completion of BI 501 Biological Origins
Successful completion of BI 501L Biological Origins Laboratory

Geology Courses

GE 501 Natural Disasters

Prerequisite: 3 semester hours of General Physical and/or Historical Geology
3 semester hours of Physics with emphasis in Mechanics
3 semester hours of Algebra and/or Statistics
3 semester hours of Calculus

Successful completion of SE 501 Advanced Educational Psychology

GE 502 Geochronology with Laboratory

Prerequisites: 6 semester hours of Calculus
8 semester hours of Physics, calculus based
8 semester hours of Chemistry, with laboratories
3 semester hours of Geology

Successful completion of GE 501 Natural Disasters

GE 503 Principles and Patterns in Paleontology

Prerequisites: 3 semester hours of General Physical and/or Historical Geology
3 semester hours of Zoology and or Botany
3 semester hours of Algebra and/or Statistics

Successful completion of GE 501 Natural Disasters
Successful completion of GE 502 Geochronology with Laboratory

GE 503F Paleontology Field Investigations (must be concurrently enrolled in GE 503 Principles and Patterns of Paleontology)

Prerequisite: Successful completion of GE 502 Geochronology with Laboratory

GE 504 Interpreting Earth History

Prerequisites: 3 semester hours of Algebra
3 semester hours of Geometry
3 semester hours of Calculus
4 semester hours of Chemistry, with laboratory
3 semester hours of Geochemistry
4 semester hours of Physics, with laboratory
3 semester hours of Physical Geology

Successful completion of GE 503 Principles and Patterns in Paleontology
Successful completion of GE 503F Paleontology Field Investigations

GE 505F Field Geology

Prerequisite: Successful completion of GE 502 Geochronology with Laboratory

Appendix M

Textbook Adoption Analysis

The information in this Appendix contains a listing of the ICRGS course required textbooks and a selected list of major colleges and universities across the country who have adopted the same textbook in their curriculum.

Appendix M
Textbook Adoption Analysis

ICR Course	Textbook Bibliographical Information	University Adoptions (selected)
SE 501 Advanced Educational Psychology	Ormrod, J. E., (2006) *Educational Psychology: Developing Learners, 5th Edition,* Prentice-Hall	Indiana University, **UT – Dallas**, University of Alabama, University of Kentucky (others)
SE 502 The Science	Posner, G. L. (2004). *Analyzing the curriculum, 3rd Edition*. NY: McGraw Hill. Chapters 1-7. (also used in SE0506)	University of Georgia, Lehigh University, Johns Hopkins University (others)
SE 503 Planning Science Instruction	Trowbridge, L. W., et al, (2004), *Teaching Secondary School Science: Strategies for Developing Scientific Literacy,* Prentice-Hall	Indiana University, **UT – Dallas**, University of Alabama, University of Kentucky (others)
SE 504 Research in Science Education	Gall, M. D., et al, (2003), *Educational Research: An Introduction*	University of Wisconsin; University of University of Maryland, University of Oregon, University of Massachusetts, University of Alabama (others)
SE 506 Implementing and Assessing Science Teaching	Johnson, D. W., and Johnson, R. T. (2003), *Meaningful Assessment: A Manageable and Cooperative Process,* Allyn and Bacon	North Carolina State University, Michigan State University (others)
	Dantonio, M and Beisenherz, P. C., (1990), *How can We Create Thinkers?: Questioning Strategies that Work for Teachers,* Allyn and Bacon	University of Minnesota, University of Georgia (others)
AG 501 Planetary and Stellar Astronomy	Chaisson, E and McMillan, S., (2005), *Astronomy Today* Prentice-Hall	University of Arizona, University of Oregon, University of California-Berkeley, **University of Texas**. **TCU** (others)
	Buck, M. T., (1990), *Exercises in Practical Astronomy using Photographs,* Taylor and Francis CRC Press	University of Colorado, University of Virginia, (others)

ICR Course	Textbook Bibliographical Information	University Adoptions (selected)
AG 502 Geochronology With Laboratory	Faure, G. and Mensing, T. M., (2005), *Isotopes: Principles and Applications, 3rd Edition*, John Wiley and sons.	University of Minnesota, University of Iowa, **University of Texas**, **Rice**, Louisiana State University (others)
AG 503 Paleoclimatology With Laboratory	Bradley, R. S., (1999), *Paleoclimatology: Restructuring Climates of the Quaternary, 2nd Edition* (Vol. 68 in the International Geophysics Series) Academic Press	Columbia University, Cornell University, Arizona State University (others)
AG 504 Creation Cosmology And the 'Big Bang' Theory	Harrison, E., (2000), *Cosmology: The Science of the Universe, 2nd Edition*, Cambridge University Press	Ohio State University, Rutgers University, Davidson University (others)
BI 501 Biological Concepts	Campbell, N., and Reece, J., (2002), *Biology, 6th Edition*, Cummings Publishing	University of Connecticut, Indiana University, Ohio State University, University of Oregon, University of Florida (others)
BI 502 Comparative Vertebrate Anatomy	Kent, G. C., and Carr, R. K., (2001), *Comparative Anatomy of the Vertebrates, 9th Edition*, McGraw-Hill	New York University, **Texas State University**, **Tarleton State University** (others)
BI 503 Principles and Patterns in Paleontology	Prothero, D. R., (2004), *Introduction to Paleobiology: Bringing Fossils to Life, 2nd Edition*, McGraw-Hill	University of Maryland, Stanford University, University of Arizona, Rutgers University, Vanderbilt University (others)
BI 504 Advanced Ecology With Laboratory	Molles, M. C., (2005), *Ecology Concepts and Applications, 3rd Edition*, McGraw-Hill	Purdue University, **Austin College**, Utah State University (others)
BI 505 Advanced Cell and Molecular Biology	Lodish, H, et al, (2007), *Molecular Cell Biology, 4th Edition*, W. H. freeman	University of California-San Diego, Cornell University, Massachusetts Institute of Technology, **Texas Tech** (others)
GE 501 Natural Disasters	Abbott, P. L., (2007), *Natural Disasters, 6th Edition*, McGraw-Hill	Tulane University, Pennsylvania State University, University of Pittsburg (others)

ICR Course	Textbook Bibliographical Information	University Adoptions (selected)
GE 502 Geochronology With Laboratory	Faure, G. and Mensing, T. M., (2005), *Isotopes: Principles and Applications, 3rd Edition*, John Wiley and sons.	University of Minnesota, University of Iowa, **University of Texas**, **Rice**, Louisiana State University (others)
GE 503 Principles and Patterns in Paleontology	Prothero, D.R.(2004). *Introduction to paleobiology:* Bringing fossils to life, 2nd. ed. NY: McGraw-Hill	University of Maryland, Stanford University, University of Arizona, Rutgers University, Vanderbilt University (others)
GE 504 Interpreting Earth History	Moores, E. M. and Twiss, R. J., (1995), *Tectonics,* W. H. Freeman	**Texas Tech**, Cornell University, **UT-Dallas,** University of California-San Diego, Davis, Massachusetts Institute of Technology (others)

Appendix N

Professional Journal Subscriptions Supporting the Curriculum

The information in this Appendix contains facsimiles of the ICRGS online listings and help pages that make available access to professional journals for the degree program.

Online Journals

Open Journals can be accessed by clicking on the name of the journal. Be sure the Switch Proxy toolbar is set to "None" and "Apply" has been clicked.

Locked Journals can be access by clicking on the name of the journal. The username and password for that journal will be displayed, along with a link to the login page for that specific journal. Be sure the Switch Proxy toolbar is set to "None" and "Apply" has been clicked.

Firefox Switch Proxy Key Journals can be accessed by clicking on the name of the journal. Be sure the Switch Proxy toolbar is set to "Firefox Switch Proxy Key" and "Apply" has been clicked (see the **Tutorial** for setup instructions).

Note: Materials used in connection with the Masters in Science Education degree program are subject to copyright protection. Please see the Copyright and Authorized Uses for details.

• Journals by Topic

Table of Contents

Physical Science

- Astronomy
- Cosmology
- Physics

Life Science

- Biology
- Biological Origins
- Botany
- Cellular and Molecular Biology
- Ecology
- Epidemiology
- Genetics
- Zoology

Earth Science

- Atmospheric Sciences
- Geology
- Oceanography
- Paleontology

General Science

Education

- General Education
- Science Education
- Educational Research
- Educational Psychology

Physical Science

Astronomy

Chinese Journal of Astronomy and Astrophysics

Living Reviews in Solar Physics

Cosmology

Earth and Planetary Science Letters

Physics

Classical and Quantum Gravity

- General Relativity and Gravitation
- Journal of Applied Quantitative Methods
- Journal of Physics: Conference Series
- Living Reviews in Relativity
- New Journal of Physics
- Nonlinear Processes in Geophysics
- Physical Review D (2004-Present)
- Physical Review Letters (2004-Present)

Life Science

Biology

- Biodiversity Informatics
- Biomicrofluidics
- Biogeosciences
- Bioinformation
- BMC Biology
- International Journal of Biological Sciences
- PLoS Biology
- Quarterly Review of Biology
- Research Journal of Biological Sciences
- Systematic Biology

Biological Origins

- Evolution
- Integrative and Comparative Biology
- Journal of Molecular Evolution
- Molecular Biology and Evolution
- Origins of Life and Evolution of Biospheres

Botany

- American Journal of Botany
- Botanical Review
- Ethnobotany Research and Applications
- Systematic Botany
- Vulpia

Cellular and Molecular Biology

- BMC Cell Biology
- Cell
- Cell & Chromosome
- International Microbiology
- Journal of Cell and Molecular Biology
- Journal of RNAi and Gene Silencing
- Microbiology and Molecular Biology Reviews
- Nucleic Acids Research (NAR)
- Stem Cell Reviews

Ecology

- Journal of Wildlife Management

Epidemiology

- Antimicrobial Agents and Chemotherapy
- Comparative Parasitology
- Journal of Parasitology

Genetics

- American Journal of Human Genetics
- Genome Research
- Genomics, Society and Policy
- Journal of Applied Genetics

- Journal of Genetics
- Journal of Heredity
- Journal of Molecular and Genetic Medicine

Zoology

- American Zoologist
- Annals of the Entomological Society of America
- Contributions to Zoology
- Copeia
- Herpetologica
- Journal of Herpetology
- Journal of Insect Science
- Journal of Mammalogy

Earth Science

- Current Research in Earth Sciences

Atmospheric Sciences

- Journal of Applied Meteorology and Climatology
- Journal of the Atmospheric Sciences
- Journal of Climate
- Monthly Weather Review

Geology

- Chemical Geology
- Geochimicia et Cosmochimia Acta
- Geological Society of America Bulletin
- Geology
- Journal of Geology
- Journal of Sedimentary Research
- Rocks and Minerals

Sedimentology

Oceanography

Journal of Oceanography

Paleontology

Journal of Paleontology

Journal of Vertebrate Paleontology

Paleobiology

General Science

Nature

Proceedings of the National Academy of Sciences

Science

Scientific American

Education

General Education

Journal of Education

Journal of Higher Education

New Testament Studies

Studies in Philosophy and Education

Science Education

Advances in Physiology Education

The American Biology Teacher

Astronomy Education Review

Bulletin of the American Museum of Natural History

CBE—Life Sciences Education

Chemistry Education: Research and Practice

Columbia Undergraduate Science Journal

- The Electronic Journal of Science Education
- Evolution: Education and Outreach
- EXCLI Journal
- Journal of College Science Teaching
- Journal of Environmental Education
- Journal of Science Education and Technology
- Journal of Science Teacher Education
- Philosophy of Science
- Science Scope
- The Science Teacher

Educational Research

- Educational Measurement: Issues and Practice
- Journal of Educational Research
- Journal of Educational Measurement
- Journal of Modern Applied Statistical Methods
- Journal of Experimental Education
- Journal of Research in Science Teaching
- Journal of Research of the National Institute of Standards and Technology
- Journal of Statistics Education
- Statistics Education Research Journal

• Journals by Title

- Advances in Physiology Education
- The American Biology Teacher
- American Journal of Botany
- American Journal of Human Genetics
- American Zoologist
- Annals of the Entomological Society of America
- Antimicrobial Agents and Chemotherapy
- Astronomy Education Review
- Biodiversity Informatics
- Biomicrofluidics
- Biogeosciences
- Bioinformation
- BMC Biology
- BMC Cell Biology
- Botanical Review
- Bulletin of the American Museum of Natural History
- CBE—Life Sciences Education
- Cell
- Cell & Chromosome
- Chemical Geology
- Chemistry Education: Research and Practice
- Chinese Journal of Astronomy and Astrophysics
- Classical and Quantum Gravity
- Columbia Undergraduate Science Journal
- Comparative Parasitology

- Contributions to Zoology
- Copeia
- Current Research in Earth Sciences
- Earth and Planetary Science Letters
- Educational Measurement: Issues and Practice
- The Electronic Journal of Science Education
- Ethnobotany Research and Applications
- Evolution
- Evolution: Education and Outreach
- EXCLI Journal
- General Relativity and Gravitation
- Genome Research
- Geochimicia et Cosmochimia Acta
- Geological Society of America Bulletin
- Geology
- Genomics, Society and Policy
- Herpetologica
- Integrative and Comparative Biology
- International Journal of Biological Sciences
- International Microbiology
- Journal of Applied Genetics
- Journal of Applied Meteorology and Climatology
- Journal of Applied Quantitative Methods
- Journal of the Atmospheric Sciences
- Journal of Cell and Molecular Biology
- Journal of Climate
- Journal of College Science Teaching

- Journal of Education
- Journal of Educational Measurement
- Journal of Educational Research
- Journal of Environmental Education
- Journal of Experimental Education
- Journal of Genetics
- Journal of Geology
- Journal of Heredity
- Journal of Herpetology
- Journal of Higher Education
- Journal of Insect Science
- Journal of Mammalogy
- Journal of Modern Applied Statistical Methods
- Journal of Molecular and Genetic Medicine
- Journal of Molecular Evolution
- Journal of Paleontology
- Journal of Parasitology
- Journal of Oceanography
- Journal of Physics: Conference Series
- Journal of Research in Science Teaching
- Journal of Research of the National Institute of Standards and Technology
- Journal of RNAi and Gene Silencing
- Journal of Science Education and Technology
- Journal of Science Teacher Education
- Journal of Sedimentary Research
- Journal of Statistics Education
- Journal of Vertebrate Paleontology

- Journal of Wildlife Management
- Living Reviews in Relativity
- Living Reviews in Solar Physics
- Microbiology and Molecular Biology Reviews
- Molecular Biology and Evolution
- Molecular Systems Biology
- Monthly Weather Review
- Nature
- New Journal of Physics
- New Testament Studies
- Nonlinear Processes in Geophysics
- Nucleic Acids Research (NAR)
- Origins of Life and Evolution of Biospheres
- Paleobiology
- Philosophy of Science
- Physical Review D (2004-present)
- Physical Review Letters (2004-present)
- PLoS Biology
- Proceedings of the National Academy of Sciences
- Quarterly Review of Biology
- Research Journal of Biological Sciences
- Rocks and Minerals (2005-2007 only, not for technical info)
- Sedimentology
- Science
- Scientific American
- Science Scope
- The Science Teacher

- Statistics Education Research Journal
- Stem Cell Reviews
- Studies in Philosophy and Education
- Systematic Biology
- Systematic Botany
- Vulpia

Appendix O

Letter of Agreement for Library Staffing and Facsimile of the ICRGS Online Library Tutorial

The information in this Appendix contains a copy of the Letter of Agreement from the Dean of Libraries at Southwestern Baptist Theological Seminary assuring the ICRGS students of qualified Liberian services until a qualified Librarian can be recruited and hired at the ICRGS.

This Appendix also contains a facsimile of the online library tutorial provide for the registered student.

SOUTHWESTERN
BAPTIST THEOLOGICAL SEMINARY

February 28, 2008

Dr. Henry M. Morris, III
President
The Institute for Creation Research
1806 Royal Lane
Dallas, Texas 75229

Dear Dr. Morris,

Thank you for conferring with Dr. Robert L. Phillips, associate dean of Libraries, and me this afternoon. It was a delight to visit with your staff and you concerning the information needs of your institute.

Pursuant to your request and upon assessment of your information needs, Dr. Phillips and I agree to enter into contract with your academic institution, The Institute for Creation Research, in order to help manage your library services program for your students, faculty, and administration. Until the ICR can appoint an information specialist with an accredited Master of Library Science degree, Dr. Phillips and I will serve as your library staff for the remainder of this academic year (through May 31, 2008).

We look forward to providing library services to your institution, which includes responding to reference queries, developing online library tutorials, assisting in collection development, and advising on the use of library technology for research and writing.

Thank you for this opportunity to serve the ICR in this manner.

Sincerely,

signed for C Berry Driver
C. Berry Driver, Jr.

bw

C. BERRY DRIVER, JR., M.S.L.S., PH.D.
DEAN OF LIBRARIES

Post Office Box 22490 | Fort Worth, TX 76122-0490 | 817.923.1921, ext. 2770 | FAX 817.921.8765 | bdriver@swbts.edu | www.swbts.edu

Overview

Welcome to the ICRGS Online Library

To begin, view the **Tutorial** and complete the setup instructions so that you can access all the journals.

Once setup is complete, you can access the various Online Journals by **Topic** or by **Title**.

Be sure to complete the Tutorial, so that all the journals in the library will be accessible.

Tutorial

Tutorial for Using ICRGS Online Library

Note: You must follow the setup instructions below to access all the online journals in our collection.

Many of the online journals are open to the world and can be accessed by clicking on their name in the various Online Journals lists. Those journals are indicated with this icon: These open journals can be accessed immediately by clicking on the name of the journal.

Some of the journals are locked to the general public. Table of contents and abstracts may be available to everyone, but to access the full text of the article (generally in PDF or HTML format), a key is needed.

The ICRGS Online Library has two types of keys for opening journals.

There is a set of unique Keys for Locked Journals. These are sets of username and password combinations. Locked Journals are indicated with this icon: Clicking on the name of a Locked Journal will display the username and password for that journal, along with a link to the login page for that specific journal.

The Firefox Switch Proxy Key is like a master key that can open most of the journals, which are indicated with this icon: The Firefox Switch Proxy Key requires an initial setup (see below) and must be turned on and off (also described below).

Firefox Switch Proxy Key Setup

Here is how to setup the Firefox Switch Proxy Key on your Windows computer.

1. Install the Firefox web browser by going to Firefox.com and following the instructions for download and installation.

2. Install the Switch Proxy Tool by opening the Firefox browser and going to http://addons.mozilla.org/en-US/firefox/addon/125

- Click the "Install Now" button
- In the popup, click "Install Now"
- When the installation has finished, close all Firefox windows and then reopen Firefox

3. Configure Switch Proxy.

- Select View->Toolbars->Switch Proxy Toolbar. When checked, there will be a toolbar displayed labeled "Proxy:".
- On the Switch Proxy Toolbar, Select "Add".
- Set the values to "Standard", then click "Next".
- Set the Proxy Label to "Firefox Switch Proxy Key".
- Set the HTTP Proxy to "p.icr.org".
- Set the Port to 81.
- Select OK.

Turning On and Off the Firefox Switch Proxy Key

To turn **on** the Firefox Switch Proxy Key:

1. Open the Firefox browser on your windows computer
2. If you don't see the "Proxy" toolbar, select "View->Toolbars" and select "Switch Proxy Toolbar".
3. By default, the proxy is set to "None". Click on the pull down menu and select "Firefox Switch Proxy Key".
4. Click "Apply".
5. Go to the various lists of Online Journals and select only those journals with this icon:

To turn **off** the Firefox Switch Proxy Key:

1. Click on the pull down menu that is set to "Firefox Switch Proxy Key" and select "None".
2. Click "Apply".

Important

When the Firefox Switch Proxy Key is applied, you will be only able to access the de.icr.edu website and the journals that require the key. Any other journal or website will display an error.

- If you get an error message in your browser when accessing other websites, select Proxy: "None" and click "Apply" on the Switch Proxy Toolbar.
- If you don't see the Switch Proxy toolbar, select "View->Toolbars" and select "Switch Proxy Toolbar".

You must use the Firefox browser to access those journals that require the Firefox Switch Proxy Key. Internet Explorer, Safari, Opera or Netscape Navigator will not work with this key.

Accessing Journals

Open Journals can be accessed by clicking on the name of the journal. Be sure the Switch Proxy toolbar is set to "None" and "Apply" has been clicked.

Locked Journals can be access by clicking on the name of the journal. The username and password for that journal will be displayed, along with a link to the login page for that specific journal. Be sure the Switch Proxy toolbar is set to "None" and "Apply" has been clicked.

Firefox Switch Proxy Key Journals can be accessed by clicking on the name of the journal. Be sure the Switch Proxy toolbar is set to "Firefox Switch Proxy Key" and "Apply" has been clicked (see setup above).

Additional Help

If you require technical support getting the Firefox Switch Proxy Key setup, please contact grad.support@icr.edu for assistance. Be sure to set up your Firefox Switch Proxy Key at the beginning of the semester.

Help

ICRGS Online Library Assistance

Frequently Asked Questions:

Q: Are there any restrictions in what I can copy and paste from these journals?

A. Yes. The journals in the online library and materials used in connection with the Masters in Science Education degree program are subject to copyright protection. Please see the Copyright and Authorized Uses for details.

Q. What do the icons mean in front of each journal title?

A. The icons indicate if the journal requires a key to access it, and if it does, the type of key you will need.

Open Journals can be accessed by clicking on the name of the journal. Be sure the Switch Proxy toolbar is set to "None" and "Apply" has been clicked.

Locked Journals can be access by clicking on the name of the journal. The username and password for that journal will be displayed, along with a link to the login page for that specific journal. Be sure the Switch Proxy toolbar is set to "None" and "Apply" has been clicked.

Firefox Switch Proxy Key Journals can be accessed by clicking on the name of the journal. Be sure the Switch Proxy toolbar is set to "Firefox Switch Proxy Key" and "Apply" has been clicked (see the **Tutorial** for setup instructions).

Q: What if I have problems accessing journals?

A: If you have problems with accessing journals, ICRGS technical support is available through a toll-free number (800-337-0375) or email grad.support@icr.edu. While you are responsible for your own hardware, software, and Internet connection, ICRGS technical support may provide assistance to help you better understand the issue.

If you require technical support getting the Firefox Switch Proxy Key setup, please contact ICRGS technical support for assistance. Be sure to set up your Firefox Switch Proxy Key at the beginning of the semester.

Q: When is technical support available?

A. Your request for support will be responded to within 24 hours after receipt during ICRGS office hours (9AM to 5PM Central, Monday through Friday and excluding holidays). You may also contact your instructor for any questions that you may have.

• Open Journals

Many of the online journals are open to the world and can be accessed by clicking on their name in the various Online Journals lists. Those journals are indicated with this icon: These open journals can be accessed immediately by clicking on the name of the journal.

Be sure the Switch Proxy toolbar is set to "None" and "Apply" has been clicked.

• Locked Journal Keys

There is a set of unique Keys for Locked Journals. These are sets of username and password combinations. Locked Journals are indicated with this icon: 🔒 Clicking on the name of a Locked Journal will display the username and password for that journal, along with a link to the login page for that specific journal.

Be sure the Switch Proxy toolbar is set to "None" and "Apply" has been clicked.

• Firefox Switch Proxy Key

The Firefox Switch Proxy Key is like a master key that can open most of the journals, which are indicated with this icon:

The Firefox Switch Proxy Key requires an initial setup and must be turned on and off. For details, see the **Tutorial**.

Be sure the Switch Proxy toolbar is set to "Firefox Switch Proxy Key" and "Apply" has been clicked.

• Copyright and Authorized Uses

Q: What am I allowed to do with the articles I want to use?

A: As an ICRGS student, you are allowed to read, download, and make a print copy of each article you want to use. For journal articles with a login or that use the switch proxy, you may make only one print copy. If you plan to incorporate an article's information into your own research paper, you must properly cite to the bibliographic information of the article (see below under citing an article).

Q: How do I properly cite to an article?

A: Use the APA Guidelines. These can be found on the bottom of the main page of your ICRGS course.

Q: What am I prohibited from doing with journal articles?

A: You may not make multiple copies (print or electronic) of journal articles that require a login or switch proxy and distribute them.

- You may not share your username and password with anyone, nor provide access to any of the secure journals for non-ICRGS students.
- You may not sell or license any journal article to anyone.
- You may not alter authors' names or publishers' copyright notice on any journal article.
- You may not post portions of secure journal articles on your own website or on any other Internet website.
- You may not take credit for information you used from any journal article.

Be very careful to show respect and courtesy due to the original author by making it clear what is and what is not your own work; this includes proper usage of citation-identified quotation marks (or citation-identified block-quoting format), to accurately delineate quoted material. Of course, it is the substance of your citation, giving credit where credit is due, that counts most.

If you have questions ask your instructor for clarification before you turn in an assignment.

Appendix P

Libraries Available for Online Students

The information in this Appendix contains a table of those colleges whose libraries are available for the ICRGS online students and a specific data sheet on each college.

APPENDIX P

College Libraries Available for Online Students

State	College City-State	College	# of Active Students	Avg Miles
Alabama	Birmingham, Alabama	University of Alabama at Birmingham	1	91
California	Fresno, California	California State University-Fresno	1	81
	Hayward, California	California State University-Hayward	2	21
	Irvine, California	University of California-Irvine	1	17
	San Bernardino, California	California State University-San Bernardino	1	0
Connecticut	Storrs, Connecticut	University of Connecticut	1	36
Florida	Miami, Florida	Florida International University	3	20
	Orlando, Florida	University of Central Florida	1	61
	Tampa, Florida	University of South Florida	2	38
Georgia	Statesboro, Georgia	Georgia Southern University	1	10
Idaho	Boise, Idaho	Boise State University	1	12
	Moscow, Idaho	University of Idaho	1	128
Iowa	Iowa City, Iowa	University of Iowa	2	59
Lousiana	New Orleans, Lousiana	University of New Orleans	1	41
Michigan	Detroit, Michigan	Wayne State University	2	25
Minnesota	Mankato, Minnesota	Minnesota State University Mankato	1	41
Missouri	Kansas City, Missouri	University of Missouri - Kansas City	1	0
	Springfield, Missouri	Southwest Missouri State University	1	19
Montana	Bozeman, Montana	Montana State University - Bozeman	2	141
New Mexico	Albuquerque, New Mexico	University of New Mexico Main Campus	1	74
	Las Cruces, New Mexico	New Mexico State University Main Campus	3	139
New York	Albany, New York	State University of New York at Albany	1	0
North Carolina	Boone, North Carolina	Appalachian State University	1	38
	Charlotte, North Carolina	University of North Carolina at Charlotte	1	46
Ohio	Cincinnati, Ohio	University of Cincinnati Main Campus	1	23
	Cleveland, Ohio	Cleveland State University	1	39
	Columbus, Ohio	Ohio State University Main Campus, The	1	44
Oklahoma	Norman, Oklahoma	University of Oklahoma Norman Campus	2	70
Pennsylvania	Philadelphia, Pennsylvania	Temple University	1	17
South Carolina	Charleston, South Carolina	College of Charleston	1	97
	Columbia, South Carolina	University of South Carolina - Columbia	1	0
Tennessee	Johnson City, Tennessee	East Tennessee State University	1	8
Texas	Arlington, Texas	University of Texas at Arlington	4	31
	Houston, Texas	University of Houston	1	63
Virginia	Charlottesville, Virginia	University of Virginia	1	75
	Fairfax, Virginia	George Mason University	1	45
Washington	Bellingham, Washington	Western Washington University	1	52
Wisconsin	Madison, Wisconsin	University of Wisconsin-Madison	1	65
	Milwaukee, Wisconsin	University of Wisconsin-Milwaukee	1	57
# of Colleges	**39**	**Totals and Average**	**52**	**47**

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Alabama** *City-State* **Birmingham, Alabama**

College **University of Alabama at Birmingham**

Address **UAB Station**

Birmingham, AL 35294

Telephone **(205) 934-401** *Web Site* **uab.edu**

Regional Accreditation **yes** *Enrollment* **15274** *Highest Degree* **6**

Contact Person **Jerry W. Stephens,** *Title* **Librarian and Director**

Contact Telephone **(205) 934-6360**

Library Web Site **mhsl.uab.edu** *Contact Email* **jerry@beowulf.mhsl.uab.edu**

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
James Thomas	Montgomery	91

LIBRARY INFORMATION

Authorization for Facility Use **Friend of the Library**

Annual Fee **$50**

Hyperlink to Documentation **https://www.mhsl.uab.edu/info/friends.html**

Portion or all of web page entry

Friends of Sterne Library
All great universities depend heavily upon their friends for financial support and gifts of materials. The Friends of Sterne Library, organized in 1977, is the support group that has enabled Sterne Library to develop its collections in exciting and significant ways. Through the generous contributions of the friends, Sterne Library has acquired outstanding collections in Art History, Ethics, Business, History, Women's Studies, Chemistry, and Sociology. Questions regarding the Friends of Sterne Library may be addressed to the circulation staff in person at the Circulation Desk on the first floor or by telephone at 934-4338.
Purpose
Gifts
Membership

Purpose
To encourage gifts to support the development of outstanding collections.
To promote the importance of Sterne Library to the University and the community.
To contribute to the growth and enrichment of Sterne Library, UAB, and the community.
Gifts
Gifts to the book fund are essential for the library to continue to grow. Gifts may be designated

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **California** *City-State* **Fresno, California**

College **California State University-Fresno**

Address **5241 N. Maple**

Fresno, CA 93740-0048

Telephone **(209) 278-424** *Web Site* csufresno.edu

Regional Accreditation **yes** *Enrollment* **17213** *Highest Degree* **5**

Contact Person **Peter McDonald** *Title* **Dean, Library Services**

Contact Telephone **559-278-2403**

Library Web Site **csufresno.edu/library** *Contact Email* pmcdonald@csufresno.edu

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
William T. Washington	Turlock	81

LIBRARY INFORMATION

Authorization for Facility Use **Community Borrower**

Annual Fee **$50**

Hyperlink to Documentation http://www.csufresno.edu/library/lib_info/policies.shtml

Portion or all of web page entry

HENRY MADDEN LIBRARY

COMMUNITY BORROWERS
Your library-issued Community Borrower card and a picture ID are required for all transactions.

LOAN PERIODS
• 4 weeks for most books, scores, curriculum/juvenile items and government documents
• 4 hours for Current Periodicals
• 7 days for Music & Media DVDs, audio cassettes, compact discs, videos and storage periodicals
Music & Media headphones are due back before the close of business each day.
RENEWALS AND RECALLS
• You may renew books online or in person at the Circulation Desk, 1st Floor. Overdue items must be renewed in person at the Circulation Desk . Recalled items may not be renewed.
• Books recalled by another patron must be returned within 10 days. You will be notified of the recall at your e-mail address, if applicable.
MAXIMUM NUMBER OF ITEMS
6 total items on your record at one time
6 outstanding requests

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **California** *City-State* **Hayward, California**

College **California State University-Hayward**

Address **25800 Carlos Bee Boulevard**
Hayward, CA 94542-3001

Telephone **(510) 881-300** *Web Site* sci.csueastbay.edu

Regional Accreditation **yes** *Enrollment* **12683** *Highest Degree* **5**

Contact Person **Myoung-ja Lee Kwo** *Title* **Library Administration - University Libr**

Contact Telephone **(510) 885-3664**

Library Web Site library.csueastbay.edu/?a=1&b=45 *Contact Email* myoung-ja.kwon@csueastbay.edu

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **2** *SumOfAll Students* **3**

Student Names, Cities, Miles from College

Name	CITY	Miles
Sarah M. Walsh	Concord	34
Karen Lee Bedinger	Walnut Creek	26

LIBRARY INFORMATION

Authorization for Facility Use **Community Borrower**

Annual Fee **$50**

Hyperlink to Documentation http://www.library.csueastbay.edu/policies/circ_community.htm

Portion or all of web page entry

Circulation Information for Community Borrowers

The CSUEB Library's Community Borrowers Program extends privileges to residents of Alameda and Contra Costa Counties for annual fee of $50 . Simply bring a valid photo ID to the Circulation Desk to be processed for Library privileges. Payments can be made in cash, by check made out to the CSUEB Annual Library Fund or by money order.
Rules for Community Borrowers
Your library card is non-transferable.
A maximum of 10 items may be checked out at any one time.
The loan period is 3 weeks with the option to renew materials up to 3 times if there are no recalls/holds pending. You may renew online, in-person or by phone (510 885-3612).
There are no LINK+ and Interlibrary Loan privileges.
Access to subscription online databases is available only in the Library.
All other Library rules also apply to community borrowers.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **California** *City-State* **Irvine, California**

College **University of California-Irvine**

Address **Campus Drive**

Irvine, CA 92697

Telephone **(714) 824-501** *Web Site* uci.edu

Regional Accreditation **yes** *Enrollment* **17221** *Highest Degree* **6**

Contact Person **Gerald Munoff** *Title* **University Librarian**

Contact Telephone **(949) 824-5213**

Library Web Site lib.uci.edu/libraries/langson.html *Contact Email* %20gmunoff@lib.uci.edu

Date Contacted **1/10/2008** *Arrangement Verified* **2/8/2008**

SumOfActive Students **1** *SumOfAll Students* **2**

Student Names, Cities, Miles from College

Name	CITY	Miles
Darrin Edward Smith	Rancho Santa Margarita	20

LIBRARY INFORMATION

Authorization for Facility Use **holder of fee-card for non-UC affiliate**

Annual Fee **$80**

Hyperlink to Documentation http://www.lib.uci.edu/services/cards/cards.html

Portion or all of web page entry

Fee-cards for non-UC affiliates
Users who are not affiliated with the University of California or who do not qualify for courtesy cards may purchase library cards at one of the loan desks.
A 6-month card is available for a fee of $24 to currently enrolled California State University, California community college, other UC extension students, and UC graduate students who have paid filing fees or are on an official leave of absence. Proof of current enrollment, paid filing fees or leave of absence is required.
A 12-month card is available for a fee of $48 to currently enrolled California State University, California community college, other UC extension students, and UC graduate students who have paid filing fees or are on an official leave of absence. Proof of current enrollment, paid filing fees or leave of absence is required.
A 12-month card is available for a fee of $75 to seniors, 62 years of age or older
A 12-month card is available for a fee of $80 to all other community users
For more information about groups eligible for UCI library cards, user types, and fees see the Lending Policy.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **California** *City-State* **San Bernardino, California**

College **California State University-San Bernardino**

Address **5500 University Parkway**
San Bernardino, CA 92407-2393

Telephone **(909) 880-500** *Web Site* csusb.edu

Regional Accreditation **yes** *Enrollment* **12153** *Highest Degree* **5**

Contact Person **Cesar Caballero** *Title* **University Librarian Dean**

Contact Telephone **(909) 537-5102**

Library Web Site **lib.csusb.edu** *Contact Email* ccaballe@csusb.edu

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
Mary Rose Mayo	San Bernardino	0

LIBRARY INFORMATION

Authorization for Facility Use **Library Associate**

Annual Fee **$30**

Hyperlink to Documentation http://www.lib.csusb.edu/about/associate.cfm

Portion or all of web page entry

Library Associates
Phone Location Contact
537-5102 PL-2006 Kathleen Rezendes-Herrick
Community members are invited to join the Library Associates to obtain library cards and to support the activities of the library.
Purpose of the Library Associates
To promote the relationship between the University, its library, and the community.
To increase public awareness of the resources and services of the CSUSB Library.
To sponsor cultural programs such as exhibits, lectures and other events.
To provide access to CSUSB library resources for those who would not otherwise be able to make use of the collections.
To provide recognition for the literary activities of members.
To promote growth of the library by seeking and accepting gifts of library materials as well as monetary contributions.
As a member of the CSUSB Library Associates you would be able to make use of the Library, including borrowing of library materials on the same basis - and subject to the same regulations - as CSUSB students, reference assistance, and low cost interlibrary loan service ($5 per request).
When school is in session, the library is open 86 hours per week including five evenings, making

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Connecticut** *City-State* **Storrs, Connecticut**

College **University of Connecticut**

Address

Storrs, CT 06269-0001

Telephone **(860) 486-200** *Web Site* uconn.edu

Regional Accreditation **yes** *Enrollment* **21805** *Highest Degree* **6**

Contact Person **Brinley Franklin** *Title* **Vice Provost for University Libraries**

Contact Telephone **860-486-0497**

Library Web Site **lib.uconn.edu** *Contact Email* brinley.franklin@uconn.edu

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
David Blane Hyslop	New London	36

LIBRARY INFORMATION

Authorization for Facility Use **Community Borrower**

Annual Fee **$50**

Hyperlink to Documentation http://www.lib.uconn.edu/about/services/circulation/CBPolicy.htm

Portion or all of web page entry

Community Borrower Program Circulation Policies
ELIGIBILITY FOR FEE-BASED CARD:
Community Borrowers may borrow from the Storrs and Regional Campus Libraries, for an annual fee, by acquiring a Library-issued white card, or a One Card issued at Wilbur Cross. (The latter may be used for reduced cost photocopying and printing, but costs an additional $5.) Apply in person (Note: for Storrs campus, applications are available only in the Homer Babbidge Library) and present proof of one the following eligibility requirements:
CT Residents, 18 years or older,
Annual Fee: $50/year.
Current members of the UConn Alumni Association,
Annual Fee: $35/year.
Funds generated by these fees are used to partially defray the operating costs of the program. The fee may not be applied against outstanding library charges and is not refundable.
ELIGIBILITY FOR FEE-EXEMPT COMMUNITY BORROWER CARD:
Applicants are eligible for a fee-exempt Community Borrower card if they fall into one of the following categories:
Registered students of the CT State University system or the CT Community/Technical College systems; privileges are granted on a semester-by-semester basis. Proof of registration for the

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Florida** *City-State* **Miami, Florida**

College **Florida International University**

Address **University Park, 11200 SW 8 St.**
Miami, FL 33199-0001

Telephone **(305) 348-200** *Web Site* **fiu.edu**

Regional Accreditation **yes** *Enrollment* **29720** *Highest Degree* **6**

Contact Person **Laura Probst** *Title* **Dean of Libraries**

Contact Telephone **305-348-3133**

Library Web Site **library.fiu.edu** *Contact Email* **laura.probst@fiu.edu**

Date Contacted **1/10/2008** *Arrangement Verified* **1/30/2008**

SumOfActive Students **3** *SumOfAll Students* **3**

Student Names, Cities, Miles from College

Name	CITY	Miles
Jill Marie Whitlock	Fort Lauderdale	31
Gina Dawn Hernandez	Homestead	29
David Harold Wishart	Miami	0

LIBRARY INFORMATION

Authorization for Facility Use **Library Associate**

Annual Fee **$50**

Hyperlink to Documentation **http://library.fiu.edu/Services/LibraryAssociatesMembershipPolicy.aspx**

Portion or all of web page entry

Library Associates Membership Policy
The FIU Libraries invite you to become a FIU Library Associate.
Library Associates have an important role in contributing to the value of the University Libraries in the community. We need people like you to help us stimulate an awareness of the importance of libraries for the future development of the University and the community. Your contribution will help support new library resources and services.
Membership as an Associate is open to all individuals or corporate entities. Associates not affiliated with the University must be at least 18 years of age. The Membership information is listed below.
FIU Alumni, employees or currentlly enrolled students already have library privileges (use your FIU Panther I.D. Card).
Membership Levels & Privileges
Membership forms are available at the Circulation Desk.
Contributing
$50 per year
Check out a maximum of ten (10) items at one time.
Use the Hold and Recall services.
Use Intercampus Loan to borrow materials from the other FIU campus.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Florida** *City-State* **Orlando, Florida**

College **University of Central Florida**

Address **PO Box 25000**
Orlando, FL 32816-0001

Telephone **(407) 823-200** *Web Site* **ucf.edu**

Regional Accreditation **yes** *Enrollment* **27411** *Highest Degree* **6**

Contact Person **Barry B. Baker** *Title* **Director of Libraries**

Contact Telephone **(407) 823-2564**

Library Web Site **library.ucf.edu** *Contact Email* **bbaker@mail.ucf.edu**

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
Pamela Lee Cameron	Ormond Beach	61

LIBRARY INFORMATION

Authorization for Facility Use **Community Patron**

Annual Fee **$60**

Hyperlink to Documentation **http://library.ucf.edu/Circulation/Privileges/NonUCFprivileges.asp**

Portion or all of web page entry

Community Patrons
This is for member of the community or for community members who would like to checkout books from our library. Please bring your photo ID and Cash or Check.

$30 for six month
$60 for 1 year

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Florida** *City-State* **Tampa, Florida**

College **University of South Florida**

Address **4202 Fowler Avenue**
Tampa, FL 33620-9900

Telephone **(813) 974-201** *Web Site* usf.edu/index.asp

Regional Accreditation **yes** *Enrollment* **36278** *Highest Degree* **6**

Contact Person **Derrie Perez** *Title* **Dean, Library System**

Contact Telephone **(813) 974-1642**

Library Web Site **lib.usf.edu** *Contact Email* dperez@lib.usf.edu

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **2** *SumOfAll Students* **2**

Student Names, Cities, Miles from College

Name	CITY	Miles
James Michael Moore	Bradenton	47
Lauren K. Castelao	Odessa	28

LIBRARY INFORMATION

Authorization for Facility Use **Visiting Scholar**

Annual Fee **$0**

Hyperlink to Documentation http://www.lib.usf.edu/public/index.cfm?Pg=VisitingScholars

Portion or all of web page entry

Visiting Scholars
The University of South Florida Libraries supports visiting scholars sponsored by the University. The primary purpose of the Library is to support the teaching, research and scholarly activities of the USF community, however; anyone may visit the USF library to use library resources, including databases, on-site and at no cost.
Access to Collections
The USF libraries have over 1,815,000 volumes, 27,820 serials, 160,000 e-books, 47,250 multi-media and 500 databases available for scholarly research endeavors. Most of the USF Tampa Library collections are housed in open stacks available to library users during regular hours. Remote access to electronic resources such as databases is available with the use of a USF NetID.
Library Hours
Borrowing Privileges and Interlibrary Loan
Individuals who qualify as visiting scholars may apply for borrowing privileges by contacting Merilyn Burke, Associate Director of Access & Media Services, at 813-974-4561 to make appropriate arrangements to acquire a library card and/or library materials via Interlibrary Loan.
Access to Special Collections
USF Libraries collect, preserve, digitize and provide access to significant collections of

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Georgia** *City-State* **Statesboro, Georgia**

College **Georgia Southern University**

Address

Statesboro, GA 30458

Telephone **(912) 681-561** *Web Site* georgiasouthern.edu

Regional Accreditation **yes** *Enrollment* **14312** *Highest Degree* **6**

Contact Person **Bede Mitchell** *Title* **Dean of the Library and University Libra**

Contact Telephone **(912) 681-5115**

Library Web Site **library.georgiasouthern.edu** *Contact Email* wbmitch@georgiasouthern.edu

Date Contacted **1/10/2008** *Arrangement Verified* **1/25/2008**

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
Jeramy W. Anderson	Register	10

LIBRARY INFORMATION

Authorization for Facility Use **member of the community**

Annual Fee **$0**

Hyperlink to Documentation http://library.georgiasouthern.edu/support/friends.html

Portion or all of web page entry

(Community members are allowed to access library materials for no charge, but the University welcomes participation in their Friends of the Library program.)
Friends of the Library Membership Levels
Basic Membership - $25
Quarterly Newsletter
Advanced notification of events
Henderson Library tote bag
Approved December 13, 2002 by Friends of Zach S. Henderson Library Board of Directors
To join, send your check made out to the GSU Foundation, for the level you have chosen, with your name, address, phone number, and e-mail address (if you have one) to:
Henderson Library
Administrative Office
P.O. Box 8074
Statesboro, GA 30460

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State	**Idaho**	*City-State*	**Boise, Idaho**		
College	**Boise State University**				
Address	**1910 University Drive**				
	Boise, ID 83725-0399				
Telephone	**(208) 385-149**	*Web Site*	**boisestate.edu**		
Regional Accreditation	**yes**	*Enrollment*	**15137**	*Highest Degree*	**5**
Contact Person	**Marilyn Moody**	*Title*	**Dean, University Libraries**		
Contact Telephone	**(208) 426-1234**				
Library Web Site	**library.boisestate.edu**	*Contact Email*	**MarilynMoody@boisestate.edu**		
Date Contacted	**1/10/2008**	*Arrangement Verified*			
SumOfActive Students	**1**	*SumOfAll Students*	**1**		

Student Names, Cities, Miles from College

Name	CITY	Miles
Randale Brothers	Meridian	12

LIBRARY INFORMATION

Authorization for Facility Use	**Special Borrower**
Annual Fee	**$0**
Hyperlink to Documentation	**http://library.boisestate.edu/faq/faq/q77.htm**
Portion or all of web page entry	Who other than Boise State University student, staff, and faculty can borrow Library materials? "Special Borrowers" can check out Library materials. Who qualifies as a Special Borrower? Idaho citizens 18 years or older upon presentation of a current Idaho driver's license and proof of current address or a current library card from an Idaho library. Boise State University Alumnus (and members of the Boise State University Alumni Association) Processing normally takes 5 to 7 days; the card will be mailed to verify address. Replacement cards are $10.00. Restrictions: At the time of applying, 2 books/items may be checked out. When the card is received, only 10 books/items maximum may be out at any given time. If any fines are incurred, patron must pay total amount before checking out or renewing materials. No RBR (Reserve Book Room) materials may be checked out. No periodicals may be checked out. No Interlibrary Loan services available. No off-campus access to licensed databases via the Library's web site. Databases denoted as "funded by LiLI" can be obtained through local public libraries or by going to www.lili.org. For further circulation detail check the Circulation Department's Home Page.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State	**Idaho**	*City-State*	**Moscow, Idaho**		
College	**University of Idaho**				
Address	**709 South Deakin Avenue**				
	Moscow, ID 83843				
Telephone	**(208) 885-611**	*Web Site*	**uidaho.edu**		
Regional Accreditation	**yes**	*Enrollment*	**11133**	*Highest Degree*	**6**
Contact Person	**Lynn Baird**	*Title*	**Dean**		
Contact Telephone	**(208) 885-6713**				
Library Web Site	**lib.uidaho.edu**	*Contact Email*	**lbaird@uidaho.edu**		
Date Contacted	**1/10/2008**	*Arrangement Verified*			
SumOfActive Students	**1**	*SumOfAll Students*	**1**		

Student Names, Cities, Miles from College

Name	CITY	Miles
Dennis Wilson	Oldtown	128

LIBRARY INFORMATION

Authorization for Facility Use	**resident of Idaho**
Annual Fee	**$0**
Hyperlink to Documentation	**http://www.lib.uidaho.edu/access_services/lib_card.shtml**
Portion or all of web page entry	Getting a Library Card If you have a University of Idaho Vandal ID card, this is your Library ID number, too, and you should register your 14-digit barcode with the library. Register in person at the Library's Circulation Desk or call 208-885-6559. For non-Moscow campus students, fill out this online form. For distance education and Independent Study students, and off campus faculty and staff: If you don't have a Vandal ID card, you should apply for a Library ID number by filling out this online form. Allow 24 hours (Monday through Friday) for the process to be completed. If you do not have an affiliation with the UI, you will not be able to access most databases. Using your Library ID number to access databases Most databases are restricted to UI students and staff. To verify your status, you will be prompted to enter your last name and 14-digit barcode number that is located at the bottom of your Vandal Card (it is circled in red in the picture above) or library card. Your student ID number will not work. Guest privileges are available to: Members of WIN may use their home library's card. Idaho residents with photo ID

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Iowa** *City-State* **Iowa City, Iowa**

College **University of Iowa**

Address

Iowa City, IA 52242-0001

Telephone **(319) 335-350** *Web Site* **uiowa.edu**

Regional Accreditation **yes** *Enrollment* **28447** *Highest Degree* **6**

Contact Person **Nancy L. Baker** *Title* **University Librarian**

Contact Telephone **(319) 335-5867**

Library Web Site **lib.uiowa.edu** *Contact Email* **http://www.lib.uiowa.edu/admin/bak**

Date Contacted **1/10/2008** *Arrangement Verified* **2/27/2008**

SumOfActive Students **2** *SumOfAll Students* **4**

Student Names, Cities, Miles from College

Name	CITY	Miles
Timothy John Iverson	Dubuque	84
Brandon Lee Fritz	Parnell	28

LIBRARY INFORMATION

Authorization for Facility Use **Borrower's Permit holder**

Annual Fee **$0**

Hyperlink to Documentation **http://www.lib.uiowa.edu/circ/libcards.html**

Portion or all of web page entry

Library Cards
One of 4 types of identification is required to check out material from the UI Libraries. All must be currently valid.
University Issued Faculty, Staff, and Student Cards:
A University of Iowa ID Card.
A University of Iowa Hospitals & Clinics (UIHC) Badge.
Library Issued Cards: (see explanation below)
A Borrower's Permit
A Proxy Card
. . . . . .
Borrower's Permits: Users not affiliated with the University may, under some circumstances, be permitted to check materials out of the Libraries. Application for a borrower's permit may be made at Main Library Circulation Services or any university library. A "special program" or “independent scholar” card guarantees issuance of a borrower's permit.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Lousiana** *City-State* **New Orleans, Lousiana**

College **University of New Orleans**

Address **Lake Front**

New Orleans, LA 70148-0001

Telephone **(504) 280-600** *Web Site* uno.edu

Regional Accreditation **yes** *Enrollment* **15665** *Highest Degree* **6**

Contact Person **Sharon Mader** *Title* **Dean**

Contact Telephone **(504) 280-6556**

Library Web Site **library.uno.edu** *Contact Email* smader@uno.edu

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
Sidney Barrow Galloway, Jr.	Covington	41

LIBRARY INFORMATION

Authorization for Facility Use **Friend of the UNO Library**

Annual Fee **$0**

Hyperlink to Documentation http://library.uno.edu/about/policy/who.html

Portion or all of web page entry

Friends of the UNO library (for LA residents) should apply for membership through Library Administration during regular business hours, 8:00 – 4:30, Monday through Friday, 280.6556. Friends can check out three (3) books for a three week period with one renewal. A white, membership card with the full last name, first name initial and middle name initial, all in caps will be issued for an annual date due every year in October. Troy University members can obtain borrowing privileges by applying for a Friends membership and filling out a white, Special Borrower's card. They will be able to check out three (3) books for a three week period with one renewal which allows privileges for one year from the date of application.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Michigan** *City-State* **Detroit, Michigan**

College **Wayne State University**

Address

Detroit, MI 48202-4095

Telephone **(313) 577-242** *Web Site* wayne.edu

Regional Accreditation **yes** *Enrollment* **31185** *Highest Degree* **6**

Contact Person **Sandra Yee** *Title* **Dean**

Contact Telephone **(313) 577-4020**

Library Web Site **lib.wayne.edu** *Contact Email* aj0533@wayne.edu

Date Contacted **1/10/2008** *Arrangement Verified* **1/25/2008**

SumOfActive Students **2** *SumOfAll Students* **2**

Student Names, Cities, Miles from College

Name	CITY	Miles
Carol Watson-Himm	Livonia	21
Eric William Pieper	Rochester Hills	28

LIBRARY INFORMATION

Authorization for Facility Use **Guest Borrower**

Annual Fee **$50**

Hyperlink to Documentation http://www.lib.wayne.edu/geninfo/using_libraries/borrowing_guest.php

Portion or all of web page entry

Guest Borrowing
Fee Based Borrowing Services:
For an annual fee of $50 community members receive the following privileges:
Check out a maximum of 10 books at one time. (DVDs, Videos, and all Reserves material will be available for in-building use ONLY.)
28 day loan, no renewal
Request access to our Storage collections, and check out materials that circulate
Access to electronic resources and databases from on campus
Access to Community Access Terminals available in each library. (Time limits are imposed, and certain times of the year access is limited.)
The following services will incur additional fees:
Interlibrary loan
Renting the Community Room, or Bernath Auditorium for educational or cultural events. (Restrictions apply)
To apply for a Library Card: At any circulation desk, provide the $50 payment, (Cash, or check accepted at all libraries. The Undergraduate Library, Medical Library and Purdy/Kresge Library also accept charge cards), and show a picture ID with name, and current address.
Standard Overdue fees apply. When overdue fines or replacement costs accrue to over $50, guest

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Minnesota** *City-State* **Mankato, Minnesota**

College **Minnesota State University Mankato**

Address **South Road and Ellis Avenue**
Mankato, MN 56002-8400

Telephone **(507) 389-246** *Web Site* **mnsu.edu**

Regional Accreditation **yes** *Enrollment* **12695** *Highest Degree* **5**

Contact Person **Joan Roca** *Title* **Dean of Library Services**

Contact Telephone **(507) 389-5953**

Library Web Site **lib.mnsu.edu** *Contact Email* **joan.roca@mnsu.edu**

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
Carl Craig Campbell	Owatonna	41

LIBRARY INFORMATION

Authorization for Facility Use **Public Library Card Holder**

Annual Fee **$0**

Hyperlink to Documentation **http://lib.mnsu.edu/services/pubservices.html**

Portion or all of web page entry

Circulation Services
Minnesota residents who have a current library card from their local public library can receive MSU borrowing privileges by presenting the card at the circulation desk. A staff member will add an MSU barcode to the public library card. Each academic term thereafter, the user's MSU privileges can be extended as long as the public library card remains current. Any non-affiliated user under age 18 must have a form signed by a parent or guardian before MSU borrowing privileges are granted.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Missouri** *City-State* **Kansas City, Missouri**

College **University of Missouri - Kansas City**

Address **5100 Rockhill Road**
Kansas City, MO 64110-2499

Telephone **(816) 235-100** *Web Site* **umkc.edu**

Regional Accreditation **yes** *Enrollment* **10298** *Highest Degree* **6**

Contact Person **Sharon L. Bostick** *Title* **Dean of Libraries**

Contact Telephone **(816) 235-1531**

Library Web Site **library.umkc.edu** *Contact Email* **Sharon L. Bostick**

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
Tricia Denice Hanska	Kansas City	0

LIBRARY INFORMATION

Authorization for Facility Use **Friend of the Library**

Annual Fee **$50**

Hyperlink to Documentation **http://library.umkc.edu/gen-info/friends.htm**

Portion or all of web page entry

Programs and Privileges for FOL Members
Members are notified and invited to all Friends events, including the Annual All-Member Meeting and the Used Book Sales.
Members may request book-borrowing privileges at the Miller Nichols Library for up to 5 books at a time. (Not all books circulate.) Otherwise, to the extent allowed by the IRS, your annual Friends membership may be all or partially deductible. For more information about annual membership categories, dues, and arrangements, please call (816-235-1531).
Volunteers are always welcome to assist with pricing and sorting items for the used book sales or to offer services in areas like the Marr Sound Archives, Special Collections or Access Services. Jan Beets chairs the Book Sale Committee.
Members receive the Friends' newsletter The Bookmark and are invited to submit articles or story ideas. Friends also receive a University-wide publication, Perspectives.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Missouri** *City-State* **Springfield, Missouri**

College **Southwest Missouri State University**

Address **901 S. National**
Springfield, MO 65804-0087

Telephone **(417) 836-500** *Web Site* **missouristate.edu**

Regional Accreditation **yes** *Enrollment* **16364** *Highest Degree* **5**

Contact Person **Karen Horny** *Title* **Dean of Library Services - Professor**

Contact Telephone **(417) 836-4525**

Library Web Site **library.missouristate.edu** *Contact Email* **KarenHorny@MissouriState.edu**

Date Contacted **1/10/2008** *Arrangement Verified* **1/25/2008**

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
Margaret A. Hesher	Ozark	19

LIBRARY INFORMATION

Authorization for Facility Use **Friend of the Library**

Annual Fee **$25**

Hyperlink to Documentation

Portion or all of web page entry

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Montana** *City-State* **Bozeman, Montana**

College **Montana State University - Bozeman**

Address

Bozeman, MT 59717-2000

Telephone **(406) 994-021** *Web Site* **montana.edu**

Regional Accreditation **yes** *Enrollment* **11611** *Highest Degree* **6**

Contact Person **Tamara Miller** *Title* **Dean of Libraries**

Contact Telephone **(406) 994-6978**

Library Web Site **lib.montana.edu** *Contact Email* **tamaramiller@montana.edu**

Date Contacted **1/10/2008** *Arrangement Verified* **1/21/2008**

SumOfActive Students **2** *SumOfAll Students* **2**

Student Names, Cities, Miles from College

Name	CITY	Miles
Richard Lee Remington	Billings	141
Ted Paul Loomans	Billings	141

LIBRARY INFORMATION

Authorization for Facility Use **Montana resident**

Annual Fee **$0**

Hyperlink to Documentation **http://friendsofmsulibraries.com/**

Portion or all of web page entry

(Friends membership welcomed for $25, but any Montana resident may borrow for no charge)
Friends of MSU Libraries
The Friends of Montana State University Libraries, established in 1994, is a volunteer association whose purpose is to foster awareness of The Libraries while strengthening this invaluable resource for MSU, the city of Bozeman and the state of Montana.
The Friends enrich students' library experience through contributions that develop its collections, environment and programs. These efforts enable quality learning and research for students and faculty, and provide lifelong learning opportunities for all Montanans.
Membership & Benefits
Become a member of the Friends of the Montana State University Libraries today! All Friends members receive a subscription to the Friends of the Libraries semi-annual newsletter and invitations to special events, exhibits, and the annual Friends dinner. Benefits vary with level of annual membership.
President's Associates for The Libraries: $1,000 or more Annually
Friends library card for personal or corporate use, 15 donor bookplates, 2 tickets for annual Friends dinner*
Patron: $500 Annually
Friends library card, 10 donor bookplates, 2 tickets for annual Friends dinner*

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **New Mexico** *City-State* **Albuquerque, New Mexico**

College **University of New Mexico Main Campus**

Address

Albuquerque, NM 87131-0001

Telephone **(505) 277-011** *Web Site* **unm.edu**

Regional Accreditation **yes** *Enrollment* **23617** *Highest Degree* **6**

Contact Person **Martha Bedard** *Title* **Dean of University Libraries**

Contact Telephone **(505) 277-4241**

Library Web Site **unm.edu/libraries.html** *Contact Email* **mbedard@unm.edu**

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
Karen S. Stewart-Thorp	Lamy	74

LIBRARY INFORMATION

Authorization for Facility Use **Community Borrower**

Annual Fee **$35**

Hyperlink to Documentation **http://elibrary.unm.edu/services/circpolicies.php**

Portion or all of web page entry

Community Borrowers
Community Borrower Cards are available to individuals who do not fit the categories listed above. These cards, good for one year, may be purchased at the Circulation Desk of any of the UNM University Libraries branch locations for $35.00. Alumni with proper authorization from the UNM Alumni Office can receive a $10.00 discount on the price of a Community Borrower's Card. The cards enable the holder to borrow materials from the UNM University Libraries, not the Law or Health Sciences Libraries. They do not include Interlibrary Loan borrowing privileges nor do they allow the card holder remote (off campus) access to our electronic resources. Information on in-house use of materials at the Law Library may be obtained by calling 277-6236, and the Health Sciences Center Library at 277-5450.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **New Mexico** *City-State* **Las Cruces, New Mexico**

College **New Mexico State University Main Campus**

Address **Box 30001**

Las Cruces, NM 88003-8001

Telephone **(505) 646-011** *Web Site* **nmsu.edu**

Regional Accreditation **yes** *Enrollment* **14748** *Highest Degree* **6**

Contact Person **Elizabeth A. Titus** *Title* **Dean**

Contact Telephone **(505) 646-1508**

Library Web Site **lib.nmsu.edu/index.shtml** *Contact Email* **etitus@lib.nmsu.edu**

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **3** *SumOfAll Students* **3**

Student Names, Cities, Miles from College

Name	CITY	Miles
Courtney Grant Herrick	Carlsbad	206
Richard J. Nininger	Glenwood	172
Jeanette Lynne Main	Santa Teresa	40

LIBRARY INFORMATION

Authorization for Facility Use **New Mexico Resident**

Annual Fee **$0**

Hyperlink to Documentation **http://lib.nmsu.edu/aboutlib/libfaq.shtml**

Portion or all of web page entry

Who is allowed to use the library?
Any New Mexico resident can check out materials from the NMSU Library. For more information, please contact the Circulation desk at 646-6910 or see our online circulation policies.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **New York** *City-State* **Albany, New York**

College **State University of New York at Albany**

Address **1400 Washington Avenue**
Albany, NY 12222-1000

Telephone **(518) 442-330** *Web Site* albany.edu

Regional Accreditation **yes** *Enrollment* **15973** *Highest Degree* **6**

Contact Person **Frank D'Andraia** *Title* **Library Director**

Contact Telephone **(518) 442-3568**

Library Web Site **library.albany.edu** *Contact Email* fdandraia@uamail.albany.edu

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
Jennifer Jewett	Albany	0

LIBRARY INFORMATION

Authorization for Facility Use **Unaffiliated User**

Annual Fee **$50**

Hyperlink to Documentation http://library.albany.edu/circ/unaffiliated.html

Portion or all of web page entry

Borrowing Privileges for Unaffiliated Users
The University Libraries of the University at Albany, through consortial agreements such as the SUNY Open Access program and the Capital District Library Council (CDLC) Direct Access Program (DAP), offer reciprocal access and circulation privileges to faculty, staff and students of SUNY affiliated institutions and other academic institutions in the Capital Region, with valid IDs from their respective institutions.
For those individuals who do not meet our current definition of a valid borrower, or are not covered by one of our reciprocal borrowing agreements with other state and local academic institutions, the Libraries have created a new category of borrower to respond to the needs of researchers who are not currently affiliated with a college or university.
The University Libraries will provide basic service to this group of "Unaffiliated Users" for a fee of $50.00 per year (12 months). The Libraries will discount this fee to $25.00 for senior citizens (63 years or older) with appropriate identification. For this fee an individual not affiliated with the University at Albany, and not otherwise covered by an existing policy, can receive circulation privileges at the University Libraries. Circulation privileges will be limited to those already defined by the Libraries for other courtesy users.
Users may borrow books from the general collection, up to 25 checked out at any one time.
Users may borrow books from the general collection for 30 days.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **North Caroli** *City-State* **Boone, North Carolina**

College **Appalachian State University**

Address

Boone, NC 28608-0001

Telephone **(704) 262-200** *Web Site* **appstate.edu**

Regional Accreditation **yes** *Enrollment* **11909** *Highest Degree* **6**

Contact Person **Mary Reichel** *Title* **University Librarian**

Contact Telephone **828-262-2625**

Library Web Site **library.appstate.edu** *Contact Email* **reichelml@appstate.edu**

Date Contacted **1/10/2008** *Arrangement Verified* **2/8/2008**

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
John Bellman Grubbs	Granite Falls	38

LIBRARY INFORMATION

Authorization for Facility Use **Community Borrower**

Annual Fee **$10**

Hyperlink to Documentation **http://www.library.appstate.edu/services/circ/commbor.html - policies**

Portion or all of web page entry

Community Borrowers and Alumni
Residents, 18 years or older, of North Carolina; and, part-time residents who own property in the counties listed below:
Ashe
Avery
Burke
Caldwell
Catawba
Watauga
Wilkes
Appalachian State University alumni, regardless of place of residence.
The following are not eligible:
Minors
Elementary and high school students
Dependents of Appalachian State University employees
Appalachian State University students while enrolled.
Proof of eligibility is required and is based on the following:
Presentation of a valid North Carolina driver's license (or a valid North Carolina state issued

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **North Caroli** *City-State* **Charlotte, North Carolina**

College **University of North Carolina at Charlotte**

Address **9201 University City Boulevard**
Charlotte, NC 28223-0001

Telephone **(704) 547-200** *Web Site* **uncc.edu**

Regional Accreditation **yes** *Enrollment* **15795** *Highest Degree* **6**

Contact Person **Carole Runnion** *Title* **Acting University Librarian**

Contact Telephone **(704) 687-2030**

Library Web Site **library.uncc.edu** *Contact Email* **Runnion, Carole**

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
Jonathan Carr Huitt	Shelby	46

LIBRARY INFORMATION

Authorization for Facility Use **Non-UNCC Borrower**

Annual Fee **$35**

Hyperlink to Documentation **http://library.uncc.edu/display/?dept=access&format=open&page=2190**

Portion or all of web page entry

Non-University Borrowing Privileges
COMMUNITY $35/year membership fee for NC and SC residents, 18 years of age and older. $15/year for Seniors, 65 years of age and older.
GUIDELINES FOR NON-UNIVERSITY BORROWERS
ID Cards are not transferable
Maximum of 6 items checked out at one time
Loan period is 21 days. If item is not overdue and has not been recalled, may be renewed 2 times by calling the Circulation Desk at 704-687-2392 or online at the Library's Website.
Electronic Resources are accessible in the Library, but not from off-campus.
Fines are charged for items not returned when due. Any unpaid fine results in suspension of Library privileges.
Materials on Reserve may only be used in the Library.
All items are subject to recall by another user. The guaranteed loan period is 21 days.
Interlibrary Loan service is only available to UNCC Faculty, Staff, Students and to other libraries.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Ohio** *City-State* **Cincinnati, Ohio**

College **University of Cincinnati Main Campus**

Address

Cincinnati, OH 45221-0001

Telephone **(513) 556-600** *Web Site* uc.edu

Regional Accreditation **yes** *Enrollment* **28995** *Highest Degree* **6**

Contact Person **Victoria A. Montavo** *Title* **Dean & University Librarian**

Contact Telephone **(513) 556-1515**

Library Web Site **www.uc.edu/libraries** *Contact Email* victoria.montavon@uc.edu

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
Carl Allen Barrows	West Chester	23

LIBRARY INFORMATION

Authorization for Facility Use **Community Borrower**

Annual Fee **$50**

Hyperlink to Documentation http://www.libraries.uc.edu/services/borrow/index.html

Portion or all of web page entry

Community Borrowers
Library Friends/Donors of University
Libraries: $50 minimum yearly donation. Must
have a Friends of University Libraries card and
photo ID. To become a Friend, visit any library
circulation desk for a donation envelope or
contact the Development Offi ce at (513) 556-0055.
Privileges
10-item check-out limit
3-week loan period
3 renewals
On-site database access at public-access
workstations
Langsam Library access after 6pm with photo
ID and appropriate membership information
(Note: select GCLC institutions have Langsam
Library access after 6pm; call 556-1424 to inquire
which institutions apply).

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Ohio** *City-State* **Cleveland, Ohio**

College **Cleveland State University**

Address **E. 24th and Euclid Avenue**
Cleveland, OH 44115-2440

Telephone **(216) 687-200** *Web Site* **csuohio.edu**

Regional Accreditation **yes** *Enrollment* **15522** *Highest Degree* **6**

Contact Person **Glenda Thornton** *Title* **Director, University Library**

Contact Telephone **(216) 687-2475**

Library Web Site **csuohio.edu/research/library.html** *Contact Email* **g.thornton@csuohio.edu**

Date Contacted **1/10/2008** *Arrangement Verified* **2/6/2008**

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
William M. Sanderson	Wadsworth	39

LIBRARY INFORMATION

Authorization for Facility Use **Community User**

Annual Fee **$0**

Hyperlink to Documentation **http://www.ulib.csuohio.edu/services/community-services.html**

Portion or all of web page entry

Community Users
OHIO RESIDENTS not directly affiliated with Cleveland State University as a faculty, staff, or student are welcome to use the Cleveland State University Library as long as they adhere to the Library's Conduct Rules for Library Use and other posted regulations.
Ohio residents may have free access to government documents and to library resources to the extent permitted by license agreements within the facility and may obtain information about those resources via computer terminals provided for looking up library holdings

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Ohio** *City-State* **Columbus, Ohio**

College **Ohio State University Main Campus, The**

Address

Columbus, OH 43210-1358

Telephone **(614) 292-644** *Web Site* osu.edu

Regional Accreditation **yes** *Enrollment* **18997** *Highest Degree* **6**

Contact Person **Joseph J. Branin** *Title* **Director of Libraries**

Contact Telephone **(614)292-6151**

Library Web Site **library.osu.edu** *Contact Email* %20branin.1@osu.edu

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
Alan Robert Judy	Springfield	44

LIBRARY INFORMATION

Authorization for Facility Use **Friend of the Library**

Annual Fee **$55**

Hyperlink to Documentation http://library.osu.edu/sites/friends/

Portion or all of web page entry

About Friends of the OSU Libraries
The Friends of the OSU Libraries is a volunteer and membership organization committed to raising awareness and funding in support of the University Libraries. Friends' donations, memberships, and volunteer time are invested in many activities to promote the Libraries on campus and in the community. When you join the Friends, you help to insure the continued quality of the services and resources of our Libraries.
. . . . . .
As a Friend of the OSU Libraries, you receive:

A subscription to our newsletter
Invitations to receptions and celebrations sponsored by Friends
Borrowing privileges letting you check out materials from the main campus and branch libraries
. . . .
An individual membership is $55 for a full year of benefits. OSU Students are welcome to join for $15 with a student ID. Once you return the application form with your credit card number, check or money order, your membership card will be mailed promptly back to you. You may also stop by our office to fill out the application and receive your membership card on the spot.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State	**Oklahoma**	*City-State*	**Norman, Oklahoma**		
College	**University of Oklahoma Norman Campus**				
Address	**660 Parrington Oval**				
	Norman, OK 73019-3070				
Telephone	**(405) 325-031**	*Web Site*	ou.edu		
Regional Accreditation	**yes**	*Enrollment*	**23000**	*Highest Degree*	**6**
Contact Person	**Sul H. Lee**	*Title*	**Dean, University Libraries**		
Contact Telephone	**(405) 325-4142**				
Library Web Site	**libraries.ou.edu**	*Contact Email*	http://libraries.ou.edu/info/personali		
Date Contacted	**1/10/2008**	*Arrangement Verified*			
SumOfActive Students	**2**	*SumOfAll Students*	**2**		

Student Names, Cities, Miles from College

Name	CITY	Miles
George Russell Keith	Altus	133
Shelby J. Smith	Noble	7

LIBRARY INFORMATION

Authorization for Facility Use	**Visitor**
Annual Fee	**$50**
Hyperlink to Documentation	http://libraries.ou.edu/help/kb/index.asp?cat0=4&cat1=138&cat2=83&article=349
Portion or all of web page entry	I am not affiliated with the University. How do I check out a book? Any non-alumnus who is an Oklahoma resident and not affiliated as a student, employee, or associate of the University of Oklahoma may apply for a Borrower's Permit. The permit, good for one year, costs $50.00, and allows a library patron to borrow books from the University of Oklahoma Libraries on the Norman Campus. To obtain a Borrower's Permit, an individual must meet all of the following criteria: Minimum 18 years of age Proof of Oklahoma residency Photo Identification - valid state driver's license, state I.D. card, passport, military I.D. No University of Oklahoma affiliation No unpaid bills at the University of Oklahoma Applications for Borrower's Permits should be made at the Bizzell Memorial Library Main Circulation Desk.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Pennsylvania** *City-State* **Philadelphia, Pennsylvania**

College **Temple University**

Address

Philadelphia, PA 19122

Telephone **(215) 204-700** *Web Site* **temple.edu**

Regional Accreditation **yes** *Enrollment* **28282** *Highest Degree* **6**

Contact Person **Larry Alford** *Title* **Dean of University Libraries**

Contact Telephone **215-204-8231**

Library Web Site **temple.edu/schools/libraries.html** *Contact Email* **larry.alford@temple.edu**

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **1** *SumOfAll Students* **2**

Student Names, Cities, Miles from College

Name	CITY	Miles
Timothy J. Murnane	Warrington	33

LIBRARY INFORMATION

Authorization for Facility Use **Friend of the Library**

Annual Fee **$50**

Hyperlink to Documentation **http://library.temple.edu/about/admin/friends/?bhcp=1**

Portion or all of web page entry

Friends of the Libraries
The Friends of the Libraries at Temple University support the acquisition and operation of the libraries as well as promote awareness of and interest in the library.
Private funds are vital in the purchase of books and services. Gifts from Friends also underwrite exhibitions, acquisitions, and preservation of rare and significant co
Friends of the Libraries enjoy many benefits including a borrowing card, access to all our online resources from computers in our libraries, bi-annual newsletters, and invitations to special programs.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State	**South Caroli**	*City-State*	**Charleston, South Carolina**		
College	**College of Charleston**				
Address	**66 George Street**				
	Charleston, SC 29424-0100				
Telephone	**(803) 953-550**	*Web Site*	**cofc.edu**		
Regional Accreditation	**yes**	*Enrollment*	**11053**	*Highest Degree*	**5**
Contact Person	**David Cohen**	*Title*	**Dean of Libraries**		
Contact Telephone	**843-953-5530**				
Library Web Site	**cofc.edu/~library**	*Contact Email*	**cohend@cofc.edu**		
Date Contacted	**1/10/2008**	*Arrangement Verified*	**1/25/2008**		
SumOfActive Students	**1**	*SumOfAll Students*	**1**		

Student Names, Cities, Miles from College

Name	CITY	Miles
Gary Wayne Bennett	Myrtle Beach	97

LIBRARY INFORMATION

Authorization for Facility Use	**Friend of the Library**
Annual Fee	**$40**
Hyperlink to Documentation	**http://www.cofc.edu/~library/frequent/pol15.html - privileges**
Portion or all of web page entry	2.10 Friends of the Library Persons not covered elsewhere in this policy but who are interested in checking out material from the library may become Friends of the Library. Persons must be at least 18 years old to be eligible for Friends of the Library status. Friends of the Library are charged a non-refundable fee of $40 for borrowing privileges for one calendar year. Friends of the Library cards are issued to one person (unless a family membership is purchased for $100 which covers two family members) and are not transferable to family members or business associates. Library staff may refuse Friends of the Library status to requesters. The Dean of Libraries or the Assistant Dean for Public Services may waive the $40 charge for visiting scholars (see 2.6.2). The check out period for Friends of the Library is two weeks, and Friends of the Library are subject to the same fine structure as undergraduate students. Friends of the Library are not eligible for interlibrary loans, off-campus database access, or check outs from the Media Collection.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **South Caroli** *City-State* **Columbia, South Carolina**

College **University of South Carolina - Columbia**

Address

Columbia, SC 29208-0001

Telephone **(803) 777-770** *Web Site* **sc.edu**

Regional Accreditation **yes** *Enrollment* **25489** *Highest Degree* **6**

Contact Person **Thomas F. McNalle** *Title* **Interim Dean of Libraries**

Contact Telephone **803-777-6212**

Library Web Site **sc.edu/libraries** *Contact Email* **tom@gwm.sc.edu**

Date Contacted **1/10/2008** *Arrangement Verified* **2/1/2008**

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
Vera Jesser Lawson	Columbia	0

LIBRARY INFORMATION

Authorization for Facility Use **Thomas Cooper Society Member**

Annual Fee **$25**

Hyperlink to Documentation **http://www.sc.edu/library/alumni/alumninfo.html**

Portion or all of web page entry

Library Information for Alumni and Friends
Members of the Carolina Alumni Association and the Thomas Cooper Society, may check out books with a valid ID card from these organizations.
Carolina Alumni Association membership is open to all graduates of the University of South Carolina.
Library privileges include:
Check out 5 books
Interlibrary Loan
Thomas Cooper Society, our friends of the library organization, is open to all community members. Various levels of membership are available. Library privileges include:
Check out 5 books
Interlibrary Loan
USC Press discounts
Library Publications
Additonal resources are available to you while at the libraries. These include:
Access to our Electronic Indexes for journal articles and citations
Access to the Electronic Journals for full text articles
Tours of the Thomas Cooper Library are provided by librarians at the beginning of each semester.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Tennessee** *City-State* **Johnson City, Tennessee**

College **East Tennessee State University**

Address **Box 70734**

Johnson City, TN 37614

Telephone **(423) 439-100** *Web Site* **etsu.edu**

Regional Accreditation **yes** *Enrollment* **11386** *Highest Degree* **6**

Contact Person **Rita Scher** *Title* **Dean**

Contact Telephone **423-439-6988**

Library Web Site **etsu.edu/etsu/libraries** *Contact Email* **scherr@etsu.edu**

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
Chris L. Hambrick	Elizabethton	8

LIBRARY INFORMATION

Authorization for Facility Use **public library card holder**

Annual Fee **$0**

Hyperlink to Documentation **http://sherrod.etsu.edu/svcs/circres.html**

Portion or all of web page entry

Circulation Policies
There are different loan periods for each patron category. Please note the differences listed below:
. . . . . .
Community privileges
Area post-high school residents, not enrolled in school, may obtain Borrowers Cards.
Borrowers Cards loan period: 2-weeks; renewals possible if there are no holds.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Texas** *City-State* **Arlington, Texas**

College **University of Texas at Arlington**

Address

Arlington, TX 76019-0120

Telephone **(817) 272-201** *Web Site* **uta.edu**

Regional Accreditation **yes** *Enrollment* **20544** *Highest Degree* **6**

Contact Person **Gerald Saxon** *Title* **Dean of Libraries**

Contact Telephone **(817) 272-5318**

Library Web Site **library.uta.edu** *Contact Email* **saxon@uta.edu**

Date Contacted **1/10/2008** *Arrangement Verified* **1/25/2008**

SumOfActive Students **4** *SumOfAll Students* **4**

Student Names, Cities, Miles from College

Name	CITY	Miles
Nathan E. Dickerson	Carrollton	28
Shannon Koontz Watkins	Forney	41
Mark J. Jolly	Fort Worth	15
Brian David Shepherd	Garland	40

LIBRARY INFORMATION

Authorization for Facility Use **Guest Borrower**

Annual Fee **$40**

Hyperlink to Documentation **http://library.uta.edu/borrowing/libraryCards.jsp**

Portion or all of web page entry

Purchased Guest Borrower's Card:
For checking out UT Arlington library materials for your personal use.
Price: $40 per year, cash and checks only.
Available regardless of your place of residence (you do not have to live in Arlington).
Your UT Arlington Library Card will be valid for one calendar year from the date of purchase.
Bring a photo ID to the Central Library Circulation Desk to get a library card.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Texas** *City-State* **Houston, Texas**

College **University of Houston**

Address

Houston, TX 77204

Telephone **(713) 743-100** *Web Site* **uh.edu**

Regional Accreditation **yes** *Enrollment* **30774** *Highest Degree* **6**

Contact Person **Dana Rooks** *Title* **Dean of Libraries**

Contact Telephone **(713) 743-9807**

Library Web Site **info.lib.uh.edu** *Contact Email* **DRooks@uh.edu**

Date Contacted **1/10/2008** *Arrangement Verified* **1/21/2008**

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
Pamella Moreland Schuknecht	Cat Spring	63

LIBRARY INFORMATION

Authorization for Facility Use **Library Associate**

Annual Fee **$75**

Hyperlink to Documentation **http://info.lib.uh.edu/services/associatescard.html**

Portion or all of web page entry

Library Associates Card
$75.00/year (free to Alumni Association members).
Limit of 4 items checked out at a time.
No Interlibrary Loan or recall services.
Expanded Associates Card
$150.00/year ($40.00 for Alumni Association members).
Limit of 20 items checked out at a time.
Interlibrary loan services limited to 10 active transactions at any given time.
Material recall services available.
Library Associates and Expanded Associates cards are available for purchase at the Service Desk, on the 1st floor of the M.D. Anderson Library. We accept cash and checks made payable to "University of Houston".
Policies for all Library Associates Cards
3 week loan period.
All privileges will be suspended until overdue books are returned or renewed.
Card valid for 12 months from date of issuance.
Does not include remote access to commercial databases licensed by the Libraries.
Cards are honored at M.D. Anderson and its branches, UH Clear Lake, and UH Downtown.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Virginia** *City-State* **Charlottesville, Virginia**

College **University of Virginia**

Address

Charlottesville, VA 22903

Telephone **(804) 924-031** *Web Site* **virginia.edu**

Regional Accreditation **yes** *Enrollment* **18279** *Highest Degree* **6**

Contact Person **Karin Wittenborg** *Title* **University Librarian**

Contact Telephone **(434) 924-3026**

Library Web Site **virginia.edu/libraries** *Contact Email* **lib.virginia.edu**

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
H. Duane Seagle	Rustburg	75

LIBRARY INFORMATION

Authorization for Facility Use **resident of Virginia**

Annual Fee **$0**

Hyperlink to Documentation **http://www.lib.virginia.edu/policies/circpol.html - borrow**

Portion or all of web page entry

Who may borrow materials from the Libraries?
UVa students
UVa faculty
UVa staff
UVa alumni
Members of the Associates of the University of Virginia Library
UVa research projects
Individuals associated with UVa agencies by specific arrangement
Virginia residents (at least 16 years of age)
Faculty and students at other Virginia institutions of higher education
Independent researchers
Faculty from OCLC Reciprocal Faculty Borrowing Program institutions
How do I obtain borrowing privileges?
Present current, valid identification at any Library circulation desk. Valid forms of identification:
UVa student, faculty or staff ID card
Virginia Driver's license or ID card
Membership card of the UVa Alumni Association
Proof of graduation from UVa and an ID card

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Virginia** *City-State* **Fairfax, Virginia**

College **George Mason University**

Address

Fairfax, VA 22030-4444

Telephone **(703) 993-100** *Web Site* gmu.edu

Regional Accreditation **yes** *Enrollment* **24368** *Highest Degree* **6**

Contact Person **Zenelis, John** *Title* **University Librarian**

Contact Telephone **703-993-2491**

Library Web Site **library.gmu.edu** *Contact Email* jzenelis@gmu.edu

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
James G. Shipe	Lovettsville	45

LIBRARY INFORMATION

Authorization for Facility Use **Library Passport Program member**

Annual Fee **$150**

Hyperlink to Documentation http://library.gmu.edu/services/passport.html

Portion or all of web page entry

Library Passport Circulation Privileges
Library card good for one year
Circulation Privileges at Fenwick, Johnson Center, Arlington, and Mercer Libraries
InterCampus materials delivery
Ten item circulating limit at a time
Three week loan period
One renewal per title
Items may be recalled by the Libraries after three weeks OR may be recalled immediately if item is needed for Course Reserve use.
. . . . . .
Library Passport Membership Fee Information
GMU alumni(ae) - $50/year
Non-affiliated patrons - $150/year
Membership forms are available online and at the Fenwick, Johnson Center, Arlington, and Mercer Library circulation desks.
For further information, please contact the circulation units of:
Arlington Library -- (703) 993-8188
Johnson Center Library -- (703) 993-9060

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Washington** *City-State* **Bellingham, Washington**

College **Western Washington University**

Address **516 High Street**

Bellingham, WA 98225-5950

Telephone **(360) 650-300** *Web Site* **wwu.edu**

Regional Accreditation **yes** *Enrollment* **11039** *Highest Degree* **5**

Contact Person **Bela Foltin** *Title* **Dean of Libraries**

Contact Telephone **(360) 650-3051**

Library Web Site **library.wwu.edu** *Contact Email* **bela.foltin@wwu.edu**

Date Contacted **1/10/2008** *Arrangement Verified* **1/25/2008**

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
Michael N. Thompson	Oak Harbor	52

LIBRARY INFORMATION

Authorization for Facility Use **Community Borrower**

Annual Fee **$25**

Hyperlink to Documentation **http://www.library.wwu.edu/access/circulation/index.shtml**

Portion or all of web page entry

Library Card
The Western Libraries Courtesy/Community Card allows you to borrow circulating materials from both Wilson Library and the Music Library. It does not provide off-campus access to online subscription databases, which are contractually restricted to current WWU students, faculty, and staff.
Current members of the following groups may obtain a Courtesy/Community Card at no charge. Expiration dates will vary.
Whatcom County colleges students, faculty, and staff
Affiliated teaching faculty
Retired WWU faculty, staff, and administrators
WWU Alumni Club members
WWU Retirees Association members
WWU faculty, staff, and adminstrator spouses or partners
WWU workshop participants
President's Club members
Students presenting reciprocal borrowing arrangement cards
SPIE employees
All other persons may purchase a Courtesy/Community Card for an annual fee of $25.00. The

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Wisconsin** *City-State* **Madison, Wisconsin**

College **University of Wisconsin-Madison**

Address **500 Lincoln Drive**
Madison, WI 53706-1380

Telephone **(608) 262-123** *Web Site* **wisc.edu**

Regional Accreditation **yes** *Enrollment* **39826** *Highest Degree* **6**

Contact Person **Ken Frazier** *Title* **Director, General Library System**

Contact Telephone **(608) 262-2600**

Library Web Site **library.wisc.edu** *Contact Email* **kfrazier@library.wisc.edu**

Date Contacted **1/10/2008** *Arrangement Verified* **1/30/2008**

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
Timothy Richard Chaffey	Belmont	65

LIBRARY INFORMATION

Authorization for Facility Use **Wisconsin Resident Borrower**

Annual Fee **$30**

Hyperlink to Documentation **http://www.library.wisc.edu/visitors/borrow.html**

Portion or all of web page entry

Wisconsin Residents
Annual Fee Card
Wisconsin residents may obtain a borrowing card by providing two current forms of identification showing Wisconsin residency (one must have a photo). The card is $30 per fiscal year, renewable every June 1st. Annual payment can be made by check or credit card.

ICR Online Science Education Program

Colleges and Online Students for Library Access

COLLEGE INFORMATION

State **Wisconsin** *City-State* **Milwaukee, Wisconsin**

College **University of Wisconsin-Milwaukee**

Address **PO Box 413**
Milwaukee, WI 53201-0413

Telephone **(414) 229-112** *Web Site* **uwm.edu**

Regional Accreditation **yes** *Enrollment* **21877** *Highest Degree* **6**

Contact Person **Margaret Cushinery** *Title* **Librarian**

Contact Telephone **(414) 229-2881**

Library Web Site **uwm.edu/libraries** *Contact Email* **mcushine@uwm.edu**

Date Contacted **1/10/2008** *Arrangement Verified*

SumOfActive Students **1** *SumOfAll Students* **1**

Student Names, Cities, Miles from College

Name	CITY	Miles
David P. Wilke	Sheboygan	57

LIBRARY INFORMATION

Authorization for Facility Use **Friend of the Library**

Annual Fee **$35**

Hyperlink to Documentation **http://www.uwm.edu/Libraries/Friends/html/membership.html**

Portion or all of web page entry

The Friends of the UWM Golda Meir Library
Benefits of Membership
The benefits of membership in the Friends of the UWM Golda Meir Library include:
a tax deduction to the extent allowed by law;
eligibility to apply for a Special Permit to borrow from the UWM Libraries' extensive collection of books;
interlibrary loan borrowing privileges for sponsoring members and above;
invitations to Friends' and library-sponsored programs, events, and lectures;
receipt of the UWM Libraries Newsletter and the Friends of the Golda Meir Library Newsletter, with information on library collections, activities, and events;
receipt of select publications of the UWM Libraries for sponsoring members and above.
Most importantly, you will be helping to support the vital role and mission of the UWM Libraries.
Membership Options
Level One Year
Individual $35
Contributing $50
Sponsor $150
Supporter $250

Appendix Q

Comparison with Texas Teaching Domains

The information in this Appendix contains a listing of each course in the ICRGS Science Education program specifying the ICRGS Course Objectives with the Texas Domain and Competency requirements.

Appendix Q

Framework Field: 116 Science: 4-8

Domain		Competency	Course	Example Course Objectives
I-SCIENTIFIC INQUIRY AND PROCESSES	1	manage learning activities to ensure the safety of all students	SE 503 Instruction	present opportunities for their students to participate in investigative science by designing lab and field investegations
			BI 501L Origins Lab	model safety; include Osha rules/laws
			BI 503L/GE 503L Paleontology Lab	Safety procedures will be taught and practiced while excavating and preparing fossils
				Design kits to be used in the classroom for fossil identification.
			GE 505F Field Geology	Safety procedures will be taught and practiced while performing field exercises
			SE 505 Implement/Assess	implement instruction that engages students through (d) the use of scientific instuments and the scientific method
	2	correct use of appropriate tools, materials, equipment, technologies	AG 502 Geochronology	exercise standard geochronological procedures for converting measured values from rock samples into "ages".
			AG 504 Astronomy	portray how telescopes work and how astronomers use them in their research.
			SE 503 Instruction	present opportunities for their students to participate in investigative science by designing lab and field investegations
				utilize charts for data collection and graphs to communicate results in scientific investigations
			BI501L Origins Lab	Proper use of microscopes and other scientific instruments
				Increase current laboratory skills
				Acquire lab skills in biotechnology and bioinformatics
			GE 505F Field Geology	Use tools to collect geologi samples
			GE 504 Historical Geology	Apply modern computational techniques to evaluate various models of mantle dynamics and plate tectonics
			GE 503 Paleoclimatology	Analyze data downloaded from Internet using ExCel
			BI 503L/GE 503L Paleontology Lab	Demonstrate the process of fossil preservation
			SE 505 Implement/Assess	implement instruction that engages students through (d) the use of scientific instuments and the scientific method
	3	process of scientific inquiry & history and nature of science	SE 505 Implement/Assess	implement instruction that engages students through (f) the use of questioning strategies to promote thinking
			SC 506 HOS & NOS	create inquiry questions that cause the audience to think about why they believe what they believe
				compare and contrast the definition of inquiry from a scientist's point of view and from a teacher's point of view
				evaluate the concepts behind each of the nature of science tenets as they have changed to fit the worldview of particular historical time period
				assess the various tenets of the nature of science to determine how each could be used to undermine and/or support scientific creationism
			GE 505F Field Geology	Describe in verbal and quantitative terms various catastrophic exogenic processes of observed landforms
			BI 503L/GE 503L Paleontology Lab	Identify a variety of fossils found in the field.
				Identify and categorize shark's teeth.
				Recognize shell fossils
				Assemble vertebrate fragments
			BI 501L Origins Lab	Examining specimens
	4	impact science has on the daily lives of students and interacts with and influences personal and societal decisions	GE 501 Natural Disasters	Class discussion hazards and why people continue to live in La Conchita, CA, where people will surely die in the next landslide.
			BI 504 Ecology	Describe how organisms interact with each other and with their environment
			GE 505F Field Geology	Observe impact of geological disasters
			GE 501 Natural Disasters	Explain how the study of catastrophic exogenic processes ("natural disasters") is essential to understanding of human culture, western civilization, empirical sciences and historical sciences
			AG 503 Paleoclimatology	evaluate claims made by conventional climate experts
	5	knows and understands the unifying concepts and processes that are common to all sciences	SE 502 Curriculum	assess critically the importance of integrating each of the science process skills into the biblical creation curriculum
			GE/BI 503 Paleontology	entire course deals with the overlap of biological and geological concepts and processes
			AG/GE 502 Geochronology	entire course deals with the overlap of astro-geophysics and geological concepts and processes
			AG/GE 502; AG 503; GE 501; GE 504 BI/GE 503; BI 501; BI 502; BI 505	As indicated in the matrix - all of these courses require a knowledge of Chemistry and include Chemistry in their content
V-SCIENCE LEARNING, INSTRUCTION, ASSESSMENT	6	theoretical and practical knowledge about teaching science and about how students learn science	SE 504 Research	Compare and contrast qualitative and quantitativ
				Interpret science education research and describe its implications from a Christian worldview
			SE 505 Implement/Assess	implement instruction that engages students through the use of a variety of teaching/learning strategies,
				implement instruction that engages students through
			SE 501 Psychology	Give examples of how individuals construct knowledge as it relates to worldviews.
				determine a variety of factors that motivate someone to learn or inhibit them from learning
				apply theories of development to individuals
			SE 503 Instruction	create instructional aids that engage students
	22	process of scientific inquiry and its role in science instruction	SC 506 HOS & NOS	create inquiry questions that cause the audience to think about whay they believe what they believe
				compare and contrast the definition of inquiry from a scientist's point of view and from a teacher's point of view
	23	varied and appropriate assessments, assessment practices to monitor science learning in laboratory, field, and classroom settings	SE 505 Implement/Assess	assess the students throughout the instruction by (a) giving positive yet informative feedback
				assess the students throughout the instruction by (b) providing formative assessment as well as evaluative assessment to allow the students to correct for misinformation
				assess the students throughout the instruction by © applying a variety of assessment strategies
				assess the students throughout the instruction by (d) using student self-assessment procedures
				implement instruction that engages students through continual evaluation of student performance

Appendix Q

Framework Field: 116 Science: 4-8

Domain	#	Competency	ICRGS courses	Example Course Objectives
II Physical Science	6	forces and motion and their relationships	GE 501 Natural Disasters	analyze of the force balance on a boulder being carried in a steady mudflow.
	7	physical properties of changes in matter	GE 501 Natural Disasters	Calculate potential and kinetic energies of catastrophic exogenic processes using principles of mechanics and analysis of work accomplished.
			GE 504 Historical Geology	Define and apply standard geological terminology to describe sedimentary strata and depositional processes, fossils and the processes by which they are formed and preserved, landforms and erosional processes, volcanic and magmatic features and processes, tectonic features and processes, and earth structure including core, mantle, and crust.
			AG 503 Paleoclimatology	Construct paleoclimate descriptions from temporal trends in meteorological elements and proxy variables such as seafloor sediments.
	8	chemical properties of and changes in matter	BI 505 Cell, Molecular	Compare and contrast competing theories of biochemical origins and distinguish between the strengths and weaknesses of each
			GE 501 Natural Disasters	Describe in verbal and quantitative terms various catastrophic exogenic processes ("natural disasters").
			BI 504 Ecology	Construct a diagram of the water, carbon, and nitrogen cycles, indicating molecular transformations and the major transforming agents
			AG 503 Paleoclimatology	Construct paleoclimate descriptions from temporal trends in meteorological elements and proxy variables such as seafloor sediments.
			GE 504 Historical Geology	Apply modern computational techniques to evaluate various models of mantle dynamics and plate tectonics
	9	energy and interactions between matter and energy	GE 501 Natural Disasters	Describe in verbal and quantitative terms various catastrophic exogenic processes ("natural disasters").
			AG 503 Paleoclimatology	Construct paleoclimate descriptsion from temporal trends in meteorological elements and proxy variables such as oxygen isotopes
	10	energy transformation; conservation of matter, energy	BI 504 Ecology	Construct food chains food webs, food pyramids, showing how usable energy is transferred /lost between each organismic transaction, tropic level
			GE 501 Natural Disasters	follow the flow of energy during a natural disaster (ex. Calculation of the potential and kinetic energy of the Lake Missoula Flood
III Life Science	11	structure and function of living things	BI 502 Vertebrate Anatomy	identify and compare gross anatomical structures of various representative vertebrates
			BI 501 Biological Origins	integrate biological information over a broad spectrum of origins issues.
	12	reproduction and mechanisms of heredity	BI 502 Vertebrate Anatomy	evaluate different theories of origins using the major stages of embryology and the accompanying histology
			BI 501 Biological Origins	acquire a broad knowledge base of topics fundamental to the origns debate.
	13	organisms and the theory of evolution	BI 502 Vertebrate Anatomy	evaluate different theories of origins using the major stages of embryology and the accompanying histology
			BI 501 Biological Origins	evaluate research material from several fields of biological study.
			BI/GE 503 Paleontology	evaluate the following as proposed examples of evolutionary series
				Defend a reasonable conclusion regarding the paleontological history of major groups
	14	regulatory mechanisms and behavior	BI 505 Cell, Molecular	develop a hypothesis explaining the immutability of biochemical systems from the current literature.
	15	relationships between organisms and environment	BI 504 Ecology	develop a hypothesis explaining the immutability of biochemical systems from the current literature.
IV Earth & Space Science Science	16	structure and function of earth systems	BI/GE 503 Paleoclimatology	construct paleoclimate descriptions from temporal trends in meteorological elements/proxy variables: oxygen isotopes, tree rings, seafloor sediments.
			GE 501 Natural Disasters	classify different types of volcanoes
	17	cycles in earth systems	GE 501 Natural Disasters	follow the flow of energy during a natural disaster (ex. Calculation of the potential and kinetic energy of the Lake Missoula Flood
			AG/GE 502 Geochronology	exercise standard geochronological procedures for converting measured values from rock samples into "ages".
				develop an alternative scientific method for incorporating radioisotopic evidence into a Biblical framework of earth history.
	18	the role of energy in weather and climate	AG 503 Paleoclimatology	recognize various types of numerical climate models and their appropriate applications and limitations.
				interpret numerical climate model output in terms of atmospheric processes observed today.
			BI/GE 503 Paleoclimatology	describe paleoclimates as they affect communities of organisms observed in the fossil record
	19	characteristics of the solar system and the universe	AG 501 Astronomy	describe the daily and annual motions of the earth, the monthly motion of the moon, and the relationship of these motions to telling time.
				relate the cause of the moon's phases and be able to determine the time and place that each phase is visible.
				relate Kepler's lasws of planetary motion, as well as Newton's laws of motion and gravity to astronomy.
				utilize basic principles of radiation to explain how they are used to learn about astronomical bodies.
				compare and contrast terrestrial and Jovian planets.
				assess why Pluto is no longer a planet.
				evaluate the four evolutionary explanations for the moon's origin and two problems with each.
				describe the basic properties and operation of the sun.
				demonstrate how astronomers determine basic stellar properties.
				evaluate the principles of stellar evolution.
				correlate the relationship between and evidence for white dwarfs, neutron stars, and black holes.
				characterize the structure of our galaxy.
				assess our place in the universe and how galaxies relate to one another.
			AG 504 Cosmology	evaluate Big Bang cosmologies.
				constuct a Biblical framework for understanding cosmological data.
				compare and contrast the old-world and young-world models of cosmology.
				evaluate claims made by conventional cosmologists.
	20	history of earth system	GE 504 Historical Geology	making a map of plate locations during the earth's early history
			GE 501 Natural Disasters	reconstruct the hydrology of the Lake Missoula Flood
			AG 507 Paleoclimatology	construct paleoclimate descriptions from temporal trends in meteorological elements/proxy variables: oxygen isotopes, tree rings, seafloor sediments.
			AG/GE 505 Geochronology	develop an alternative scientific method for incorporating radioisotopic evidence into a Biblical framework of earth history.

Appendix Q

Framework Field: 136 Science: 8-12

Domain		Competency	Course	Example Course Objectives
I-SCIENTIFIC INQUIRY & PROCESSES	1	selects and manages learning activities to ensure the safety of all students & correct uses & care of organisms, natural resources, materials, equipment, & technologies	SE 503 Curriculum Design	present opportunities for their students to participate in investigative science by designing lab and field investegations
			SE 505 Implentation/Assessment	implement instruction that engages students through (d) the use of scientific instuments and the scientific method
			GE 505F Field Geology	Safety procedures will be taught and practiced while performing field exercises
			BI 503L/GE 503L Paleontology Lab	Safety procedures will be taught and practiced while excavating and preparing fossils
				Design kits to be used in the classroom for fossil identification.
			SE 505 Implement/Assess	implement instruction that engages students through (d) the use of scientific instuments and the scientific method
			BI 501L Origins Lab	model safety; include Osha rules/laws
	2	nature of science, process of scientific inquiry, unifying concepts that are common to all sciences	GE 501 Natural Disasters	Identification of 7-fold sequence of a catastrophic process, involving energy, heat, pressure, critical threshold analysis, motion, friction
			SE 503 Curriculum Design	incorporate questioning strategies into lesson planning that help students develop an understanding of . . . .
			SE 502 Curriculum Design	evlauate the national science standards
			SE 505 Implentation/Assessment	implement instruction that engages students through (f) the use of questioning strategies to promote thinking
			SC 506 HOS & NOS	create inquiry questions that cause the audience to think about why they believe what they believe
				compare and contrast the definition of inquiry from a scientist's point of view and from a teacher's point of view
				evaluate the concepts behind each of the nature of science tenets
			SE 502 Curriculum	assess critically the importance of integrating each of the science process skills into the biblical creation curriculum
			AG/GE 502 Geochronology	entire course deals with the overlap of astro-geophysics and geological concepts and processes
			AG/GE 502 Geochronology	entire course deals with the overlap of astro-geophysics and geological concepts and processes
			BI 503L/GE 503L Paleontology Lab	Identify a variety of fossils found in the field.
				Identify and categorize shark's teeth.
				Recognize shell fossils
				Assemble vertebrate fragments
			AG/GE 502; AG 503; GE 501; GE 504 BI/GE 503; BI 501; BI 502; BI 505	As indicated in the matrix - all of these courses require a knowledge of Chemistry and include Chemistry in their content
X-SCIENCE, INSTRUCTION, ASSESSMENT	46	research-based theoretical & practical knowledge about teaching science, how students learn science, & role of scientific inquiry in sci. instruction	SE 501 Psychology	Apply theories of devleopmental learning
			SE 504 Research	Interpret science education research describe its implications
				compare and contrast qualitative and quantitative research methods as they relate to social and natural science
			AG 503 Paleoclimatology	access original paleoclimate data from websites.
	47	monitors and assesses science learning in laboratory, field, and classroom settings	SE 505 Implementation/ Assessment	assess the students throughout the instruction by (a) giving positive yet informative feedback
				assess students by (b) providing formative assessment & evaluative assessment to allow students to correct for misinformation
				assess the students throughout the instruction by © applying a variety of assessment strategies
				assess the students throughout the instruction by (d) using student self-assessment procedures
				implement instruction that engages students through continual evaluation of student performance
			BI 501L Biological Origins Lab	modeling

Appendix Q

Framework Field: 136 Science: 8-12

Domain	#	Competency	ICRGS	Example Course Objectives
II Physics	4	describes motion in one and two dimensions	GE 501 Natural Disasters	Kinetic energy analysis of mudflow
	5	laws of motion	AG 503 Paleoclimatology	recognize various types of numerical climate models and their appropriate applications and limitations.
			AG 501 Planetary/Stellar Astronomy	describe the daily and annual motions of the earth, the monthly motion of the moon, and the relationship of these motions to telling time.
				relate Kepler's laws of planetary motion, as well as Newton's laws of motion and gravity to astronomy.
	6	concepts of gravitational and electromagnetic forces in nature	AG 501 Planetary/Stellar Astronomy	relate Kepler's laws of planetary motion, as well as Newton's laws of motion and gravity to astronomy.
	7	applications of electricity and magnetism	AG 504 Cosmology	magnetic field resources are used
	8	conservation of energy and momentum	AG 503 Paleoclimatology	recognize various types of numerical climate models and their appropriate applications and limitations.
			GE 501 Natural Disasters	Calculate potential and kinetic energies of catastrophic exogenic processes using principles of mechanics/analysis of work
	9	laws of thermodynamics	AG 503 Paleoclimatology	recognize various types of numerical climate models and their appropriate applications and limitations.
	10	characteristics and behavior of waves	GE 501 Natural Disasters	Analysis of P-waves, S-waves, Love waves and Rayleigh Waves during an earthquake
	11	concepts of quantum physics	AG 504 Cosmology	qualitatively describe the main concepts of general relativity
III Chemistry	12	characteristics of matter and atomic structure	AG/GE 502 Geochronology	Compare and contrast methods used to date rocks using radioisotopic methods
			BI 501 Biological Origins	Compare the cellular structure and chemistry of different cell types
	13	properties of gases	AG 503 Paleoclimatology	recognize various types of numerical climate models and their appropriate applications and limitations.
	14	properties and characteristics of ionic and covalent bonds	BI 501 Biological Origins	chemical evolution on origin of life (module objective)
			BI 505 Cell/Molecular Biology	evaluate the validity of each theory of biochemical ofigins
			AG 503 Paleoclimatology	Construct paleoclimate descriptions from temporal trends in meteorological elements and proxy variables
			GE 501 Natural Disasters	Describe in verbal/quantitative terms various catastropic exogenic processes.
			GE 504 Historical Geology	
	15	interprets chemical equations and chemical reactions	AG/GE 502 Geochronology	
			GE 501 Natural Disasters	Calculate potential and kinetic energies of catastrophic exogenic processes using principles of mechanics and analysis of work accomplished.
				Perform force balance analysis to describe steady and uniform motion of catastrophic exogenic processes
			AG/GE 502 Geochronology	Exercise standard geochronological procedures for converting measured values from rock samples into "ages
	16	types and properties of solutions		Learned in undergrad chemistry courses - prerequisite for entrance to ICRGS
	17	energy transformations that occur in physical, chemical processes	BI 505 Cell and Molecular Biology	
			GE 501 Natural Disasters	Steam energy converted to explosion during volcanic eruption
			AG 503 Paleoclimatology	recognize various types of numerical climate models and their appropriate applications and limitations.
	18	nuclear fission, nuclear fusion, nuclear reactions		
	19	oxidation and reduction reactions	BI 502 Anatomy	
	20	acids, bases, and their reactions	BI 501 Biological Origins	
IV Cell Structure & Processes	21	structure and function of biomolecules	BI 505 Cell and Molecular Biology	Acquire a competent knowledge level of the biochemical systems
			BI 502 Anatomy	identify and compare gross anatomical structures of various representative vertebrates
	22	basic structures of living things; specialized partsperform specific functions	BI 501 Biological Origins	
				Evaluate the significant cellular differences between eubacteria, archea, and eukarya.
	23	cells carry out life processes	BI 505 Cell and Molecular Biology	
			BI 501 Biological Origins	
	24	specialized cells, tissues, organs, systems, and organisms grow, develop	BI 502 Anatomy	identify and compare gross anatomical structures of various representative vertebrates
V Heredity & Evolution of Life	25	Structures, functions of nucleic acids in mechanisms of genetics	BI 502 Anatomy	
			BI 501 Biological Origins	evaluate the feasibility of gene duplication as a means of creating benefiecial genetic information
	26	contintuity and variations of traits from one generation to the next	BI 501 Biological Origins	Summarize the sources of variation within a population
				Evaluate the effects of sexual reproductin on populations
	27	theory of biological evolution	BI/GE 502 Geochronology	Analysis of the types of change through time evidenced in the fossil record
			BI 504 Advanced Ecology	
			BI/GE 503 Paleontology	evaluate the horse series, ammonite series, etc. as proposed examples of evolutionary series
				defend reasonable conclusion regarding the paleontological history of major groups.
				Biostratigraphic analysis of trilobite diversity
			BI 501 Biological Origins	Identify the assumptions used in cladistics, phylogenetics, and molecular clocks Describe the Miller-Urey experiment
	28	evidence for evolutionary change during Earth's history	BI 502 Anatomy	
			BI/GE 503 Paleontology	describe the history of system names, and
				memorize the key features of each and their sequence in the Geologic Column Diagram (GCD),
				define "geologic system" (paleosystem);
				evaluate creationist vs. evolutionist explanations for the "Cambrian explosion," mass extinction, "mammalian adaptive radiation," convergence, "living fossils," and stasis

Appendix Q

VI Diversity of Life	29	similarities, differences between living organisms and how taxonomic systems are used to organize and interpret diversity of life	BI/GE 503 Paleontology	Biostratigraphic analysis of trilobite diversity
			BI 504 Advanced Ecology	identify and compare gross anatomical structures
			BI 505 Cell and Molecular Biology	contrast the following as evolutinary links: nautilus, walking whale, coelacanth, archaeoraptor, etc.
	30	living systems are found within other living systems, each with its own boundaries and limits	BI 504 Advanced Ecology	Describe how organisms interact with each other and with their environment
				Analysis of "pictures" of ecosystems in texts and museums
	31	processes by which organisms maintain homeostasis	BI 502 Anatomy	
			BI 501 Biological Origins	
	32	relationship between biology and behavior		
VII Interdepen-dence of life & Environmental Systems	33	Relationships between abiotic and biotic factors of terretrail & aquatic ecosystems, habitats, & biomes, including the flow of matter and energy	BI 504 Ecology	Descriptions of ancient ecosystems and ancient habitats
			GE 504 Historical Geology	
	34	interdependence and interactions of living things in terrestrial, acquatic ecosystems	GE 504 Historical Geology	Discussion of fossil assembledges
			BI 504 Ecology	Describe how organisms interact with each others and their environment
	35	relationship between carrying capactiy, changes in populations, ecosystems	AG/GE 502 Geochronology	Describe how organisms interact with each others and their environment
VIII Earth's History & the Structure and Function of Earth Systems	36	structure and function of the geosphere	GE 501 Natural Disasters	Describe in verbal and quantitative terms various catastrophic exogenic processes ("natural disasters").
	37	processes of plate tectonics, weathering, erosion, and deposition that change Earth's surface	GE 504 Historical Geology	Describes plate tectonic process impacting sedimentation and strata formation
			AG 503 Paleoclimatology	Construct paleoclimate descriptions of temporal trends in meteorological elements /proxy variables such as oxygen isotopes, tree rings, seafloor sediments
	38	Formation and history of Earth	AG/GE 502 Geochronology	develop an alternative scientific method for incorporating radioisotopic evidence intoa Biblical framework of earth history.
			GE 504 Historical Geology	Analysis of processes of plate spreading and subduction
	39	structure and function of the hydrosphere	AG 501 Planetary/Stellar Astronomy	
	40	structure and function of the atmosphere	AG 501 Planetary/Stellar Astronomy	recognize climate terminology, meteorological elements, and proxy variables used to develop climate descriptions.
	41	effects of natural events and human activity on Earth systems	AG 503 Paleoclimatology	Interpret numerical climate model output in terms of atmospheric processes observed today.
			BI/GE 503 Paleontology	Description and analysis of mass extinction events as they affect paleontology
IX Components & Properties of Solar System & Universe	42	implications of Earth's placement and orentation in the solar system	AG 501 Planetary/Stellar Astronomy	describe the daily and annual motions of the earth, the monthly motion of the moon, and the relationship of these motions to telling time.
	43	role of sun in solar system; characteristics of planets, other objects that orbit the sun	AG 501 Planetary/Stellar Astronomy	describe the daily and annual motions of the earth, the monthly motion of the moon, and the relationship of these motions to telling time.
				relate the cause of the moon's phases and be able to determine the time and place that each phase is visible.
				relate Kepler's lasws of planetary motion, as well as Newton's laws of motion and gravity to astronomy.
				utilize basic principles of radiation to explain how they are used to learn about astronomical bodies.
				compare and contrast terrestrial and Jovian planets.
				assess why Pluto is no longer a planet.
				evaluate the four evolutionary explanations for the moon's origin and two problems with each.
				describe the basic properties and operation of the sun.
				demonstrate how astronomers determine basic stellar properties.
			AG 501 Planetary/Stellar Astronomy	evaluate the principles of stellar evolution.
				correlate the relationship between and evidence for white dwarfs, neutron stars, and black holes.
				characterize the structure of our galaxy.
				assess our place in the universe and how galaxies relate to one another.
	44	composition, history, properties of universe	AG 501 Planetary/Stellar Astronomy	evaluate Big Bang cosmologies.
			GE/BI 502 Geochronology	constuct a Biblical framework for understanding cosmological data.
			AG 504 Cosmology	compare and contrast the old-world and young-world models of cosmology.
				evaluate claims made by conventional cosmologists.
	45	history and methods of astronomy	AG 504 Cosmology	portray how telescopes work and how astronomers use them in their research.
			AG 503 Paleoclimatology	define "geologic system" (paleosystem);
				memorize the key features of each and their sequence in the Geologic Column Diagram (GCD), .
				describe the history of system names, and contrast on multiple points the different meanings scientists give to the GCD

Appendix R

Special Comments regarding the ICRGS Institutional Viewpoint Distinctives

The information in this Appendix provides particular comments regarding the ICRGS institutional viewpoints and the institution's distinctives as they are applicable to various constitutional and legal issues.

Appendix R

Special Comments regarding the ICRGS Institutional Viewpoint Distinctives

1. The ICRGS, as its website and publications show, sincerely holds certain institutional viewpoints, as a matter of religious belief and conviction. Specifically, these religious viewpoints are identified in ICRGS's nine "**Tenets of Biblical Creationism**" (a/k/a "Principles of Biblical Creationism" in the ICRGS Catalog), denoted in ICR's Bylaws (Article III, Section 3.3). As part of this Application process, ICRGS requests due accommodation for those institutionally held religious viewpoints. This accommodation is respectfully requested under the First and Fourteenth Amendments, and under relevant Texas Constitution counterparts (Article 1, § 3, § 3a, § 6, § 13, § 19, and § 29). In particular, this request contemplates Free Exercise Clause and/or Establishment Clause liberty rights, as well as Free Speech Clause liberty rights.

2. The ICRGS, as its website and publications show, sincerely holds *additional* (yet interrelated) institutional viewpoints, which are simultaneously scientific and academic in character, as a matter of ICRGS's institutional academic freedom, particularly applied to viewpoints of theoretical model applications for interpreting empirical and scientifically accepted data relevant to the physical and life sciences.

    a. For example, geoscience analysis models are relevant to scientific methodology and analysis issues used to calculate the age of the earth (such as radiometric dating) and for analyzing geophysical catastrophist data (such as rapid canyon formation recently illustrated by the volcano-induced mudflows at Mount St Helens).

    b. Likewise, bioscience analysis models are relevant for analyzing the logic and/or interpreting the teleology of biochemical systems (such as DNA—RNA information processing in biogenetic contexts) or the ecological significance of mutual symbiosis (such as the mutualism shown by the Pinyon Jay and the Pinyon Pine).

    Specifically, these scientific viewpoints are identified in ICRGS's nine "**Tenets of Scientific Creationism**" (a/k/a "Principles of Scientific Creationism" in the ICRGS Catalog), denoted in ICR's Bylaws (Article III, Section 3.2). As part of this Application process, ICRGS requests due accommodation for those institutionally held scientific viewpoints. This accommodation is respectfully requested under the First and Fourteenth Amendments, and under relevant Texas Constitution counterparts (Article 1, § 3, § 3a, § 8, § 13, § 19, and § 29). In particular, this request contemplates Free Speech Clause liberty rights.

3. The ICRGS, having received two favorable recommendations already, which were later rejected (or unduly discounted) as an inadequate predicate for favoring ICRGS's Application, is concerned about ***whether*** its public viewpoint espousal of the above-mentioned Tenets of Biblical Creationism and/or Tenets of Scientific Creationism *has or will become* the subject of unequal (or otherwise improper) discriminatory treatment, in conjunction with the processing of ICRGS's Application for a Certificate of Authority, under the Texas Education Code's Chapter 61 and Texas Administrative Code's Title 19, Chapter 7. In particular, ICRGS is especially concerned that any such "discriminatory treatment" , -- in light of anti-creationist bias, prejudice, "peer pressure", and/or "popularity" influences, -- may be deemed "unequal" (or otherwise improper) according to federal norms of 14th Amendment-guaranteed Due Process (or relevant Texas Constitution counterparts) and/or 14th Amendment-guaranteed Equal Protection (or relevant Texas Constitution counterparts).

4. Similarly, ICRGS is also concerned about ***whether*** the processing of its Application for a Certificate of Authority, under the Texas Education Code's Chapter 61 and Texas Administrative Code's Title 19, Chapter 7, complies with the Texas Religious Freedom Restoration Act of 1999 (codified at Texas Civil Practice & Remedies Code, § 110.001 through §110.012), especially as whether that Application's processing is or is not accommodated as to ICRGS's institutional religious viewpoint expressed in and by its Tenets of Biblical Creationism.

5. The ICRGS is concerned that its Application be processed in a manner that non-discriminatorily distinguishes between a complete ***banning*** of ICRGS's academic degree-granting speech opportunities and a "narrowly tailored" ***regulating*** of ICRGS's academic degree-granting speech, in light of ICR's institutional viewpoints as consistently expressed in its "Tenets of Biblical Creationism" and its "Tenets of Scientific Creationism". Although it is common for accredited universities in Texas and the United States to teach other disciplines with a "science" designation (i.e. military science; social science; political science, etc.), the real challenge is to accommodate the teaching of the natural sciences (e.g. bioscience and geophysical science) that is comparable to other Texas accredited institutions, and equal to the academic rigor standards required of them, while duly respecting the academic freedom and religious freedoms prioritized in our U.S and Texas constitutions (and in the Texas Religious Freedom Restoration Act of 1999)..

6. The ICRGS is concerned that educational politics may unduly influence the processing of ICRGS's Application, in a manner that chills free creation science education speech (as a form of academic speech), and thus dampens postsecondary education diversity (in contravention of Article 1, §3 and §3a), and/or thus facilitates the promotion of a postsecondary education market "monopoly" (in contravention of Article 1, §26 of the Texas Constitution).

7. The ICRGS, having provided the above-listed comments, in support of its Application-related request (in light of *Romans chapter 13*) for due accommodation

of its institutional viewpoints, wants to nonetheless emphasize its institutional respect for the Texas Higher Education Coordinating Board, which Board obviously has a very challenging regulatory mission, and continuously faces an “ocean” of interactive laws and governing legal standards, not to mention many political pressures to disfavor “unpopular” applicants.

Appendix S

The Institute for Creation Research Graduate School Curriculum Syllabi

The information in this Appendix contains the updated and most complete set of Curriculum Syllabi for all of the courses in the ICRGS Master of Science degree program in Science Education.

AG 501 Planetary and Stellar Astronomy

Institution for Creation Research Graduate School

Course Development: Don B. DeYoung, Ph.D. and Danny R Faulkner
Instructor: Danny R Faulkner
Phone: (803) 286-9781 (Home); (803) 313-7029 (Office)
(803) 804-2042 (Cell); Fax: (803) 313-7106
E-mail: drfaulkn@gwm.sc.edu
Office Hours: TBA

Course Description. (Prerequisites: SE 501 and/or permission of instructor) ***4.5 quarter hours.*** A survey of planetary and stellar astronomy, including aspects of the sky, time, coordinates, telescopes, and observational techniques. Topics include early astronomy, light and telescopes, planet earth, motion and the moon, solar systems, planets, star properties.

A COURSE OBJECTIVES

The Learner will be able to:

1. Describe the daily and annual motions of the earth, the monthly motion of the moon, and the relationship of these motions to telling time.
2. Describe the causes of the moon's phases and be able to determine the time and place that each phase is visible.
3. Explain the earth's seasons in relation to the motion of the earth.
4. Discuss Kepler's laws of planetary motion and Newton's laws of motion and gravity as applied to astronomy.
5. Utilize basic principles of radiation to explain how astronomical bodies are observable.
6. Compare and contrast how reflective and refractive telescopes work and how astronomers use them in their research.
7. Compare and contrast the size, mass, composition, and atmospheric composition of the terrestrial planets.
8. Compare and contrast the size, mass, and composition of the Jovian planets.
9. Explain why Pluto is no longer considered a planet.
10. Evaluate the four evolutionary explanations for the moon's origin and two problems with each.
11. Discuss explanations for craters and seas on the surface of the moon.
12. Evaluate current explanations for the origin and evolution of the solar system.
13. Discuss the origin of comets, asteroids, and meteoroids and their relation to one another.
14. Justify the conclusion that the universe is extremely large.
15. Describe the following: the basic properties and operation of the sun; the structure of our galaxy; the structure of our universe.
16. Demonstrate with diagrams and calculations how astronomers determine basic stellar properties, such as distance, mass, temperature, and size.
17. Evaluate the principles of stellar evolution.

18. Discuss evidence for white dwarfs, neutron stars, and black holes and the relationship between them.
19. Assess our place in the universe and how galaxies relate to one another.
20. Discuss the following: the Hersprung-Russell Diagram; supernovas and their relation to other stars; Hubble's relation; quasars; two arguments for and against dark matter; the significance of the microwave background radiation.
21. Describe and discuss inflation.
22. Compare and contrast at least three theories for the origin of our universe.
23. Develop and defend you personal view about the probability of finding life beyond the earth.

B TEXT AND MATERIALS

Textbooks

1. Bruck, M. T., (1990). *Exercises in practical astronomy using photographs*. Boca Raton, FL: Taylor & Francis CRC Press.
2. Chaisson, E., McMillan, S. (2005) *Astronomy Today*. Upper Saddle River, NJ: Pearson Prentice Hall.
3. DeYoung, D. B. (2000). *Astronomy and the Bible*. Grand Rapids, MI: Baker Books.

Other Resources

1. *The Privileged Planet*. La Habra, CA: Illustra Media http://www.illustramedia.com/scripts/ThePrivilegedPlanet-web.pdf

Access to Required Journals

1. *Annual Review of Earth & Planetary Sciences*
2. *Astronomy Education Review*
3. *Astrophysical Journal & Letters*
4. *Earth and Planetary Science Letters*
5. *Journal of Applied Meteorology and Climatology*
6. *Living Reviews in Solar Physics*
7. *Monthly Weather Review*

C COURSE REQUIREMENTS

1. **Prerequisites.**
   a. Undergraduate: Calculus (6 semester hours); physics (8 semester hours, calculus based, including labs); chemistry (8 semester hours, including labs).
   b. Graduate: SE 501.
2. **Attendance:** Students are expected to access the website throughout the course and enter into discussion with one another and the instructor. Regular participation in web chats and discussion boards are necessary to learn and contribute to the class.
3. Work through the ten online modules. Learners will complete the modules, one each week, in order to be successful in the course.

4. Complete online quizzes.
5. Complete exercises from the Bruck book.
6. Read assignments, work through module review questions, complete measurement and observation exercises.
7. Complete a 1000 word research paper. An accompanying Power Point presentation is optional.
8. Ask for help if needed by emailing the instructor, or dialog with fellow students on the discussion board. Students are welcome to share course content (including chapter review questions, photograph measurements, and observations) with other students, family, and friends.

D GRADES

1. Grading Scale.

Letter Grade	Grade point	Percent
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retake—your new grade will replace the old grade.

2. Course Grading Criteria.

a.	Discussion (10 pts/discussion)	100 pts.	10%
b.	Exercises, observations	250 pts.	25%
c.	Mid term exam	200 pts.	20%
d.	Final exam	200 pts.	20%
e.	Research paper	250 pts.	25%
Total		**1000 pts.**	**100%**

E COURSE ASSIGNMENTS

1. **Discussion:** Students will participate in asynchronous group discussions about assigned content in each module. Questions about content or problems with assignments will be discussed in the sessions. Program objectives (1-4) and course objectives (1-8) will be reinforced during these discussions.

2. **Exercises & observations:** Ten astronomy photograph exercises will be completed from the text *Exercises in Practical Astronomy using Photographs* (Bruck and Hilger, 1990).
3. **Exams:** There will be two online tests, a midterm and a final. These tests will have questions similar to the review questions at the end of the chapters.
4. **Research paper:** A 1,000 word (approx.) paper will be prepared on an astronomy topic of the student's choice supported by current journal articles.

F COURSE CALENDAR

Module	Topic
1	Early Astronomy
2	Light and Telescopes
3	Introduction to the Solar System and Planet Earth
4	The Moon
5	Solar System I – The Planets
6	Solar System II – Debris of the Solar System and Solar System Origin
7	Star Properties
8	Stellar Evolution
9	Galaxies
10	Cosmology

G RESOURCES AND SUPPLEMENTARY MATERIAL

1. Arny, T. T. & Schneider, S. E. (2007). *Explorations: Introduction to astronomy.* New York: Mcgraw-Hill College.
2. Fix, J. D. (2007). *Astronomy*. New York: Mcgraw-Hill College.
3. Olmstad, D. (2005). *An introduction to astronomy: Designed as a textbook for the use of students on college*. MI: University of Michigan.

AG 501L Planetary and Stellar Astronomy

Institution for Creation Research Graduate School

Instructor: Danny R Faulkner
Phone: (803) 286-9781 (Home); (803) 313-7029 (Office)
(803) 804-2042 (Cell); Fax: (803) 313-7106
E-mail: drfaulkn@gwm.sc.edu

Course Description (Prerequisites: SE 501, AG 501 or taken concurrently) ***2 credits.*** One week lab course offered on the campus of the University of South Carolina Lancaster (USCL) during the summer quarter. Access to the observatory of the Charlotte Amateur Astronomy Club which features a 24-inch Newtonian reflector, a 16-inch Cassegrain reflector, and a 6-inch Alvin Clark refractor. Topics include: lenses and telescopes, spectroscopy, earth's orbital velocity, sunspots, The Hertzsprung – Russell diagram, RR Lyrae stars, The Crab Nebula, Pulsars, structure of the Milky Way, the Hubble Relation, and quasars.

A COURSE OBJECTIVES.

The learner will apply the concepts learned in AG 501 (see AG 501 syllabus); specifically, during the lab the learner will be able to:

1. Measure astronomical data.
2. Use telescopes (Newtonian reflector, a 16-inch Cassegrain reflector, and a 6-inch Alvin Clark refractor).
3. Use an optic photometer to measure the brightness of stars.
4. Employ celestial star globes to locate constellation data according to the date and other cosmic phenomena.
5. Find and sketch various planetary and stellar observable facts

B TEXT AND MATERIALS

Textbooks

1. Bruck, M. T., (1990). *Exercises in practical astronomy using photographs*. Boca Raton, FL: Taylor & Francis CRC Press.

Other Resources

1. reprints of labs in *Sky and Telescope* provided to the students.
2. Project CLEA at http://www3.gettysburg.edu/~marschal/clea/CLEAhome.html.

Access to the Following Required Journals

1. Annual Review of Earth & Planetary Sciences
2. Astronomy Education Review
3. Astrophysical Journal & Letters
4. Earth and Planetary Science Letters
5. Journal of Applied Meteorology and Climatology

6. Living Reviews in Solar Physics
7. Monthly Weather Review

C COURSE REQUIREMENTS

1. **Prerequisites**:
   a. Undergraduate: At least one undergraduate course each in calculus, chemistry, and physics.
   b. Graduate: SE 501, AG 501 taken prior to lab or concurrently with lab.
2. **Attendance:** The course will be offered on the campus of the University of South Carolina Lancaster (USCL) during the summer. There will be no charge for using USCL facilities. There are three hotels within ½ mile of the campus that are suitable for housing students One advantage of offering the class at USCL is that the students will have access to the observatory of the Charlotte Amateur Astronomy Club. The observatory is in a dark sky location 15 miles from campus. The observatory features a 24-inch Newtonian reflector, a 16-inch Cassegrain reflector, and a 6-inch Alvin Clark refractor. The schedule will be planned during dark moon, that is, from third to first quarter.

D GRADING

1. **Grading scale**

Grade	**Grade point**		
A	4.00		
A-	3.67	C-	1.67
B+	3.33	D+	1.33
B	3.00	D	1.00
B-	2.67	D-	0.67
C+	2.33	F	00
C	2.00		

Courses with a D or F are not accepted and need to be retaken – your new grade will replace the old grade.

2. **Course Grading Criteria**

a.	Lab exercise	70%
b.	Participation	10%
c.	Course paper	20%

E COURSE ASSIGNMENTS

1. **Lab Exercises**. Written reports will include the following lab exercises: Observatory labs; scale of the solar system; Lenses and telescopes; spectroscopy;

the earth's orbital velocity; the sun's temperature; sunspots; spectral classification; the Hertzsprung – Russell diagram; the mass – luminosity relation; RR Lyrae stars; Cepheid variables; the Crab Nebula; pulsars; the structure of the Milky Way; the Hubble relation; quasars.

2. **Participation.** Contributing to discussion and involvement in the lab activities will help the student gain confidence in the concepts.

3. **Course paper.** Concentrating on two or three concepts, students will synthesize what they have experienced in the laboratory and at the observatory into lessons they can use in the science classroom. Web sites and other resources that can be used during teaching a unit on the chosen concepts will be included in the paper. The paper will be due one month after the lab experience.

F COURSE CALENDAR

The labs listed in E-1 will be exercised. Several hours will be spent at the observatory. There will also be time spent observing of the sun.

G RESOURCES AND SUPPLEMENTARY MATERIAL

1. Arny, T. T. & Schneider, S. E. (2007). *Explorations: Introduction to astronomy.* New York: Mcgraw-Hill College.
2. Chaisson, E., McMillan, S. (2005) *Astronomy Today*. Upper Saddle River, NJ: Pearson Prentice Hall.
3. DeYoung, D. B. (2000). *Astronomy and the Bible*. Grand Rapids, MI: Baker Books.
4. Fix, J. D. (2007). *Astronomy*. New York: Mcgraw-Hill College.
5. Olmstad, D. (2005). *An introduction to astronomy: Designed as a textbook for the use of students on college*. MI: University of Michigan.

AG 502 Geochronology with Lab

Institute for Creation Research Graduate School

Instructor: Larry Vardiman, PhD
Phone: (360) 631-5034; E-mail: LVardiman@icr.edu
Office Hours: Online 9-4 M-F; Office location: Classroom Forum at www.de.icr.edu

Course Description. (Prerequisites: admission to geology minor, SE 501, GE 501, and/or consent of instructor). ***6 quarter hours.*** A review, critique, and evaluation of assumptions and evidences for the age of the earth and its rock layers. Particular emphasis will be placed on surveying the use of the radioisotope dating methods, especially potassium-argon, rubidium-strontium, samarium-neodymium and uranium-thorium-lead, to expose the fatal problems with them. Special emphasis will also focus on the results of the RATE (Radioisotopes and the Age of the Earth) research project, including helium diffusion in zircon, fission tracks, radiohalos, discordant isochron 'ages', and radiocarbon in supposedly ancient organic materials and diamonds, that together indicate that nuclear decay was grossly accelerated during a recent catastrophic event in earth history and that the earth is therefore young.The laboratory requires that original data on rubidium-strontium, potassium-argon, samaritum-neodymium, uranium-lead and carbon-14 be downloaded, plotted, and interpreted using IsoPlot 3.0 which is an add-on to Excel. Cross referenced with GE 502. (Cross referenced with GE 502).

A COURSE OBJECTIVES

At the end of this course the learner will be able to:

1. Recognize and use geological dating terminology.
2. Compare and contrast methods used by geologists to date rocks using radioisotopic methods.
3. Exercise standard geochronological procedures for converting measured values from rock samples into "ages."
4. Analyze radioisotope dating methods to discover their critical problems and assumptions in order to argue coherently for a young-earth model.
5. Develop an alternative scientific method for incorporating radioisotopic evidence into a young earth framework of earth history.
6. Compare and contrast the old-earth and young-earth models of earth history.
7. Evaluate claims made by conventional geochronologists and develop a confident personal view of Earth's history.
8. Express view of Earth's history in effective, written form using accurate terminology.

B TEXTS AND MATERIALS

Textbooks [Required].

1. Faure, G., & Mensing, T.M. (2005). *Isotopes: Principles and applications.* 3rd ed. Hoboken, NJ: John Wiley & Sons.
2. Vardiman, L., Snelling, A.A., & Chaffin, E.F., eds. (2005). *Radioisotopes and the age of the earth, Vol. II: Results of a young-earth creationist research initiative.* El Cajon, California: Institute for Creation Research, and St. Joseph, MO: Creation Research Society.
3. Ludwig, K.R. (2001). *Isoplot version 3.0: A geochronological toolkit for Microsoft Excel.* Berkeley Geochonology Center Special Publication No. 4, University of California, Berkeley, California.
4. Austin, S.A., ed. (1994). *Grand Canyon: Monument to catastrophe.* Santee, CA: Institute for Creation Research.
5. Morris, J.D. (1994). *The young earth.* Green Forest, AR: Master Books.

Videos or DVD's [Required].

1. *Thousands … not billions: Challenging an icon of evolution, questioning the age of the Earth.* (2005).DVD. San Diego, CA: Institute for Creation Research.
2. Austin, S. (2003). *Radioisotopes and the age of the earth.* DVD. San Diego, CA: Institute for Creation Research.

Access to Required Journals.

1. *Nature*
2. *Science*

C COURSE REQUIREMENTS

1. **Prerequisites.**
   a. Undergraduate: Calculus (6 semester hours); physics (8 semester hours, calculus based); chemistry (8 semester hours, with lab); geology (3 semester hours).
   b. Graduate: SE 501, GE 501.
2. **Attendance.** Participation in web chats is necessary to learn and contribute to the class. Regular participation in web chats and discussion boards are necessary to learn and contribute to the class.
3. **Reading and viewing assignments:** Reading and viewing assignments must be completed according to the assigned schedule prior to chat room discussions on textual content in order for a fully informed interaction to occur. Because of the major contrast between the conventional and Biblical view of earth's history, all assignments in both conventional and Creationist resources must be completed.
4. **Laboratory assignments:** All data analysis and computer work must be completed according to the assigned schedule prior to chat room discussions on the laboratory work in order for a fully informed interaction to occur. Due to the complexity of some of the data and challenges in displaying and interpreting the data on various hardware and software packages, it will be necessary for the student to complete as much progress as possible on a particular assignment before requesting help or discussing the results.

5. **Assigned Work:** All work must be completed by the end of the course. If an assignment is late it will result in dropping your grade by 10% for each week it is late. It will not be accepted after the final exam has been given.
6. **Attitude:** Do your work as unto the Lord. A negative person is not fun to be with. He brings a depressing shadow to every project. He is a complainer, a murmurer and a faultfinder. No matter how many good things are going on, he always seems to spot the one thing that could be a potential problem. *"For as he thinks in his heart, so is he"* Proverbs 23:7. In other words think about what you are thinking about and saying. Is it pleasing to the Lord?
7. **Computer Literacy:** The following skills are necessary to successfully complete this course: ability to
   a. use a word processing program.
   b. conduct web searches.
   c. upload and download data and other information from the World Wide Web.
   d. offload and view data and other information from CDs.
   e. scan photos and other graphics that are not already digitized and insert them into a document.
   f. create charts and graphs using Excel.

D GRADES

1. Grading Scale

Letter Grade	Grade point	Percent
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retaken—your new grade will replace the old grade.

2. Course Grading Criteria

Class

1.	Inquiry Questions	200 pts.	20%
2.	Group Discussion	100 pts.	10%
3.	Quizzes	200 pts.	20%
4.	Mid-term Exams	200 pts.	20%
5.	Term Paper	100 pts.	10%

6.	Final Exam	200 pts.	20%
Total		**1000 pts.**	**100%**

Lab

Written Practical Assignment	1000 pts.	100%

E COURSE ASSIGNMENTS

1. **Inquiry Questions:** Several questions will be posted for each module which address most of the main issues for a given module. The student should post answers to these questions before attempting to discuss them with the others in the class or taking the quizzes.
2. **Group Discussion:** This portion of the online course will be conducted in the Classroom Forum and possible chat rooms. Students will be expected to discuss questions raised by the instructor among themselves. The instructor will monitor the discussion and determine how each student is contributing to the forum. Students are strongly encouraged to inquire and contribute to the discussion.
3. **Quizzes and four Mid-term Exams:** These are designed to encourage the student to read and study continually through the course by testing progress in understanding and learning of the course material. The feedback he receives also informs the student of his progress and of the types of questions to be expected on the final exam, thus helping him to study for it.
4. **Term Paper:** Each student will write a 10-page report discussing his views on global warming, considering old-earth perspectives, young-earth models, and Biblical constraints. He will discuss concerns about future climate change and how current observations, conventional climate models, and Biblical revelation affect his views. The term paper will be based on journal articles, Impact Articles, your texts, and videos. The paper will include references, especially technical journal articles available on-line. You will be expected to access and download at minimum the articles on climate change listed in the resources of this course. You are encouraged to conduct your own search for more recent journal articles on global warming. Procedures for accessing journal articles and a tutorial may be found in the ICR **Online Library**. The term paper will be written in the standard format found in the ICR **The Masters Degree Science Education Paper.** The term paper is due at the end of Module 11.
5. **Final Exam:** Each student will take a Final Exam during week 12 which is designed to comprehensively test his knowledge of the course material, its application, and the skills they have gained doing the Practical Assignment. The final exam will be open book, but not open to help from others.

Lab

1. **Written Practical Assignment for Lab:** The purpose of the Written Practical Assignment is to help the student understand and be conversant with the methodology and mechanics of how geologists date rocks by actually taking real data and working through the required steps to produce the interpreted vast “ages” of rocks. Such a “hands-on” approach is the best learning method.

F COURSE CALENDAR

Module	Topic
1	Introduction and young earth chronology
2	Scientific evidence for a young earth.
3	Basics of radioactive decay, radioactive dating, and carbon-14 dating
4	Rubidium-strontium dating, potassium-argon dating [Quiz #1]
5	Samarium-neodymium, lutetium-hafnium, and rhenium-osmium dating
6	Uranium-thorium-lead and lead-lead dating
7	Inheritance and mixing and strontium-neodymium-lead, geochemistry. [Quiz #2]
8	Radiohalos and fission-tracks
9	Thermochronology, u-series disequilibrium dating
10	An accelerated decay model within a young earth history Final exam.

G RESOURCES AND SUPPLEMENTARY MATERIAL

1. Dalrymple, G. Brent. (1991). *The age of the Earth.* Stanford, CA: Stanford University Press.
2. DeYoung, D. (2005). *Thousands…not billions: Challenging an icon of evolution, questioning the age of the Earth.* Green Forest, AK: Master Books.
3. Dicken, A. (2005). *Radiogenic isotope geology* (2nd edition). Cambridge, England: Cambridge University Press.
4. Faure, G. (2001). *Origin of igneous rocks: The isotope evidence.* Berlin, Germany: Springer -Verlag.
5. Morris, H.M. (1974). *Scientific creationism.* Green Forest, AR: Master Books.
6. Morris, H.M. (1976). *The Genesis record.* Creation San Diego, CA: Life Publishers.
7. Morris, H.M. (1984). *The biblical basis for modern science.* Grand Rapids, MI: Baker Book House.
8. Morris, H.M. (1993). *Biblical creationism.* Grand Rapids, MI: Baker Book House.
9. Vardiman, L., Snelling, A.A., & Chaffin, E.F. (Eds.). (2000). *Radioisotopes and the age of the Earth: A young-earth creationist research initiative.* El Cajon, CA: Institute for Creation Research and St. Joseph, MO: Creation Research Society.
10. Whitcomb, J.C. and Morris, H.M. (1970). *The Genesis flood: The biblical record and its scientific implications.* Philadelphia, PA: The Presbyterian and Reformed Publishing Company.

AG 503 Paleoclimatology with Lab

Institute for Creation Research Graduate School

Instructor: Larry Vardiman, PhD
Phone: (360) 631-5034; E-mail: LVardiman@icr.edu
Office Hours: Online 9-4 M-F; Office location: Classroom Forum at www.de.icr.edu

Course Description: (Prerequisites: admission to astro/geophysics minor, SE 501, AG 501). ***6 quarter hours*.** Descriptions and methods for evaluating current, past, and future climates: Paleoclimate reconstruction, climate and climatic variation, dating methods, ice cores, marine sediments and corals, non-marine geological evidence, pollen analysis, dendrochronology, documentary data, and paleoclimate models. The laboratory requires proxy variables from ten sources to be downloaded, plotted, and interpreted using Excel.

A COURSE OBJECTIVES

At the end of this course the student will be able to:

1. Recognize climate terminology, meteorological elements, and proxy variables used to develop climate descriptions.
2. Access and analyze original paleoclimate data from websites.
3. Construct paleoclimate descriptions from temporal trends in meteorological elements and proxy variables such as oxygen isotopes, tree rings, and seafloor sediments.
4. Interpret paleoclimate descriptions in accordance with a young-earth age model.
5. Recognize various types of numerical climate models and their appropriate applications and limitations.
6. Interpret numerical climate model output in terms of atmospheric processes observed today.
7. Evaluate claims made by conventional climate experts and develop a personal view of Earth's climate history.
8. Express a personal view of Earth's climate history and future in effective, written form using accurate climate terminology.

B TEXTS AND MATERIALS

Textbooks [Required]

1. Bradley, R.S. (1999). *Paleoclimatology: Reconstructing climates of the quaternary*. 2nd e. New York, NY: vol. 68 in the International Geophysics Series, Elsevier, Academic Press.
2. Vardiman, Larry (2001). *Climates before and after the Genesis flood: Numerical models and their implications.* San Diego, CA: Monograph, Institute for Creation Research.

Videos or DVD's [Required]

1. Vardiman, L. (2003). *Wild, wild weather: The Genesis flood and the ice age,* San Diego, CA: DVD, Institute for Creation Research.
2. Vardiman, Larry. (2003). *Rocks of ages or rock of creation?* San Diego, CA: DVD, Institute for Creation Research.
3. Vardiman, Larry, et al. (1990-2006). *Impact articles,* San Diego, CA: Institute for Creation Research.
4. Vardiman, Larry. (2007). *Video clips specific to paleoclimatology.* San Diego, CA: Institute for Creation Research.

Access to Required Journals

1. *Bulletin of the American Meteorological Society*
2. *Journal of Applied Meteorology and Climatology*
3. *Journal of Atmospheric Sciences*
4. *Journal of Climate*
5. *Journal of Oceanography*
6. *Nature*
7. *Science*

C COURSE REQUIREMENTS

1. **Prerequisites:**
   a. Undergraduate: Calculus (6 semester hours); physics (8 semester hours, calculus based, including labs); chemistry (8 semester hours, including labs); meteorology (3 semester hours).
   b. Graduate: SE 501; AG 501.
2. **Attendance:** Participation in web chats is necessary to learn and contribute to the class.
3. **Reading and viewing assignments:** Reading and viewing assignments must be completed according to the assigned schedule prior to chat room discussions on textual content in order for a fully informed interaction to occur. Because of the major contrast between the conventional and Biblical view of climate history, all assignments in both conventional and Creationist resources must be completed.
4. **Laboratory assignments:** All data analysis and computer work must be completed according to the assigned schedule prior to chat room discussions on the laboratory work in order for a fully informed interaction to occur. Due to the complexity of some of the data and challenges in displaying and interpreting the data on various hardware and software packages, it will be necessary for the student to complete as much progress as possible on a particular assignment before requesting help or discussing the results.
5. **Assigned Work:** All work must be completed by the end of the course. If an assignment is late it will result in dropping your grade by 10% for each week it is late. It will not be accepted after the final exam has been given.
6. **Attitude:** Do your work as unto the Lord. A negative person is not fun to be with. He brings a depressing shadow to every project. He is a complainer, a murmurer and a faultfinder. No matter how many good things are going on, he always seems to spot the one thing that could be a potential problem. *"For as he*

thinks in his heart, so is he" Proverbs 23:7. In other words think about what you are thinking about and saying. Is it pleasing to the Lord?

7. **Computer Literacy:** The following skills are necessary to successfully complete this course ability to:
    a. use a word processing program.
    b. conduct web searches.
    c. upload and download data and other information from the World Wide Web.
    d. offload and view data and other information from CDs.
    e. scan photos and other graphics that are not already digitized and insert them into a document.
    f. View PowerPoint 2003 or more recent version.

D GRADES

1. Grading Scale

Letter Grade	Grade point	Percent
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retaken—your new grade will replace the old grade.

2. Course Grading Criteria

a.	Inquiry Questions	20%
b.	Group Discussion	10%
c.	Quizzes	10%
d.	Mid-term Exam	20%
e.	Term paper on Global Warming	20%
f.	Final Exam	20%
	Total	100%

E COURSE ASSIGNMENTS

1. **Inquiry Questions:** A set of Inquiry questions will be asked about the assigned reading and video viewing for each module. The questions should be downloaded and responses written and then uploaded for grading. These questions should be

completed prior to discussion with the rest of the class. Please include your name as part of the title of the uploaded file.

2. **Group Discussion:** A few of the Inquiry Questions will be selected for further discussion by the entire class. Each student is expected to participate in an asynchronous discussion of each question on the Classroom Forum. The instructor will occasionally review the interaction and contribute comments. A grade will be assigned to each student based on the quantity and quality of contribution to the discussion.
3. **Quizzes:** Ten multiple choice or true false questions will be answered for each module. The questions are automatically graded. Two attempts will be allowed. A quiz will become available at 12:05 a.m. on Monday morning and close at 11:55 p.m. on Sunday night for each module.
4. **Mid-term Exam:** Each student will take a mid-term exam during module 6 covering the material in chapters 1-5 of Bradley. 25 multiple-choice questions will focus on climate terminology and facts discussed in the primary textbook. The multiple choice questions will also address how to access, display, and analyze data. 10 essay questions will address how to summarize, interpret, and evaluate data to develop climate descriptions. The mid-term exam will be open-book, but not open to help from others. Please include your name as part of the title of the uploaded file.
5. **Term Paper on Global Warming:** Each student will write a 10-page report discussing his views on global warming, considering old-earth perspectives, young-earth models, and Biblical constraints. He will discuss concerns about future climate change and how current observations, conventional climate models, and Biblical revelation affect his views. The term paper will be based on journal articles, Impact Articles, your texts, and videos. The paper will include references, especially technical journal articles available on-line. You will be expected to access and download at minimum the articles on climate change listed in the resources of this course. You are encouraged to conduct your own search for more recent journal articles on global warming. Procedures for accessing journal articles and a tutorial may be found in the ICR **Online Library**. The term paper will be written in the standard format found in the ICR **The Masters Degree Science Education Paper.** The term paper is due at the end of Module 11.
6. **Final Exam:** Each student will take a final exam during week 12 covering the material in chapters 1-10 of Bradley, other reading assignments, and laboratory projects. 25 multiple-choice questions will focus on climate terminology and facts discussed in the primary textbook. The multiple-choice questions will also address how to access, display, and analyze paleoclimate data. 10 essay questions will address how to summarize, interpret, and evaluate climate models and descriptions. The final exam will be open book, but not open to help from others.

F COURSE CALENDAR

Module	Topic
1	Paleoclimatic Reconstruction

	Climate and Climatic Variation
2	Dating Methods I
	Dating Methods II
3	Ice Cores
4	Marine Sediments and Corals
5	Non-marine Geological Evidence
6	Non-marine Biological Evidence
	Mid-term Exam
7	Pollen Analysis
8	Dendroclimatology
9	Documentary Data
10	Paleoclimate Models
	Final Exam

G RESOURCES AND SUPPLEMENTAL MATERIAL

Books

1. Aardsman, D.E., (1991). *Radiocarbon and the Genesis flood.* ICR Monograph.
2. San Diego, CA: Institute for Creation Research.
3. Anderson, J.B., & Ashley, G.M., eds. (1991). *Glacial marine sedimentation: paleoclimatic significance.* Special Paper 261. Boulder, CO: The Geological Society of America, Inc.
4. Aguado, E. & Burt, J.E. (2007). *Understanding weather and climate.* 4th Ed.
5. Upper Saddle River, NJ: Pearson Prentice Hall.
6. Bath, L.M., Dias, M.A., Williamson, D.L., Willianson, G.S., & Wolski, R.J., (1987).
7. *Documentation of NCAR CCM1 program modules.* Technical Note TN-287+IA. Boulder, CO: National Center for Atmospheric Research Climate and Global Dynamics Division, NCAR.
8. Bath, L.M., Dias, M.A., Williamson, D.L., Williamson, G.S., & Wolski, R.J., (1991). *User's guide to NCAR CCM1*. Note TN-286+IA. Boulder, CO: National Center for Atmospheric Research Technical Climate and Global Dynamics Division, NCAR.
9. Berger, W.H. & Labeyrie, L.D. (1985). *Abrupt climate change.* Vol. 216, NATO
10. Advanced Science Institute Series. Dordrecht: Kluwer Academic Publishers.
11. Berger, W.H., Smetacek, V.S., & Wefer, G., eds, (1989). *Productivity of the ocean: Present and past.* Dahlem Workshop Report 44. New York: John Wiley & Sons.
12. Bowen, R. (1991). *Isotopes and Climate.* London: Elsevier Applied Science.
13. Bradley, R.S. & Jones, P.D., eds. (1992). *Climate since A.D. 1500.* London: Routledge.
14. Bradley, Raymond S. (1999). *Paleoclimatology: Reconstructing climates of the quaternary.* 2nd Ed. (Vol. 68 in the International Geophysics Series). New York: Elsevier, Academic Press.

15. Budyko, M.I. (1982). *The earth's climate: Past and future.* International Geophysical Series, Vol. 29. San Diego, CA: Academic Press, Harcourt Brace Jovanovich.
16. Buydko, M.I., Ronov, A.B., & Yanshin, A.L. (1987). *History of the earth's*
17. *atmosphere.* Berlin: Springer-Verlag.
18. Burroughs, W.J. (1992). *Weather cycles: Real or imaginary?* Cambridge: Cambridge
19. University Press.
20. Carbone, G. (2004). *Exercises for weather and climate,* 5th Ed. Upper Saddle River, NJ: Person Prentice Hall.
21. Corell, R.W. & Anderson, P.A. (1991). *Global environmental change.* NATO
22. Advanced Science Institute Series. Berlin: Springer-Verlag.
23. Cronin, T.M. (1999). *Principles of paleoclimatology.* New York: Columbia University Press.
24. Crowley, T.J. & North, G.R. (1991). *Paleoclimatology.* Oxford Monographs on Geology and Geophysics #18. Oxford: Oxford University Press, Clarendon Press.
25. Dowdeswell, J.A & Scourse, J.D., eds. (1990). *Glacimarine environments: Processes and sediments.* The Geological Society of London Special Publication No. 53, London: The Geological Society of London.
26. Firth, P. & Fisher, S.G., eds. (1992). *Global climate change and freshwater ecosystems.* New York: Springer-Verlag.
27. Frakes, L.A., Francis, J.E. & Syktus, J.I. (1992). *Climate modes of the phanerozoic.* Cambridge: Cambridge University Press.
28. Fulton, R.J., ed. (1989). *Quaternary geology of Canada and Greenland.* Vol. K-1, Decade of North America Geology Project, Ottowa: Geological Society of Canada.
29. Gross, M.G.)1971). *Oceanography.* 2nd Ed. Merrill Physical Science Series, Columbus, OH: Merrill Publishing Co.
30. Hastenrath, S. (1991). *Climate dynamics of the tropics.* Atmospheric Sciences Library, Dordrecht: Kluwer Academic Publishers.
31. Hess, S.L.)1979). *Introduction to theoretical meteorology.* Melbourne, FL: Krieger Publishing Co.
32. Holton, J.R. (1992). *Introduction to Dynamic Meteorology, 3rd Ed.,* International Geophysical Series, Vol. 48, San Diego, CA: Academic Press Inc., Harcourt Brace Jovanovich.
33. Hopkins, D.M., ed., 1967. *The Bering Land Bridge.* Stanford University Press, Stanford, CA.
34. Houghton, J.T., 1986. *The physics of atmospheres.* 2nd Ed. Cambridge: Cambridge University Press.
35. Houghton, J.T., Jenkins, G.J. & Ephraums, J.J. (1990). *Climate change.* World Meteorological Organization, Intergovernmental Panel on Climate Change (IPCC) Scientific Assessment, New York: Cambridge University Press.
36. Hsu, K.J. & Weissert, J.J., eds. (1985). *South Atlantic paleoceanography.* London: Cambridge University Press.
37. Huggett, R.J. (1991). *Climate, earth processes, and earth history.* Berlin: Springer-Verlag.

38. Lamb, H.H. (1985). *Climatic history and the Future.* Princeton, NJ: Princeton University Press.
39. Mantoura, R.F.C., Martin, J.M. & Wollast, R., eds. (1991). *Ocean margin processes in global change.* Dahlem Workshop 9. New York: John Wiley & Sons.
40. Marchuk, G.I. & Sarkisyan, A.S. (1988). *Mathematical modeling of ocean circulation.* Berlin: Springer-Verlag.
41. McGuffie, K. & Henderson-Sellers, A. (2005). *A climate modeling primer.* 3rd Ed. West Sussex, England: John Wiley & Sons.
42. Miller, A. (1971). *Meteorology*. 2nd Ed., Merrill Physical Science Series, Columbus, OH: Merrill Publishing Co.
43. Oard, M.J. (1990). *An ice age caused by the Genesis flood.* ICR Monograph, San Diego, CA: ICR.*
44. Oard, M.J. (2005) *The frozen record*. San Diego, CA: Monograph, Institute for Creation Research.*
45. Oescher, H. & Langway, Jr., C.C. eds. (1989). *The environmental record in glaciers and ice sheets.* Dahlem Workshop 8. New York:. John Wiley & Sons.
46. Prothero, D.R. & Berggren, W.A., eds. (1992). *Eocene-oligocene climatic and biotic evolution.* Princeton, NJ: Princeton University Press.
47. Royal Society, The (1990). *Proceedings of the Royal Society and Academie des Sciences discussion meeting held on February 15,16, 1989,* London: The Royal Society.
48. Schlesinger, M.E., ed. (1990). *Climate-ocean interaction.* Dordrecht: Kluwer Academic Publishers.
49. Schlesinger, M.E., ed. (19860. *Physically-based modeling and simulation of climate and climate change, parts 1 and 2.* Vol. 243, NATO Advanced Science Institute Series. Dordrecht: Kluwer Academic Publishers.
50. Souchez, R.A. & Lorrain, R.D. (1991). *Ice composition and glacier dynamics.* Berlin: Springer-Verlag.
51. Stephenson, F.R. & Wolfendale, A.W. (1987). *Secular solar and geomagnetic variations in the last 10,000 years.* Vol. 236, NATO Advanced Science Institute Series. Dordrecht: Kluwer Academic Publishers.
52. Summerhayes, C.P. & Shackleton, N.J., eds. (1986). *North Atlantic paleoceanography.* Geological Society Special Publication No. 21, Oxford: The Geological Society, Blackwell Scientific Publication.
53. Turekian, K.K., ed. (1971). *The late cenozoic glacial ages.* New Haven, CO: Yale University Press.
54. Vardiman, L., Snelling, A.A. & Chaffin, E.F., eds. (2000). *Radioisotopes and the age of the earth: A young-earth creationist research initiative.* San Diego, CA: Institute for Creation Research and the Creation Research Society.
55. Vardiman, L., Snelling, A.A. & Chaffin, E.F., eds. (2005). *Radioisotopes and the age of the earth: Results of a young-earth creationist research initiative.* Vol. II. San Diego, CA: Institute for Creation Research and the Creation Research Society.
56. Vardiman, L. (2003). *Wild, wild weather: The Genesis flood and the ice age,* San Diego, CA: DVD, Institute for Creation Research.

57. Vardiman, L. (2003). *Rocks of ages or rock of creation?* San Diego, CA: DVD, Institute for Creation Research.
58. Vardiman, L., et al. (1990-2006). *Impact articles,* San Diego, CA: ICR website, http://www.icr.org/articles/type/2/, Institute for Creation Research.
59. Vardiman, Larry (2001). *Climates before and after the Genesis flood: numerical models and their implications.* San Diego, CA: Monograph, Institute for Creation Research.
60. Vardiman, L. (1995). *Sea floor sediment and the age of the earth.* San Diego, CA: ICR Monograph, ICR.*
61. Vardiman, L. (1993). *Ice cores and the age of the earth.* San Diego, CA: ICR Monograph, ICR.*
62. Warrick, R.A., Barrow, E.M. & Wigley, T.M.L., eds. (1993). *Climate and sea level change: Observations, Projections, and implications.* Cambridge: Cambridge University Press.
63. Watt, A.D. & Hansen, P.M. (2006). *Secrets in polar ice.* Molina, CO: Almond Tree-Press.
64. Williams, D.F., Lerche, I. & Full, W.E. (1988). *Isotope chronostratigraphy: Theory and methods.* Academic Press Geology Series, San Diego, CA: Academic Press, Inc.
65. Williamson, D.L., Kiehl, J.T., Ramanathan, V., Dickinson, R.E., & Hack, J.J. (1987). *Description of the NCAR community climate model (CCM1).* Technical.Note TN-285+STR, Boulder, CO: National Center for Atmospheric Research, Climate and Global Dynamics Division, NCAR.
66. Williamson, G.S. & Williamson D.L. (1987). *Circulation statistics from seasonal and perpetual January and July simulations with the NCAR community climate model (CCM1): R15.* Technical Note TN-302+STR. Boulder, CO: National Center for Atmospheric Research, Climate and Global Dynamics Division, NCAR.

Journal Articles on Global Warming for Term Paper

1. Bond, G., Kromer, B., Beer, J., Muscheler, R., Evans, M.N., Showeres, W., Hoffman, S., Lotti-Bond, R., Hajdas, I., & Bonani, G. (2001). Persistent solar influence on North Atlantic climate during the Holocene. *Science.* vol. 294, no. 5549, pp. 2130-2136.
2. Carslaw, K.S., Harrison, R.G. & Kirkby, J. (2002). Cosmic rays, clouds, and climate. *Science.* vol. 298, no. 5599, pp. 1732-1737.
3. Gorbarenko, S.A., Goldberg, E.L., Kashgarian, M., Velivetskaya, T.A., Zakharkov, S.P., Pechnikov, V.S., Bosin, A.A., Psheneva, O.Y. & Ivanova, E.D. (2007). Millennium scale environment changes of the Okhotsk Sea during last 80 kyr and their phase relationship with global climate changes. *Journal of Oceanography.* vol. 63, pp. 609 to 623.
4. Hanna, E, Irvine-Flynn, T., Wise, S., Huybrechts, P., Steffen, K., Huff, R., Cappelen, J., Shuman, C. & Griffiths, M. (2007). Increased runoff from melt from the Greenland ice sheet: A response to global warming. *Journal of Climate.* 10 May 2007 | doi: 10.1175/2007JCLI1964.1, pp. 331-341.

5. Kerr, R.A. (2001). A variable sun and the Maya collapse. *Science.* vol. 292, no. 5520, p. 1293.
6. Knutson, T.R., Sirutis, J.J., Garner, S.T., Held, I.M. & Tuleya, R.E. (2007). Simulation of the recent multidecadal increase of Atlantic hurricane activity using an 18-km-grid regional model. *Bulletin of the American Meteorological Society.* October, pp. 1549-1565.
7. Lindzen, R.S. (1990). Some coolness concerning global warming. *Bulletin of the American Meteorological Society*. vol. 71, No. 3.
8. Muscheler, R., Joos, F., Műller, S.A. & Snowball, I. (2005). Climate: How unusual is today's solar activity? *Nature*. 436, (28 July 2005) | doi:10.1038/nature04045, pp. E3-E4.
9. Rind, D. (2002). The sun's role in climate variations. *Science.* vol. 296, no. 5568, pp. 673-677.
10. Schaefer, J.M., Denton, G.H., Barrell, D.J.A., Ivy-Ochs, S., Kubik, P.W., Andersen, B.G., Phillips, F.M., Lowell, T.V. & Schlűchter, C. (2006). Near-synchronous interhemispheric termination of the last glacial maximum in mid-latitudes. *Science.* vol. 312, no. 5779, pp. 1510-1513.
11. Shackleton, N.J. (2000). The 100,000-year ice-age cycle identified and found to lag temperature, carbon dioxide, and orbital eccentricity. *Science.* vol. 289, no. 5486, pp. 1897-1902.
12. Wada, A. & Norihisa, U. (2007). Importance of tropical cyclone heat potential for tropical cyclone intensity and intensification in the western North Pacific. *Journal of Oceanography*. vol. 63, pp. 427 to 447.
13. Zhang, C. & Fang, Q. (2008). Empirical relationship between sea surface temperature and water vapor: Improvement of the physical model with remote sensing derived data. *Journal of Oceanography.* vol. 64, pp. 163 to 170.

*Valuable for your library.

AG 504 Creation Cosmology and the Big Bang Theory

Institute for Creation Research Graduate School

Instructor: Russell Humphreys, PhD
Phone: (505) 292-5819; E-mail: drhumph@swcp.com
Office Hours: M-F; 9-4; Office location: AG513 Classroom Forum

Course Description: (Prerequisites: admission to astro/geophysics minor, SE 501, AG 501). ***4.5 quarter hours*.** This course teaches the basics of cosmology, outlines the big-bang theory, and contrasts it with several creationist cosmologies. It touches on areas of science such as orbital mechanics, astronomy, relativity, and quantum mechanics, but not in great detail. It emphasizes concepts with a minimum of mathematics. Topics include: history of cosmology, stars and galaxies, a cosmic center, space and time, special relativity, curved space and general relativity, black and white holes, time dilation, Big Bang models, and creation models.

A COURSE OBJECTIVES

At the end of this course the learner will be able to:

1. Recognize and use cosmology terms.
2. Qualitatively describe the main concepts of general relativity.
3. Evaluate Big Bang cosmologies.
4. Construct a young earth framework alternative for understanding cosmological data.
5. Develop an alternative scientific method for incorporating cosmological data into a young earth framework of history.
6. Compare and contrast the old-world and young-world models of cosmology
7. Evaluate claims made by conventional and young earth cosmologists.
8. Express a confident personal view of the history of the heavens in effective, written form using accurate terminology.

B TEXTS AND MATERIALS

Textbooks [Required]

1. Harrison, E. (2000). *Cosmology: The science of the universe*, 2nd ed. Cambridge, United Kingdom: Cambridge University Press.
2. Humphreys, D.R. (1994). *Starlight and time: Solving the puzzle of distant starlight in a young universe.* Green Forest, AR: Master Books.
3. Williams, A. & Hartnett, J. (2005). *Dismantling the big bang: God's universe rediscovered*. Green Forest, AR: Master Books.

DVD [Required]

1. *Starlight and time: Updated and expanded.* (2005). DVD, Answers in Genesis.

Access to Required Journals

1. *Astrophysical Journal*
2. *Astrophysical Journal Letters*
3. *Journal of Creation*
4. *Nature*
5. *Physical Review Letters*
6. *Science*

C COURSE REQUIREMENTS

1. **Prerequisites:**
   a. Undergraduate: Calculus (6 semester hours); physics (8 semester hours, calculus based, including labs); chemistry (8 semester hours, including labs); astronomy (3 semester hours).
   b. Graduate: SE 501, AG 501.
2. **Attendance:** Participation in web chats is necessary to learn and contribute to the class. Regular participation in web chats and discussion boards are necessary to learn and contribute to the class.
3. **Reading and viewing assignments:** Reading and viewing assignments must be completed according to the assigned schedule prior to chat room discussions on textual content in order for a fully informed interaction to occur. Because of the major contrast between the conventional and Biblical view of earth's history, all assignments in both conventional and Creationist resources must be completed.
4. **Assigned Work:** All work must be completed by the end of the course. If an assignment is late it will result in dropping your grade by 10% for each week it is late. It will not be accepted after the final exam has been given.
5. **Computer Literacy:** The following skills are necessary to successfully complete this course: ability to
   a. use a word processing program,
   b. conduct web searches,
   c. upload and download data and other information from the World Wide Web,
   d. offload and view data and other information from CDs,
   e. scan photos and other graphics that are not already digitized and insert them into a document,
   f. View PowerPoint 2003 or more recent version.

D GRADES

1. Grading Scale

Letter Grade	Grade point	Percent
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82

C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retaken—your new grade will replace the old grade.

2. Course Grading Criteria

a.	Inquiry Questions	20%
b.	Group Discussion	10%
c.	Quizzes	10%
d.	Mid-term Exams	20%
e.	Term Paper	10%
f.	Final Exam	30%
	Total	100%

E COURSE ASSIGNMENTS

1. **Inquiry Questions:** Several questions will be posted for each module which address most of the main issues for a given module. The student should post answers to these questions before attempting to discuss them with the others in the class or taking the quizzes.
2. **Group Discussion:** This portion of the online course will be conducted in the Classroom Forum and possible chat rooms. Students will be expected to discuss questions raised by the instructor among themselves. The instructor will monitor the discussion and determine how each student is contributing to the forum. Students are strongly encouraged to inquire and contribute to the discussion.
3. **Quizzes and Mid-term Exams:** These are designed to encourage the student to read and study continually through the course by testing progress in understanding and learning of the course material. The feedback he receives also informs the student of his progress and of the types of questions to be expected on the final exam, thus helping him to study for it.
4. **Term Paper:** This is a 4-8 page research paper on a topic related to the course. The preferred length is 4 pages addressing a topic selected by the student demonstrating his writing skills and ability to relate a technical topic for the general public. It should be referenced and similar to ICR's Impact Articles. The format and referencing should conform to the APA style manual.
5. **Final Exam:** Each student will take a Final Exam during week 11 which is designed to comprehensively test his/her knowledge of the course, its application, and the skills gained doing the Practical Assignment.

F COURSE CALENDAR

Module **Topic**

1	History of Cosmology Stars and Galaxies
2	A Cosmic Center
3	Space and Time
4	Special relativity
	[Quiz #1]
5	Curved space and General Relativity
6	Black and White Holes
7	Time dilation
	[Quiz #2]
8	The Big Bang Models
9	General Biblical Model
10	Detailed Biblical Mode
	Final Exam, Course paper due

G RESOURCES AND SUPPLEMENTAL MATERIAL

1. Humphreys, D. R. (2007). "Creation Cosmologies Solve Spacecraft Mystery" in *ICR Acts and Facts*. Santee, CA: Institute for Creation Research.
2. Humphreys, D. R. (2007). PowerPoint presentation, *Starlight and Time III*.
3. Humphreys, D. R. "Our Galaxy is the Centre of the Universe, 'Quantized' Red Shifts Show" in *Journal of Creation* 16(2):96-104, 2002, archived at http://www.creationontheweb.com/content/view/1570.
4. Einstein, A., Lorentz, H. A., Minkowski, H. & Weyl, H. (1952). *The principle of relativity*, with notes by Arnold Sommerfeld. New York: Dover Publications.
5. Einstein, A. (1983). *Sidelights on relativity*. New York: Dover Publications.
6. Einstein, A. (1953). *The meaning of relativity*, 5th ed. Princeton, NJ: Princeton University Press.
7. Hawking, S.W. (1988). *A brief history of time: From the big bang to black holes*. New York: Bantam Books.
8. Kaufmann, W. J., III. (1977). *The cosmic frontiers of general relativity*. Boston, MA: Little, Brown, & Company.
9. Kutner, M. L. (1987). *Astronomy: A physical perspective.* New York: Harper & Row.
10. Koestler, A. (1989). *The sleepwalkers: A history of man's changing vision of the universe*. London: Arkana, Penguin Books.
11. Luminet, Jean-Pierre. (1992). *Black holes*. Cambridge, England: Cambridge University Press.
12. Narlikar, J. V. (1993). *Introduction to cosmology*, 2nd ed. Cambridge, England: Cambridge University Press.
13. North, J. D. (1990). *The measure of the universe: A history of modern cosmology*. New York: Dover Publications.
14. Peebles, P. J. E. (1993). *Principles of physical cosmology* (1993). Princeton, New Jersey: Princeton University Press.
15. Rindler, W. (1977). *Essential relativity: Special, general, and cosmological*, rev. 2nd ed. New York: Springer-Verlag.

16. Rucker, R. (1984). *The fourth dimension: A guided tour of the higher universes*. Boston, MA: Houghton Mifflin Company
17. Wheeler, J. A. (1990). *A journey into gravity and spacetime*. New York: Scientific American Library.

BI 501 Biological Origins

Institute for Creation Research Graduate School

Instructor: Dr. Daniel Criswell
Phone: (214) 615-6041; **E-mail:** dcriswell@icr.edu
Office Hours: Online TBA; **Office Location**: Yahoo Messenger Conference Room

Course Description. (Prerequisites: SE 501 or consent of professor) ***4.5 quarter hours.*** A survey focusing on the various theories of biological origin and diversification. Students will evaluate current theories of origins beginning with the origin of life and proceeding through the origin of cells, species, and man. All theories are reviewed in light of contemporary biological knowledge. Emphasis is placed on distinguishing between observation, hypothesis, evidence, and confirmation as applied to evaluating origins paradigms and their implications. Fall Quarter.

A COURSE OBJECTIVES

At the completion of this course students will be able to:

1. Analyze the validity of a scientific experiment from origins related literature.
2. Integrate information over a broad spectrum of origins issues.
3. Synthesize a publishable 1800 word essay based on scientific data.
4. Evaluate research material from several fields of biological study.
5. Acquire a broad knowledge base of topics fundamental to the origins debate.

B TEXT AND MATERIALS

Textbooks

1. Campbell, N. & Reece, J. (2002). *Biology.* 6th Ed. San Francisco: Benjamin Cummings Publishing.
2. Additional assigned reading in the current scientific literature.

C COURSE REQUIREMENTS

1. **Prerequisites**
   a. Undergraduate: Students must have a minimum of one year of college level biology.
   b. Graduate: SE 501.
2. **Attendance:** Students are expected to access the website throughout the course and enter into discussion with one another and the instructor. Regular participation in web chats and discussion boards are necessary to learn and contribute to the class.
3. Writing skills are a must. Students are expected to write all assignments using correct grammar and spelling.
4. Students are required to interact with the instructor on a weekly basis.

5. Students should plan on spending 10-12 hours per week on the reading and writing assignments.
6. A letter grade will be deducted from work turned in late. After one week another letter grade will be dropped from the earned grade. Assignments will not be accepted after two weeks past the due date.

D GRADES

1. Grading Scale

Letter Grade	Grade point	Percent
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retaken—your new grade will replace the old grade.

2. Course Grading Criteria

a.	Quizzes	10 pts each/100 pts.	20%
b.	Discussion Board	5 pts. each/50 pts.	10%
c.	Article Summary	50 pts.	10%
d.	Course Paper	100 pts.	20%
e.	Final Exam	200 pts.	40%
	Total	**500 pts.**	**100%**

E COURSE ASSIGNMENTS

1. **Quizzes:** The quizzes cover the material in each module. Students should focus on the relevance of each topic in the creation/evolution debate and not merely the content. Quizzes will assist students with understanding the content and expectations for the course.
2. **Discussion Board:** Students will respond to all discussion board topics.
3. **Article Summary:** The summary of the peer reviewed article will include the introduction, the problem researched, methods, results, and the author's conclusions along with the student's conclusion of the data presented. This paper must be written before the student chooses a topic for the research paper. The instructor will assist students with writing difficulties in this paper before attempting the research paper.

4. **Course Paper:** The writing assignment is the culmination of the student's personal research into one of the topics from the course. Each student will include a minimum of ten references for the paper. Topic approval from the instructor is required. This paper will follow the same format as for the summary paper.
5. **Final Exam:** Exams will be in the same format as the quizzes. Students should concentrate on the relevance of the material in class to the creation/evolution controversy.

F COURSE CALLENDER

Module	Topic
1	Biological Beginnings Part I: Organic evolution or God's building blocks?
2	Biological Beginnings Part II: The Search for Life in the Solar System
3	The Basic Unit of Life: Cells
4	No New Genes
5	Variation Part I: Variation within Populations
6	Variation Part II: Species and the Kind
7	Molecular Clocks and Phylogeny
8	Biotechnology and Bioethics Part I: We know that we can do it, but should we do it?
9	Biotechnology and Bioethics Part II: Stem Cells and Human Cloning
10	Man and the Primates: Is there a monkey in your family tree?

G RESOURCES AND SUPPLEMENTARY MATERIAL

Free Access Periodicals

Free Access Including Current Issues

1. *Nucleic Acids Research*: www.nar.oxfordjournals.org.
2. PLoS: www.plos.org (Public Library of Science).
3. Pubmed Central: www.biomedcentral.com/browse/journals.
4. *Journal of Biological Chemistry*: www.jbc.org.
5. *Journal of Cellular and Molecular Medicine*: www.blackwell-synergy.com/loi/JCMM?open=2004#year2004.
6. *International Journal of Developmental Biology*: www.ijdb.ehu.es/web/.
7. *The Journal of Clinical Investigation*: www.jci.org/.
8. *Nature Protocols*: www.nature.com/nprot/index.html.

Free Access for Journal Articles 6 Months or Older

1. *Antimicrobial Agents and Chemotherapy*: http://aac.asm.org.
2. *Nature Nanotechnology*: www.nature.com/nnano/journal/v2/n10/index.html.
3. *Molecular Biology and Evolution*: http://mbe.oxfordjournals.org.
4. *Proceedings of the National Academy of Science*: www.pnas.org.
5. *The Journal of Experimental Biology*: http://jeb.biologists.org.

6. *The Journal of Neuroscience*: www.jneurosci.org/.

Free Access for Journal Articles 1 Year or Older

1. *The American Journal of Pathology*: http://ajp.amjpathol.org.
2. *Microbiology and Molecular Biology Reviews*: http://mmbr.asm.org.
3. *Stem Cells*: http://stemcells.alphamedpress.org/.
4. *The American Journal of Human Genetics*: www.ajhg.org/.

BI 501L Biological Origins Lab

*Institute for Creation Research Graduate Schoo*l

Instructor: Dr. Daniel Criswell
Phone: (214) 615-8341; **E-mail:** dcriswell@icr.edu
Office Hours: Online TBA; **Office Location**: BI 509 Discussion Board

Course Description: (Prerequisites: SE 501 and BI 501 in progress or already completed.) ***3 quarter hours.*** A intensive, one-week course designed to instruct Middle and High School teachers on how to integrate laboratory exercises into their curriculum. Instruction is based on teacher development in all phases of laboratory protocols with an emphasis on new developments in biotechnology and bioinformatics useful in Middle School and High School classrooms. Students in the course participate in 10 laboratory modules designed to increase skills in teaching observation, hypothesis, evidence, and confirmation when applied to the evaluation of origins, ethics, and their implications.

A COURSE OBJECTIVES

At the completion of this course students will be able to:

1. Analyze the validity of a scientific experiment from origins related literature.
2. Integrate biological information over a broad spectrum of origins issues.
3. Acquire a broad biology knowledge base fundamental to the origins debate.
4. Increase current laboratory skills.
5. Acquire laboratory skills in biotechnology and bioinformatics.
6. Formulate teaching strategies for integrating laboratory procedures into classroom curriculum.
7. Identify and use laboratory exercises applicable to the origins debate.

B TEXT AND MATERIALS

Textbooks

1. Campbell, N. & Reece, J. (2002). *Biology.* 6th Ed. San Francisco: Benjamin Cummings Publishing.
2. ICR Biological Concepts Laboratory Manual
3. College Level Introductory Biology Text
4. Laptop PC Computer recommended
5. Notebook

C COURSE REQUIREMENTS

1. **Prerequisites**
   a. Undergraduate: Students must fulfill the ICRGS Biology Minor requirements.
   b. Graduate: SE 501 and BI 501 in progress or already completed.

2. **Attendance:** Students are expected to access the website throughout the course and enter into discussion with one another and the instructor. Regular participation in web chats and discussion boards are necessary to learn and contribute to the class.
2. Lab attendance at ICR in Dallas
3. Introductory biology laboratory experience.
4. Teaching experience recommended.

D GRADES

1. Grading Scale

Letter Grade	Grade point	Percent
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retaken—your new grade will replace the old grade. A letter grade will be deducted from work turned in late.

2. Course Grading Criteria

a.	Participation	100 points	20%
b.	Lab Evaluation	100 points	10%
c.	Lab notebook.	100 points	20%
d.	Curriculum design	200 points	40%

A= >450 points, B= 400-449 points, C= 350-399 points

E. COURSE ASSIGNMENTS

1. **Participation:** Students must be present in all ten laboratory modules to participate in the laboratory modules. There is no provision to complete this course on-line.
2. **Lab Evaluation:** Students will write an evaluation of each exercise concentrating on how the student can utilize and/or modify this lab in their classroom or prospective classroom.
3. **Lab Notebook:** Answers to the lab exercises and notes from the instructor should be written in a separate notebook so the student can keep a clean copy of the

laboratory exercises provided for their future use. Graded lab notebooks will remain with the student.

4. **Curriculum Design:** Students will write a laboratory exercise and post it on the course website for feedback from other students. The post will be no later than one week after the end of the face-to-face laboratory portion of the class. All students will participate in providing feedback for the proposed labs. Instructions for writing the lab will be given during the face-to-face lab time.

F. COURSE SCHEDULE

Schedule may change depending on availability and delivery of live organisms.

Monday

Module 1: Plants as Replicating Systems for Food
am
- Plant Cell Structure
- Plant Gross Anatomy
- Photosynthesis
- Transpiration
- Asexual reproduction

Begin planaria regeneration, observation of Frog development and maintenance for module 10.

Module 2**:** Catalysts and Specificity
pm
- Enzymology
- Substrates and conditions for enzyme activity
- Levinthal's paradox and probability
- Demonstrations on the "cheap"

Tuesday

Module 3: Information Systems
am
- DNA replication and transcription
- Protein synthesis

Module 4: Sequence Homology and Bioinformatics
pm
- DNA sequencing and Blast searches
- Protein sequencing and Blast searches

Wednesday

Module 5: Irreducible Complexity and Cell Biology
am
- Paramecia cell structure and physiology
- Amoeba cell structure and physiology
- Euglena cell structure and physiology

Module 6: The "Organosubstrate", Bacteria as Symbionts
pm
- Hand-washing and bacteria
- Mouth bacteria

Cloning bacteria and antibiotic resistance

Thursday

Module 7: Variation, Species, and the "Kind"
am
Human Inheritance
Skin color genetics
Blood types
Dominant/Recessive traits
Clarification of true dominants

Observation of culture plates for module 6

Module 8: Hardy-Weinberg Equilibrium
pm
Fruit fly genetics
Bottleneck games
Mendel

Friday

Module 9: Taxonomy and Phylogeny
am
Butterfly key
Taxonomy "pool" from DNA sequences
Building a "tree"

Module 10**:** Animal Homology
pm
Appendages
Chicken breast and wing
Turtle girdles
Fish fins
Planaria regeneration
Frog development
Living fossils in the classroom

Course Observations and Wrap-up

G RESOURCES AND SUPPLEMENTARY MATERIAL

Free Access Periodicals

Free Access Including Current Issues

1. *Nucleic Acids Research*: www.nar.oxfordjournals.org.
2. PLoS: www.plos.org (Public Library of Science).
3. Pubmed Central: www.biomedcentral.com/browse/journals.
4. *Journal of Biological Chemistry*: www.jbc.org.
5. *Journal of Cellular and Molecular Medicine*: www.blackwell-synergy.com/loi/JCMM?open=2004#year2004.

6. *International Journal of Developmental Biology*: www.ijdb.ehu.es/web/.
7. *The Journal of Clinical Investigation*: www.jci.org/.
8. *Nature Protocols*: www.nature.com/nprot/index.html.

Free Access for Journal Articles 6 Months or Older

1. *Antimicrobial Agents and Chemotherapy*: http://aac.asm.org.
2. *Nature Nanotechnology*: www.nature.com/nnano/journal/v2/n10/index.html.
3. *Molecular Biology and Evolution*: http://mbe.oxfordjournals.org.
4. *Proceedings of the National Academy of Science*: www.pnas.org.
5. *The Journal of Experimental Biology*: http://jeb.biologists.org.
6. *The Journal of Neuroscience*: www.jneurosci.org/.

Free Access for Journal Articles 1 Year or Older

1. *The American Journal of Pathology*: http://ajp.amjpathol.org.
2. *Microbiology and Molecular Biology Reviews*: http://mmbr.asm.org.
3. *Stem Cells*: http://stemcells.alphamedpress.org/.
4. *The American Journal of Human Genetics*: www.ajhg.org/.

BI 502 Comparative Vertebrate Anatomy

Institute for Creation Research Graduate School

Instructor: Dr. Sharon E. Cargo
Phone: 760-789-2393
e-mail shargo123@Yahoo.com
On-line office hours: TBA

Course Description. (Prerequisites: admission to biology minor SE 501, BI 501, admission to biology minor and/or consent of professor) ***4.5 quarter hours***. In this class comparative vertebrate anatomy will be taught using texts and resources from a variety of origin philosophies. Scientific knowledge so gained will enable the student to evaluate the origin theories as presented. To be taken concurrently with BI 502L.

A COURSE OBJECTIVES

The learner will be able to:

1. Identify and compare gross anatomical structures of various representative vertebrates.
2. Compare and contrast evolution and creation using the major stages of embryology and the accompanying histology.
3. Evaluate flaws in the theory of biologic evolution.
4. Assemble support for creation as a scientific theory using scientific information.

B TEXT AND MATERIALS

Textbooks

1. Kent, G.C. & Carr, R.K. (2001). *Comparative anatomy of the vertebrates.* 9th ed. New York, NY: McGraw-Hill.
2. Gillen, A.L., Sherwin, F.J., & Knowles, A.C. (1999). *The human body: An intelligent design.* St Joseph, MO: Creation Research Society.
3. Wood, T. C., & Murray, M.J. (2003). *Understanding the pattern of life, origins and organization of the species.* Nashville, TN: Broadman & Holman.

Access to Required Journals

1. *American Zoologist*
2. *Integrative and Comparative Biology*
3. *Bulletin of the American Museum of Natural History*
4. *Contributions to Zoology*
5. *Copeia*
6. *Evolution*
7. *Integrative and Comparative Biology*
8. *Journal of Mammalogy*
9. *Journal of Vertebrate Paleontology*

C COURSE REQUIREMENTS

1. **Prerequisites:** A teachable spirit. *"Incline your ear to wisdom, and apply tour heart* to *understanding*." Proverbs 2:2
   a. Undergraduate: Human Anatomy and Physiology, or Vertebrate Zoology.
   b. Graduate: SE 501; BIO 501.
2. **Attendance:** Students are expected to access the website throughout the course and enter into discussion with one another and the instructor. Regular participation in web chats and discussion boards are necessary to learn and contribute to the class.
3. **Reading Assignments:** Reading assignments before class discussions is necessary for meaningful discussions
4. **Complete work:** All work must be completed before the end of the course. Late work will result in dropping the letter grade 10% for each week that the work is late. Work will NOT be accepted after the final exam has been given
5. **Attitude:** *"And whatsoever ye do in word or in deed, do all in the name of the Lord* Jesus, *giving thanks to God and the father by him."* Colossians 3:17. You may notice that I use sarcasm occasionally to emphasize a point. As an instructor at the ICRGS I am "preaching to the choir" and everyone in the class is already a young earth creationist. Sarcasm and anti-evolutionist humor are not appropriate when trying to persuade an evolutionist to change his or her mind. Any discussion about origins is a spiritual battle. As such, facts often have little influence. Your arguments must be presented in a rational and polite manner or you will be dismissed as a crackpot. It is our duty to learn as much as possible about evolution to be able to defend creation. "*But sanctify the Lord God in your hearts and be ready always to give an answer to every man that asketh you a reason of the hope that is in you with meekness and fear*" I Peter 3:15. In any event, your views will often be met with ridicule. "*Having a good conscience that whereas they speak evil of you, as of evil doers, they may be ashamed that falsely accuse your good conversation in Christ.* I Peter 3:16
6. **Computer Literacy:** To successfully complete this course the student must be able to use a word processor, do web searches, upload and download information from the World Wide Web, scan photos and other graphics and insert them in a digitalized form into a document.

D GRADES

1. Grading Scale

Letter Grade	Grade point	Percent
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79

C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retaken—your new grade will replace the old grade.

2. Course Grading Criteria

a.	Quizzes	200 points	20%
b.	Study Questions	200 points	20%
c.	Group discussions	200 points	20%
d.	Research Paper	200 points	20%
e.	Final Exam	200 points	20%
	Total	**1000 points**	**100%**

E COURSE ASSIGNMENTS

1. **Quizzes:** over the reading assignments.
2. **Study Questions:** Answer the indicated questions for each assignment
3. **Group Discussions:** Participation in group discussions will enhance the learning process. We are covering a large body of knowledge; discussion and pertinent questions will help to re-enforce such knowledge.
4. **Research Paper:** A minimum of 5 pages on a topic relating anatomy to the evolution/creation debate. The format must conform to the APA Publication manual. At least 3 scientific references should be included. Personal opinion can be expressed in theconclusion, but must be labeled as such. The paper is due on or before the last day of class. Topic examples are:
   a. A particular "vestigial" organ discussion.
   b. A special sense organ discussion, such as the eye.
   c. The origin of a specialized function or ability, such as flight.
   d. Comparison of a structure that has supposedly evolved into another structure, such as scale to feather.
5. **Final Exam:** to be taken online.

F COURSE CALENDAR

Module	Topic
1	An Introduction to Vertebrate Organization and Classification
2	"Origins" and Development of the Craniates
3	The Integumentary System, Design and Baraminology
4	Beginning the Skeletal System, Design and Baraminology continued
5	Continuing the Skeletal System, Design and Baraminology continued
6	Muscles, Design and Baraminology continued
7	Digestive and Respiratory Systems, Design and Baraminology continued
8	Circulatory and Urogenital Systems, Design and Baraminology continued
9	Nervous System, Design and Baraminology continued

10	Endocrine System and Special Senses, Design and Baraminology continued Paper due; Final Exam

G RESOURCES AND SUPPLEMENTARY MATERIAL

1. Gish, D.T. (1995). *Evolution: The fossils still say NO!* El Cajon, CA: Institute for Creation Research.
2. Denton, M. (1985). *Evolution: A theory in crisis.* Chevy Chase, MD: Adler and Adler.
3. Ham, K., Sarfati, J. & Wieland, C. (2000). *The revised and expanded answers book*, Green Forrest, AR: Master Books.
4. Ham, K., editor. (2007). *The new answers book*, Green Forest, AR: Master Books.
5. Davis, P. & Kenyon, D.H. (1993). *Of pandas and people: The central question of biological origins*. Dallas, TX: Haughton Publishing.
6. Lubenow, M. (l992). *Bones of contention: A creationist assessment of human fossils.* Grand Rapids, MI: Baker Books.
7. Ham, K. (1998). *The great dinosaur mystery solved!* Green Forest AR: Master Books,
8. Bergman, J. & Howe, G. (1990). *"Vestigial" organs are fully functional.* Terre Haute, IN: Creation Research Society.

BI 502L Comparative Vertebrate Anatomy

Institute for Creation Research Graduate School

Instructor: Dr. Sharon E. Cargo
Phone: 760-789-2393
e-mail shargo123@Yahoo.com
On-line office hours TBA

Course Description: (Prerequisites: SE 501; BIO 501. Students must have previously or concurrently be enrolled Biology 504.) ***1.5 quarter hours.*** This class will be concentrating on the structures of the various vertebrate classes. To enable practical application there will be weekly teaching adventures involving an evaluation of origin issues. We will concentrate on known facts and consider which module of origins the facts fit best (to be taken concurrently with BI 502).

A COURSE OBJECTIVES

Course Objectives. The learner will be able to

1. Identify and compare gross anatomical structures of various representative vertebrates.
2. Look at origins issues from a scientific perspective by evaluating the evidence.
3. Evaluate the evidence for biologic evolution not only of the vertebrates but the evolution of one class into another, e.g. fish to amphibian.
4. Utilize objectively obtained scientific information to convey support for origins of living organisms and man.
5. Assemble a database of scientifically gathered material.

B TEXT AND MATERIALS

Textbooks

1. Houseman, J.G. (2003). *Digital zoology, version 2.0 CD rom and student workbook.* New York, NY: McGraw-Hill Higher Education.
2. Optional but helpful, a college level Vertebrate Anatomy text, such as Kent, G. C. & Carr, R. K. (2001). *Comparative anatomy of the vertebrates.* 9th ed. New York, NY: McGraw-Hill. or Kardong, K. V. (2006). *Vertebrates: Comparative anatomy, function, evolution*, 4th ed. New York, NY: McGraw-Hill Higher Education.
3. Optional but helpful, a college level Zoology text, such as Hickman, C. P., Jr. et al. *Animal diversity.* 4th ed. 2007. New York, NY: McGraw-Hill Higher Education.
4. Optional but helpful, a human anatomy college level text such as *Gray's anatomy* but the best I have seen is Netter, F. H. (1998). *Atlas of human anatomy*. 2nd ed. East Hanover, NJ: Novartis.

Access to Required Journals

1. *American Zoologist*

2. *Integrative and Comparative Biology*
3. *Bulletin of the American Museum of Natural History*
4. *Contributions to Zoology*
5. *Copeia*
6. *Evolution*
7. *Integrative and Comparative Biology*
8. *Journal of Mammalogy*
9. *Journal of Vertebrate Paleontology*

C COURSE REQUIREMENTS

1. **Prerequisites:** A teachable spirit and an open mind.
   a. Undergraduate: Human Anatomy and Physiology, or Vertebrate Zoology.
   b. Graduate: SE 501; BIO 501. Students must have previously or concurrently be enrolled Biology 504.
2. **Attendance:** Participation in class discussions is required.
3. **Labs and Reading Assignments:** Reading assignments should be completed before class discussions. This is necessary for meaningful discussions.
4. **Museum fieldwork:** If a Natural History Museum is not available, fieldwork can be done on the Internet. More details to follow.
5. **Complete work:** all work must be completed before the end of the course. Late work will result in dropping the letter grade 10% for each week that the work is late. Work will NOT be accepted after the final exam has been given.
6. **Attitude.** Your arguments must be presented in a rational and polite manner or you're work will be viewed as unprofessional. It is imperative that we all learn as much as possible about all origin theories to be able to understand which is more scientific.
7. **Computer Literacy:** To successfully complete this course the student must be able to use a word processor, do web searches, upload and download information from the World Wide Web, scan photos and other graphics and insert them in a digitalized form into a document.

D GRADES

1. Grading Scale

Letter Grade	Grade point	Percent
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retaken—your new grade will replace the old grade.

2. Course Grading Criteria

a.	Lab Quizzes	100 points	33.3%
b.	Study Questions & Discussions	200 points	33.3%
c.	Final Exam	100 points	33.3%
	Total	**400 points**	**100%**

E COURSE ASSIGNMENTS

1. **Lab Quizzes:** Ten labs over the reading assignments. Each lab assignment includes identifying structures of the specimens studied during the Module. They will be presented as numbered figures in a PowerPoint presentation. The student will make a corresponding numbered list and turn in to be graded.
2. **Study Questions and Discussions:** Study questions and exercises are in the textbook at the end of each chapter. Participation in group discussions will enhance the learning process. We can supplement each other's experiences by the sharing and subsequent discussion of the field research.
3. **Final Exam:** to be taken online, open book but timed.

F COURSE CALENDAR

Module	Topic
1	Lab 1. The candidates for vertebrate ancestry - the Echinoderms, the Hemichordata, Urochordata, and the Cephalochordata
2	Lab 2. Jawless fishes, the Lampreys and Hagfishes
3	Lab 3. Cartilaginous Fishes, the dogfish shark
4	Lab 4. Bony Fish, the perch
5	Lab 5. Amphibians I, the mudpuppy
6	Lab 6. Amphibians II, the frog
7	Lab 7. Reptiles, the turtle
8	Lab 8. Aves, the pigeon
9	Lab 9. Mammals, the fetal pig and rat
10	Lab 10. Humans and other unusual mammals Study for final, final

G RESOURCES AND SUPPLEMENTARY MATERIAL

Suggested (not required) Reference Works That Will Make Good Additions to Your Library. These are also listed in the Lecture Syllabus**.**

1. Gish, Duane T.1995. *Evolution: the Fossils Still Say NO!* , Institute for Creation Research, El Cajon, CA, 1995. ISBN 0-89051-112-8

2. Denton, Michael.1985. *Evolution: A Theory in Crisis.* Adler and Adler, Chevy Chase, MD, 1985, ISBN 0-97561-52-X
3. Ham, Ken, Sarfati, Jonathan, & Wieland, Carl.2000. *The Revised and Expanded Answers Book*, Master Books, Green Forrest AR. ISBN 0-89051-161-6
4. Ham, Ken, general editor.2007. *The New Answers Book*, Master Books, Green Forest, AR. ISBN 10-089051093
5. Davis, Percival, & Kenyon, Dean H. .1993. *Of Pandas and People: The Central Question of Biological Origins*. Haughton Publishing, Dallas, TX.. ISBN 0-914519-40-0
6. Lubenow, Marvin l. 992. *Bones of Contention: A Creationist Assessment of Human Fossils*. Baker Books, Grand Rapids, MI. ISBN0-8010-5677-2
7. Ham, Ken.1998. *The Great Dinosaur Mystery Solved*! Master Books, Green Forest AR. ISBN 0-89051-282-5
8. Bergman, Jerry & Howe, George.1990. *"Vestigial" Organs Are Fully Functional* Creation Research Society, Terre Haute, IN. ISBN 0-940384-09-4
9. Morris, Henry. 2006 The Defenders Study Bible. Nelson Bibles. ISBN 10-0529121638

BI 503 Principles and Patterns in Paleontology

Institute for Creation Research Graduate School

Dr. Gary E. Parker, course designer
Phone: (863) 494-9558 Email: creation@strato.net
Chris Osborne, instructor; Email: drchrisosborne@yahoo.com
Office Hours: Online TBA Office Location: Yahoo Messenger Conference Room

Course Description: (Prerequisites: admission to biology minor, SE 501, BI 501, BI 502 with lab or consent of professor) ***4.5 quarter hours***. Comparisons of criteria used to classify fossils and extant forms are analyzed in Systematic Paleontology for patterns used to propose and defend models for the origin and history of major taxonomic groups. (Cross-reference with GE 503) BI 503L to be taken concurrently.

A COURSE OBJECTIVES

The learner will be able to:

1. Define "fossil," exposing popular misconceptions in the process.
2. Describe the different types of fossils, explain how each type forms (taphonomy), and discuss formation of fossil fuels (coal and oil).
3. Define "geologic system" (paleosystem) along with the following:
   a. List the sequence in the Geologic Column Diagram.
   b. Describe their features.
   c. Describe the history of system names.
   d. Compare and contrast on multiple points the radically different meanings creationists/Flood geologists vs. evolutionists give to the GCD.
4. Contrast the many radically different predictions creationist geologists vs. evolutionists geologists made as the study of fossils began.
5. Evaluate the following as proposed examples of evolutionary series (morphologic series + stratigraphic series): horse series, fish-to-amphibian, algae-to-land plants, ammonite series, flat-to-coiled oysters, whale series.
6. Compare and contrast the following as examples of evolutionary links vs. creationist mosaics: nautilus, "walking whale," "mammal-like reptiles, coelacanth, *Peripatus*, *Archaeopteryx*, "Archaeoraptor," cycads/"seed ferns," and algal classification.
7. Evaluate creationist vs. evolutionist explanations for the "Cambrian explosion," mass extinction, "mammalian adaptive radiation," convergence, "living fossils," and stasis.
8. Relate the "Ice Age" to post-flood catastrophism and to Florida fossils.
9. Defend a reasonable conclusion regarding the paleontological history of major groups.

B TEXT AND MATERIALS

Textbooks

1. Prothero, D.R.(2004). *Introduction to paleobiology: Bringing fossils to life*, 2nd. ed. NY: McGraw-Hill.
2. Parker, G.E. & M.M. (2005). *The fossil book.* Green Forest, AR: Master Books.
3. Parker, G,E.(2006). *Creation: Facts of life,* Rev. ed., Green Forest, AR: Master Books.
4. Parker, G.E. (2007). *Building blocks in science:* Green Forest, AR: Master Books.
5. Sodera, V. (2006). *One small speck to man: The evolution myth.* West Sussex, United Kingdom: Vija Sodera Productions.

Videos/DVDs

1. Parker, G.E. (1995). *Fossils and the food* (with Study Guide). Florence, KY: Answers in Genesis.
2. Taylor, P.S. (1982). *The world that perished.* Mesa, AZ: Films for Christ.
3. Parker, G.E. (1996). *From evolution to creation.* Florence, KY: Answers in Genesis.

Access to Required Journals

1. *Journal of Paleontology*
2. *New Scientist*
3. *Natural History*
4. *Science*
5. *Nature*

Materials

1. Parker, M. M. *Fossil Study Kit.* Creation Adventures Museum, Arcadia, FL.

C COURSE REQUIREMENTS

1. **Prerequisites**
   a. Undergraduate: at least a year of undergraduate work in biology or geology.
   b. Graduate: SE 501, BI 501, BI 502.
   c. Read Chs. 1 and 3 of *Creation: Facts of Life,* Rev. ed. (2005), and watch DVD/Video, *From Evolution to Creation* (1996).
2. **Types of activities:** reading; evaluation of videos; journal critiques; reports and presentations; chat room discussions; quizzes and tests.
3. **Expectations:** Keep up with weekly assignments, completing work in advance if scheduling conflicts exist.
4. You must download the exam proctor form and either FAX or snail-mail (USPS) it the first week of school.

D GRADES

1. Grading Scale

Letter Grade	Grade point	Percent
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retaken – your new grade will replace the old grade.

2. Course Grading Criteria.

a.	Two tests	300 pts.	30%
b.	Summary Essay	100 pts.	10%
c.	Inquiry questions	200 pts.	20%
d.	Journal Critique	100 pts.	10%
e.	Lay presentation	200 pts.	20%
f.	Discussion	100 pts.	10%
	Total	**1000 pts.**	**100%**

E COURSE ASSIGNMENTS

1. **Tests:** Take a mid-term and a final exam over content learned from the reading assignments.
2. **Summary Essay:** Do a Summary Essay over course content (part of final).
3. **Inquiry questions**: higher level questions relating to the reading assignments and to be turned in for grading.
4. **Journal Critique:** Critique classic and current journal articles on a major paleontological topic of your choice, demonstrating ability to "read between the lines."
5. **Lay presentations:** Prepare 2 lay presentations on dinosaurs and biblical history and on fossils and human origins. Prepare a lay presentation or article (esp. for school or church groups) (a) contrasting evolutionary beliefs about human origins with the fossil evidence, and (b) relating dinosaur paleontology to biblical history.
6. **Discussion:** Participate in the module discussion board.

F COURSE CALENDAR

Module	Topic
1	Fossils—Definition, Types, Formation
2	Geologic Column Diagram (GCD)—Contrasting views
3.	Paleosystematics—Missing Links or Mosaics?
4.	Paleostratigraphy —Ecological or Evolutionary series?

5. Begin Fossil Collection
   TEST # 1
6. "Ice Age" and Florida Fossils; Vertebrates
7. Invertebrates I: Cnidarians, Echinoderms, Brachiopods, Bryozoans
8. Invertebrates II Arthropods, Mollusks
9. Paleobotany; Micropaleontology
   TEST # 2
10. Journal Critiques and Lay Presentations due
    Week 11: Share Critiques, Presentations, Summary Essay.

G RESOURCES AND SUPPLEMENTARY MATERIAL

1. Ayala, F. & Valentine, J. (1986). *Evolving: The theory and processes of organic evolution.* Menlo Park, CA: Benjamin/Cummings Publ. Co.
2. Bliss, Parker, & Gish. (1980). *Fossils: Key to the present.* San Diego, CA: CLP Publishers.
3. Dobzhansky, Alayla, Stebbins, & Valentine. (1977). *Evolution.* San Francisco: W. H. Freeman.
4. Denton, M.(1985). *Evolution Theory in crisis.* Bethesda, MD: Adler & Adler.
5. Gish, D. (1986). *Evolution: The fossils still say no!* San Diego, CA: Creation-Life Publishers.
6. Lubenow, M.L. (1992). *Bones of contention.* Grand Rapids, MI: Baker Book House.
7. Morris, H. & Parker, G. (1986). *What is creation science?* El Cajon, CA: Master Books.
8. Oard, M.J. (2004). *Frozen in time: The woolly Mammoth, the Ice Age, and the Bible.* Green Forest, AR: Master Books.
9. Parker, S. (1990). *The practical paleontologist*. New York: Simon & Schuster.

BI 504 Advanced Ecology with Lab

Institute for Creation Research Graduate School

Instructor: Dr. Chris Osborne
Course Designer: Dr. Gary Parker
Phone: (619) 448-0900 (w); E-mail: drcdosborne@yahoo.com
Office Hours: TBA; Office Location: virtual

Course Description: (Prerequisites: SE 501) ***6 quarter hours.*** A model is presented for how the biosphere is designed and structured and how it functions. Communities, ecosystems, and biomes are examined to see how they fit the model. Mankind's role in managing the earth is discussed and evaluated. Possible solutions to various environmental problems are evaluations. Field work is integrated with coursework.

A COURSE OBJECTIVES

The student will be able to:

1. Describe how organisms interact with each other and with their environment.
2. Compare and contrast environmental issues from an evolutionary and creation worldview.
3. Convert statements of evolutionary "faith" and creationist faith into scientific statements.

B TEXT AND MATERIALS

Textbooks

1. Molles, M.C. (2005). *Ecology concepts and applications.* 3rd Ed. Boston: McGraw-Hill.
2. Parker, G. (2002). *Exploring the world around you: A look at nature from topics to tundra.* Green Forest, AR: Master Books.

Access to Required Journals

1. *Behavioral Ecology*
2. *Conservation Ecology*
3. *Ecology*
4. *Journal of Animal Ecology*
5. *Journal of Applied Ecology*
6. *Journal of Ecology*
7. *Journal of Functional Ecology*
8. *Wetlands*

C COURSE REQUIREMENTS

1. **Prerequisites**
   a. Undergraduate: at least a year of undergraduate work in biology or geology.
   b. Graduate: SE 501
   c. Read the book *Creation Facts of Life* by Gary Parker
2. Attendance: since there will be a lot of interaction in the class, your presence during web chats is necessary to learn and contribute to the class.
3. Read Assignments, Participation in Discussion: Individuals will not be able to process the reading assignments if they have not read the assignments BEFORE class starts. Reading the assignments and then discussing them helps everyone construct meaning of a difficult concept.
4. Completion of work: All work must be completed by the end of the course. If an assignment is late it will result in dropping your grade 10% for each week it is late. It will NOT be accepted after the final exam has been given.
5. Attitude: “Let He who would love life and see good days, Let him refrain his tongue from evil and his lips from speaking deceit” Ps. 34: 12-13. Do your work as unto the Lord. A negative person is not fun to be with. He brings a depressing shadow to every project. He is a complainer, a murmurer and a faultfinder. No matter how many good things are going on, he always seems to spot the one thing that could be a potential problem. “For as he thinks in his heart, so is he” Proverbs 23:7. In other words think about what you are thinking about and saying. Is it pleasing to the Lord?
6. Computer Literacy: The ability to use a word processing program, do web searches, upload and download information from the World Wide Web, scan photos and other graphics that are not already digitized and insert them into a document, create web pages and create charts and graphs using a program like Excel are necessary to successfully complete this course.

D GRADES

1. **Grading Scale**

Letter Grade	Grade point	Percent
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retaken—your new grade will replace the old grade.

2. **Course Grading Criteria**

a.	Quizzes	150 points	15%
b.	Discussions	100 points	10%
c.	Field Experience	300 points	30%
	20 points/week for field work		
	100 points for completed Virtual Nature Guide		
d.	Inquiry Questions	100 points	10%
e.	Research Paper	200 points	20%
f.	Final Exam	150 points	15%
	Total	**1000 points**	**100%**

E COURSE ASSIGNMENTS

1. **Quizzes:** over *Exploring the World Around You* and *Ecology Concepts and Applications.* (Science Education Program Objective 1; Course Objectives 1, 2, 3).
2. **Discussion:** Discussions over *Exploring the World Around You* and *Ecology Concepts and Applications.* (Science Education Program Objective 1; Course Objectives 1, 2, 3).
3. **Field Experience:** Virtual Nature Walk – based on chapter titles – combine everything that can be identified, explained, observed. For example: symbiosis; competition between exotics and natives; succession; ecosystems of . . . . (go to library and classify based on state – Parks and wildlife; textbooks - state) and define what is in it; video/virtual tour with pictures and write up on each; medicinal plants; abiotic factors; atmospheric conditions; rainfall, temperature average, soil type; energy flow and food; evolutionary and creationist explanations (how might each deal with it); environmental issues; including but not limited to module assignments. Grading will include progress along the way as you complete each module; pictures you take, graphics, explanations, and clarity of explanations presented by you, the tour guide, power point presentation; etc. (Science Education Program Objectives 1, 4; Course Objective 1).
4. **Inquiry Questions**: answer and upload questions over reading. (Science Education Program Objective 1; Course Objectives 1,2,3).
5. **Research Paper:** Written report: give examples. Chicago Style; mechanics; appropriate sources; include historical and recent resources; recent journal articles and examine materials by skeptics. Suggested Topics: global warming; ozone; rainforests; recycling (Science Education Program Objective 1, 3, 4; Course Objective 1,3).
6. **Final Exam:** (comprehensive). Students will take on-line final exam over the course objectives (tests all objectives on the knowledge level) (Science Education Program Objective 1; Course Objectives 1-3).

F COURSE CALENDAR

Module	Topic
1	Perspectives on Ecology
2	Niches, Habitats and Adaptations
3	Species, Kinds, and Symbiosis
4	Abiotic Factors
5	Food, Energy Flow and Cycles
6	Balance in Nature
7	Aquatic Ecosystems and Biomes
8	Succession and Biogeography
9	Landscape Ecology
10	Humans and Ecology

G RESOURCES AND SUPPLEMENTARY MATERIAL

1. Bailey, R., Ed. (1995). *The true state of the planet.* NY: The Free Press.
2. Brennan, S. & Withgott, J. (2006). *Environment: The science behind the stories.* Prentice Hall College Division.
3. Brower, J.E., Zar, J. H., & von Ende, C. N. (1998). *Field and laboratory methods for general ecology.,* 4th Ed. Boston, MA: McGraw-Hill Publishers.
4. Bush, M.B. (2003). *Ecology of a changing planet.* 3rd Ed. Upper Saddle River, NJ: Merrill-Prentice Hall.
5. Lomborg, B. (2001). *The skeptical environmentalist: Measuring the real state of the world*. NY: Cambridge University Press.
6. Mosby, H.S.; Giles, R. H.; Schemnitz, S. D.; & Bookhout, T. A. (Editors). (1996). *Research and management techniques for wildlife and habitats*. Lawrence, KA: Allen Press, Inc..
7. Odum, E., & Barrett, G.W. (2004). *Fundamentals of ecology, 5th Ed*. Pacific Grove, CA: Brooks Cole Publishers.
8. Parker, G. (2001). *Creation: Facts of life*. 8th Ed. Green Forest, AR: Master Books.
9. Williams, R. (2002). *Population analysis and management of animal populations*. Burlington, MA: Academic Press.

BI 505 Advanced Cell and Molecular Biology

Institute for Creation Research Graduate School

Instructor: Dr. Daniel Criswell
Phone: ICR 214 615-8325; E-mail: dcriswell@icr.edu

Course Description: (Prerequisites: SE 501, BI 501) ***4.5 quarter hours.*** A survey of the molecular processes governing inheritance and an investigation into the variation of these processes and their limits. Special consideration is given to current molecular topics related to the origin of biochemical pathways.

A COURSE OBJECTIVES

At the completion of this course students will be able to:

1. Evaluate the validity of each theory of biochemical origins from the current literature.
2. Compare and contrast competing theories of biochemical origins and distinguish between the strengths and weaknesses of each.
3. Develop a hypothesis explaining the immutability of biochemical systems from the current literature.
4. Acquire a competent knowledge level of the biochemical systems frequently used as models for origin of life theories.
5. Synthesize a Creationist paradigm for biochemical differences between created kinds.

B TEXT AND MATERIALS:

Textbooks.

1. Lodish, H., Berk, A., Kaiser, C.A., Krieger, M., Scott, M.P., Bretscher, A., Ploegh, H., & Matsudaira, P. (2007). *Molecular cell biology*. 4th ed. NY: W. H. Freeman.
2. Additional assigned reading in the current scientific literature.

C COURSE REQUIREMENTS

1. **Prerequisites:**
   a. Undergraduate: Biochemistry or Molecular Biology.
   b. Graduate: BI 501
2. **Attendance:** Students are expected to access the website throughout the course and enter into discussion with one another and the instructor. Regular participation in web chats and discussion boards are necessary to learn and contribute to the class.
3. Writing skills are a must. Students are expected to write all assignments using correct grammar and spelling.

4. Students are required to interact with the instructor on a weekly basis.
5. Students should plan on spending 10-12 hours per week on the reading and writing assignments.
6. A letter grade will be deducted from work turned in late. After one week another letter grade will be dropped from the earned grade. Assignments will not be accepted after two weeks past the due date.

D GRADES

1. Grading Scale

Letter Grade	Grade point	Percent
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retaken—your new grade will replace the old grade.

2. Course Grading Criteria

a.	Discussion board topic	50 pts.	10%
b.	Quizzes	100 pts.	20%
c.	Article summary	50 pts.	10%
d.	Course paper	100 pts.	20%
e.	Final exam	200 pts.	40%
	Total	**500 pts.**	**100%**

E COURSE ASSIGNMENTS

1. **Discussion Board:** Participation in each discussion board is expected.
2. **Quizzes:** The quizzes cover the material in each module. Students should focus on the relevance of each topic in the creation/evolution debate and not merely the content.
3. **Article Summary:** The summary of the peer reviewed article will include the introduction, the problem researched, methods, results, and the author's conclusions along with the student's conclusion of the data presented. This paper must be written before the student chooses a topic for the research paper.
4. **Course Paper:** The writing assignment is the culmination of the student's personal research into one of the topics from the course. Each student will include

a minimum of ten references for the paper. Topic approval from the instructor is required.

5. **Final Exam:** Exams will be in the same format as the quizzes. Students should concentrate on the relevance of the material in class to the creation/evolution controversy.

F COURSE CALENDER

Module	Topic
1	The Central Dogma: DNA replication and transcription in archea, prokarya and eukarya. Are the differences irreconcilable?
2	Serial Endosymbiosis: Can endosymbiosis give rise to new organisms?
3	One Gene, One Protein? Shuffling, editing, and lots of variation
4	Gene and Chromosome Structure LINES, SINES and lots of Junk?
5	Regulation: Promoters, enhancers, operons and lots of rules, rules, rules, and more rules
6	Horizontal gene transfer: It's like trading baseball cards!
7	Viruses and virulence: Everyone's villain
8	Immunity and the Origin of Disease: Did Adam and Eve have an immune system?
9	Hox Genes and Development. Please don't flip the wrong switch
10	Cancer: The product of cellular evolution gone mad!

G RESOURCES AND SUPPLEMENTARY MATERIAL

Free Access Periodicals

Free Access Including Current Issues

1. *Nucleic Acids Research*: www.nar.oxfordjournals.org.
2. PLoS: www.plos.org (Public Library of Science).
3. Pubmed Central: www.biomedcentral.com/browse/journals.
4. *Journal of Biological Chemistry*: www.jbc.org.
5. *Journal of Cellular and Molecular Medicine*: www.blackwell-synergy.com/loi/JCMM?open=2004#year2004.
6. *International Journal of Developmental Biology*: www.ijdb.ehu.es/web/.
7. *The Journal of Clinical Investigation*: www.jci.org/.
8. *Nature Protocols*: www.nature.com/nprot/index.html.

Free Access for Journal Articles 6 Months or Older

1. *Antimicrobial Agents and Chemotherapy*: http://aac.asm.org.
2. *Nature Nanotechnology*: www.nature.com/nnano/journal/v2/n10/index.html.
3. *Molecular Biology and Evolution*: http://mbe.oxfordjournals.org.
4. *Proceedings of the National Academy of Science*: www.pnas.org.
5. *The Journal of Experimental Biology*: http://jeb.biologists.org.

6. *The Journal of Neuroscience*: www.jneurosci.org/.

Free Access for Journal Articles 1 Year or Older

1. *The American Journal of Pathology*: http://ajp.amjpathol.org.
2. *Microbiology and Molecular Biology Reviews*: http://mmbr.asm.org.
3. *Stem Cells*: http://stemcells.alphamedpress.org/.
4. *The American Journal of Human Genetics*: www.ajhg.org/.

GE 501 Physics and Geology of Natural Disasters

Institute for Creation Research Graduate School

Instructor: Steven A. Austin
Phone: (619) 448-0900 (w); E-mail: saustin@icr.edu
Office Hours: Virtual TBA

Course Description: (Prerequisites: SE 501, and/or consent of instructor). ***4.5 quarter hours***. Analysis of some of the most extraordinary geologic events that have affected the earth's surface including displacement processes (earthquakes, landslides, storm surges and tsunamis), nozzle and penetration events (caldera and summit eruptions, pluton intrusion, piping failure of natural dams, meteor impacts), and energetic granular flows (debris avalanches, debris flows, hyperconcentrated river floods, and pyroclastic flows). Focus is on eye-witness reports allowing geological classification and quantitative description. Mechanical analysis employs force vectors, energy balance, and work budgets with only occasional use of calculus. Probability analysis addresses potential threat to humans. This course is also appropriate for science educators needing broad experience with surface geologic processes.

A COURSE OBJECTIVES

The learner will be able to:

1. Explain how the study of catastrophic exogenic processes ("natural disasters") is essential to understanding of human culture, western civilization, empirical sciences and historical sciences.
2. Define, recognize and classify exogenic geologic processes that have directly impacted humans and civilization.
3. Describe in verbal and quantitative terms various catastrophic exogenic processes ("natural disasters").
4. Calculate potential and kinetic energies of catastrophic exogenic processes using principles of mechanics and analysis of work accomplished.
5. Perform force balance analysis to describe steady and uniform motion of catastrophic exogenic processes.
6. Apply the principle of process-product analogy so that ancient deposits can be used to discover and interpret ancient natural disasters.

B TEXT AND MATERIALS

Textbooks

1. Abbott, P.L. (2007). *Natural disasters.* 6th Ed. Boston: McGraw Hill.
2. Morris, J. & Austin, S.A. (2003). *Footprints in the ash.* Green Forest, AR: Master Books.

Resources

1. *"Physics and Geology of Natural Disasters,"* the twelve DVDs that are Dr. Austin's twelve lectures supporting the ten modules of this course (the 12 DVD's are distributed to students by ICR as part of course fee).
2. *"Mystery of the Megaflood,"* the NOVA one-hour documentary on DVD produced by Public Broadcasting System (PBS), first aired in 2005 (available online at www.amazon.com for $17.95 plus shipping).
3. *"Perilous Beauty: The Hidden Dangers of Mount Rainier,"* the 29-minute VHS video tape produced by U.S. Geological Survey, 1996 (available from Northwest Interpretive Association, 3029 Spirit Lake Highway, Castle Rock, WA 98611, tel: (360) 274-2127, $19.95 plus $5 shipping; this video tape is not available in DVD format, and *cannot* be ordered online).
4. *Catastrophe Reference Database* (version 2.0), by Steven A. Austin and William A. Hoesch, Institute for Creation Research, 2005, on CD-ROM disk.

Access to Required Journals

1. *Biogeosciences.*
2. *Bulletin of the American Museum of Natural History.*
3. *Current Research in Earth Sciences*
4. *Earth and Planetary Science Letters.*
5. *Ecological Monographs.*
6. *Geochimicia et Cosmochimia Acta.*
7. *Geological Society of American Bulletin.*
8. *Geology.*
9. *Journal of Geology.*
10. *Nature.*
11. *Rocks and Minerals.*
12. *Sedimentology.*
13. *Science.*
14. *Scientific American.*

C COURSE REQUIREMENTS

1. **Prerequisites:**
   a. Undergraduate: Geology (3 semester hours physical & historical); physics (3 semester hours, emphasis in mechanics); math (3 semester hours of algebra/statistics, 3 hours of calculus).
   b. Graduate: SE 501.
2. **Attendance:** Students are expected to access the website throughout the course and enter into discussion with one another and the instructor. Regular participation in web chats and discussion boards are necessary to learn and contribute to the class.
3. Reading and taking notes while watching lectures.
4. Assigned problems given by the professor.
5. Abstract research & writing assignment.
6. Form energy analysis problems as assigned by the professor .

7. Review natural disaster case studies.
8. Review supplementary materials, videos and DVDs.
9. Find, read, and evaluate selected geologic literature using specified format to write abstracts.

D GRADES

1. Grading Scale

Letter Grade	Grade point	Percent
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retaken—your new grade will replace the old grade.

2. Course Grading Criteria

a.	Module Quizzes	20%
b.	Assigned Problems & Review of Case Studies	10%
c.	Abstract Research & Writing Assignment	20%
d.	Final Exam	50%

E COURSE ASSIGNMENTS

1. **Module Quizzes:** Quizzes over DVD lectures and reading assignments.
2. **Assigned Problems and Review of Case Studies:** Mathematical calculation of geological problems from past and present natural disasters.
3. **Abstract Research & Writing Assignment:** You will read assigned journal articles and write post your analysis of the research and conclusions to discuss with the members of your class.
4. **Final Exam: A** comprehensive test over all the class material.

F COURSE CALENDAR

Module	Topic
1	Understanding Natural Disasters
2	Learning from Catastrophe
3	Organizing Chaos
4	Shaking the Earth

5 The 4 V's of Volcanoes
6 Asteroid Impact in the Ocean
7 Landslides
8 Dilute Fluid Flows
9 Concentrated Sediment Flows.
10 a. The Search for Sodom & Gomorrah
b. Amos's Earthquake
c. Messiah's Earthquake

Week 11: Major writing assignments due, course review and final exam.

G RESOURCES AND SUPPLEMENTARY MATERIAL

1. ***Map Archives,*** a collection of digitized maps used by teachers and students, archived at the Institute for Creation Research and distributed to students in PDF and JPEG formats. Currently ArcView is used on a computer at ICR but has not yet been used by students to display maps. Hard copies of many maps are housed at Institute for Creation Research.
2. ***Photo Archives,*** a very large collection of digitized photography used by teachers and students, archived at the Institute for Creation Research and distributed to students in PDF, TIF and JPEG formats. Hard copies (film and print photos) are housed at Institute for Creation Research. Primary subject of the photo archive is physical process geology. Classic photography distributed by US Geological Survey is included in this collection. Natural disaster photo databases are also available online.
3. ***Digital Reprint Archive,*** a collection of digital manuscripts and publications used in teaching geology. The archive is mostly in PDF form. The professor makes assignments and distributes these files to students.
4. ***Rock Sample Archive***, an enormous collection of catalogued rocks and minerals is archived at ICR. The collection includes microscopic thin sections polished slabs, prepared display and research fossils, X-ray diffraction (XRD) data files, scanning-electron micrographs (SEM), and x-ray fluorescence data files (XRF). Professors can use this data to supplement course content and distribute data to students.
5. ***Google Earth,*** an online satellite photography database. This online database is available to students for natural disasters studies. The course professor demonstrates how overflights of sites of geological interest are performed. Students can manipulate and display *Google Earth.*
6. ***Navigation Resources.*** The professor demonstrated the use of conventional GPS to solve geologic problems. The professor encourages students to use GPS and to interface it with maps and aerial photography.
7. ***Lecture Notes.*** The professor makes available as PDF files the content of his PowerPoint lectures.

GE 502 Geochronology with Lab

Institute for Creation Research Graduate School

Instructor: Larry Vardiman, PhD
Phone: (360) 631-5034; E-mail: LVardiman@icr.edu
Office Hours: 9-4 M-F; Office location: Classroom Forum at www.de.icr.edu.

Course Description. (Prerequisites: admission to geology minor, SE 501, GE 501, and/or consent of instructor). ***6 quarter hours.*** A review, critique, and evaluation of assumptions and evidences for the age of the earth and its rock layers. Particular emphasis will be placed on surveying the use of the radioisotope dating methods, especially potassium-argon, rubidium-strontium, samarium-neodymium and uranium-thorium-lead, to expose the fatal problems with them. Special emphasis will also focus on the results of the RATE (Radioisotopes and the Age of the Earth) research project, including helium diffusion in zircon, fission tracks, radiohalos, discordant isochron 'ages', and radiocarbon in supposedly ancient organic materials and diamonds, that together indicate that nuclear decay was grossly accelerated during a recent catastrophic event in earth history and that the earth is therefore young. The laboratory requires that original data on rubidium-strontium, potassium-argon, samaritum-neodymium, uranium-lead and carbon-14 be downloaded, plotted, and interpreted using IsoPlot 3.0 which is an add-on to Excel. (Cross Referenced with AG 502)

A COURSE OBJECTIVES

At the end of this course the learner will be able to:

1. Recognize and use geological dating terminology.
2. Compare and contrast methods used by geologists to date rocks using radioisotopic methods.
3. Exercise standard geochronological procedures for converting measured values from rock samples into "ages."
4. Analyze radioisotope dating methods to discover their critical problems and assumptions in order to argue coherently for a young-earth model.
5. Develop an alternative scientific method for incorporating radioisotopic evidence into a young earth framework of earth history.
6. Compare and contrast the old-earth and young-earth models of earth history.
7. Evaluate claims made by conventional geochronologists and develop a confident personal view of Earth's history.
8. Express this view in effective, written form using accurate terminology.

B TEXTS AND MATERIALS

Textbooks [Required]

1. Faure, G. & Mensing, T.M. (2005). *Isotopes: Principles and applications*, 3rd ed. Hoboken, NJ: John Wiley & Sons.

2. Vardiman, L., Snelling, A.A., & Chaffin, E.F., Eds. (2005). *Radioisotopes and the age of the earth, Vol. II: Results of a young-earth creationist research initiative.* El Cajon, California: Institute for Creation Research & St. Joseph, MO: Creation Research Society.
3. Ludwig, K.R. *Isoplot version 3.0: A geochronological toolkit for Microsoft Excel.* Berkeley Geochonology Center Special Publication No. 4, University of California, Berkeley, California, 2001.
4. Austin, S.A. (editor). (1994). *Grand Canyon: Monument to catastrophe.* Santee, CA: Institute for Creation Research.
5. Morris, J.D. (1994). *The young earth.* Green Forest, AR: Master Books.

Videos or DVD's [Required]

1. *Thousands … not billions: Challenging an icon of evolution, questioning the age of the Earth.* (2005).DVD. San Diego, CA: Institute for Creation Research.
2. Austin, S. (2003). *Radioisotopes and the age of the earth.* DVD San Diego, CA: Institute for Creation Research.

Access to Required Journals

1. *Nature*
2. *Science*
3. *Geology Teacher*

C COURSE REQUIREMENTS

1. **Prerequisites**
   a. Undergraduate: Calculus (6 semester hours); physics (8 semester hours, calculus based); chemistry (8 semester hours, with lab); geology (3 semester hours).
   b. Graduate: SE 501, GE 501.
2. **Attendance:** Students are expected to access the website throughout the course and enter into discussion with one another and the instructor. Regular participation in web chats and discussion boards are necessary to learn and contribute to the class.
3. **Reading and viewing assignments:** Reading and viewing assignments must be completed according to the assigned schedule prior to chat room discussions on textual content in order for a fully informed interaction to occur. Because of the major contrast between the conventional and Biblical view of earth's history, all assignments in both conventional and Creationist resources must be completed.
4. **Laboratory assignments:** All data analysis and computer work must be completed according to the assigned schedule prior to chat room discussions on the laboratory work in order for a fully informed interaction to occur. Due to the complexity of some of the data and challenges in displaying and interpreting the data on various hardware and software packages, it will be

necessary for the student to complete as much progress as possible on a particular assignment before requesting help or discussing the results.

5. **Assigned Work:** All work must be completed by the end of the course. If an assignment is late it will result in dropping your grade by 10% for each week it is late. It will not be accepted after the final exam has been given.
6. **Attitude:** Do your work as unto the Lord. A negative person is not fun to be with. He brings a depressing shadow to every project. He is a complainer, a murmurer and a faultfinder. No matter how many good things are going on, he always seems to spot the one thing that could be a potential problem. *"For as he thinks in his heart, so is he"* Proverbs 23:7. In other words think about what you are thinking about and saying. Is it pleasing to the Lord?
7. **Computer Literacy:** The following skills are necessary to successfully complete this course: ability to
   a. use a word processing program.
   b. conduct web searches.
   c. upload and download data and other information from the World Wide Web.
   d. offload and view data and other information from CDs.
   e. scan photos and other graphics that are not already digitized and insert them into a document.
   f. create charts and graphs using Excel.

D GRADES

1. **Grading Scale**

Letter Grade	Grade point	Percent
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retaken—your new grade will replace the old grade.

2. **Course Grading Criteria**

a. Inquiry Questions	20%
b. Group Discussion	10%
c. Quizzes	20%
d. Mid-term Exams	20%
e. Final Exam	30%

Total	100%

Lab

Written Practical Assignment	100%

E COURSE ASSIGNMENTS

1. **Inquiry Questions:** Several questions will be posted for each module which address most of the main issues for a given module. The student should post answers to these questions before attempting to discuss them with the others in the class or taking the quizzes.
2. **Group Discussion:** This portion of the online course will be conducted in the Classroom Forum and possible chat rooms. Students will be expected to discuss questions raised by the instructor among themselves. The instructor will monitor the discussion and determine how each student is contributing to the forum. Students are strongly encouraged to inquire and contribute to the discussion.
3. **Quizzes and Mid-term Exams:** These are designed to encourage the student to read and study continually through the course by testing progress in understanding and learning of the course material. The feedback he receives also informs the student of his progress and of the types of questions to be expected on the final exam, thus helping him to study for it.
4. **Final Exam:** Each student will take a Final Exam during week 12 which is designed to comprehensively test his knowledge of the course material, its application, and the skills they have gained doing the Practical Assignment. The final exam will be open book, but not open to help from others.
5. **Written Practical Assignment for Lab:** The purpose of the Written Practical Assignment is to help the student understand and be conversant with the methodology and mechanics of how geologists date rocks by actually taking real data and working through the required steps to produce the interpreted vast "ages" of rocks. Such a "hands-on" approach is the best learning method.

F COURSE CALENDAR

Module	Topic
1	Introduction and Biblical Chronology
2	Scientific Evidence for a young earth
3	Basics of Radioactive Decay, Radioactive Dating, and Carbon-14 Dating
4	Rubidium-Strontium dating, Potassium-Argon dating [Quiz #1]
5	Samarium-Neodymium, Lutetium-Hafnium, and Rhenium-Osmium dating
6	Uranium-Thorium-Lead and Lead-Lead dating
7	Inheritance and mixing and Strontium-Neodymium-Lead, Geochemistry [Quiz #2]
8	Radiohalos and fission-tracks

9	Thermochronology, U-series disequilibrium dating
10	An accelerated decay model within a Biblical earth history
	Final Exam

G RESOURCES AND SUPPLEMENTARY MATERIAL

1. Dalrymple, G. Brent. (1991). *The age of the Earth.* Stanford, CA: Stanford University Press.
2. DeYoung, D. (2005). *Thousands…not billions: Challenging an icon of evolution, questioning the age of the Earth.* Green Forest, AK: Master Books.
3. Dicken, A. (2005). *Radiogenic isotope geology* (2nd edition). Cambridge, England: Cambridge University Press.
4. Faure, G. (2001). *Origin of igneous rocks: The isotope evidence.* Berlin, Germany: Springer -Verlag.
5. Morris, H.M. (1974). *Scientific creationism.* Green Forest, AR: Master Books.
6. Morris, H.M. (1976). *The Genesis record.* Creation San Diego, CA: Life Publishers.
7. Morris, H.M. (1984). *The Biblical basis for modern science.* Grand Rapids, MI: Baker Book House.
8. Morris, H.M. (1993). *Biblical creationism.* Grand Rapids, MI: Baker Book House.
9. Vardiman, L., Snelling, A.A., & Chaffin, E.F. (Eds.). (2000). *Radioisotopes and the age of the Earth: A young-earth creationist research initiative.* El Cajon, CA: Institute for Creation Research and St. Joseph, MO: Creation Research Society.
10. Whitcomb, J.C. and Morris, H.M. (1970). *The Genesis flood: The Biblical record and its scientific implications.* Philadelphia, PA: The Presbyterian and Reformed Publishing Company.

GE 503 Principles and Patterns in Paleontology

Institute for Creation Research Graduate School

Dr. Gary E. Parker, course designer
Phone: (863) 494-9558 Email: creation@strato.net
Dr. Chris Osborne; instructor
Email: drchrisosborne@yahoo.com
Office Hours: Online TBA Office Location: Yahoo messenger Conference Room

Course Description. (Prerequisites: admission to geology minor, SE 501, GE 501, GE 502, and/or consent of professor) ***4.5 quarter hours***. Comparisons of criteria used to classify fossils and extant forms are analyzed in Systematic Paleontology for patterns used to propose and defend models for the origin and history of major taxonomic groups. (Cross-reference with BI 503) GE 503F to be taken concurrently.

A COURSE OBJECTIVES

The learner will be able to:

1. Define "fossil," exposing popular misconceptions in the process.
2. Describe the different types of fossils, explain how each type forms (taphonomy), and discuss formation of fossil fuels (coal and oil).
3. Define "geologic system" (paleosystem) along with the following:
   a. List the sequence in the Geologic Column Diagram.
   b. Describe their features.
   c. Describe the history of system names.
   d. Compare and contrast on multiple points the radically different meanings creationists/Flood geologists vs. evolutionists give to the GCD.
4. Contrast the many radically different predictions creationist geologists vs. evolutionists geologists made as the study of fossils began.
5. Evaluate the following as proposed examples of evolutionary series (morphologic series + stratigraphic series): horse series, fish-to-amphibian, algae-to-land plants, ammonite series, flat-to-coiled oysters, whale series.
6. Compare and contrast the following as examples of evolutionary links vs. creationist mosaics: nautilus, "walking whale," "mammal-like reptiles, coelacanth, *Peripatus, Archaeopteryx*, "Archaeoraptor," cycads/"seed ferns," and algal classification.
7. Evaluate creationist vs. evolutionist explanations for the "Cambrian explosion," mass extinction, "mammalian adaptive radiation," convergence, "living fossils," and stasis.
8. Relate the "Ice Age" to post-flood catastrophism and to Florida fossils.
9. Defend a reasonable conclusion regarding the paleontological history of major groups.

B TEXT AND MATERIALS

Textbooks

1. Prothero, D.R.(2004). *Introduction to paleobiology: Bringing fossils to life.* 2nd ed. NY: McGraw-Hill.
2. Parker, G.E. & M.M. (2005). *The fossil book.* Green Forest, AR: Master Books.
3. Parker, G,E.(2006). *Creation: Facts of life,* Rev. ed., Green Forest, AR: Master Books.
4. Parker, G.E. (2007). *Building blocks in science:* Green Forest, AR: Master Books.
5. Sodera, V. (2006). *One small speck to man: The evolution myth.* West Sussex, United Kingdom: Vija Sodera Productions.

Videos/DVDs

1. Parker, G.E. (1995). *Fossils and the Flood* (with Study Guide). Florence, KY: Answers in Genesis.
2. Taylor, P.S. (1982). *The world that perished.* Mesa, AZ: Films for Christ.
3. Parker, G.E. (1996). *From evolution to creation.* Florence, KY: Answers in Genesis.

Access to Journals

1. *Journal of Paleontology*
2. *New Scientist*
3. *Natural History*
4. *Science*
5. *Nature*

Materials

1. Parker, M. M. *Fossil Study Kit.* Creation Adventures Museum, Arcadia, FL.

C COURSE REQUIREMENTS

1. **Prerequisites:**
   a. Undergraduate: geology (3 semester hours, physical/geology); biology (3 semester hours zoology/botany); math (3 semester hours algebra/statistics).
   b. Graduate: SE 501, GE 501, GE 502.
   c. Read Chs. 1 and 3 of *Creation: Facts of Life,* Rev. ed. (2005), and watch DVD/Video, *From Evolution to Creation* (1996).
2. **Attendance:** Students are expected to access the website throughout the course and enter into discussion with one another and the instructor. Regular participation in web chats and discussion boards are necessary to learn and contribute to the class.
3. **Types of activities:** reading; evaluation of videos; journal critiques; reports and presentations; chat room discussions; quizzes and tests.
4. **Expectations:** Keep up with weekly assignments, completing work in advance if scheduling conflicts exist.

5. You must download the exam proctor form and either FAX or snail-mail (USPS) it the first week of school.

D GRADES

1. Grading Scale

Letter Grade	Grade point	Percent
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retaken – your new grade will replace the old grade.

2. Course Grading Criteria

a.	Two tests	300
b.	Summary Essay	100
c.	Inquiry questions	200
d.	Journal Critique	100
e.	Lay presentation	200
f.	Discussion	100
	Total points	**1000**

E COURSE ASSIGNMENTS

1. **Tests:** Take a mid-term and a final exam over content learned from the reading assignments.
2. **Summary Essay:** Do a Summary Essay over course content (part of final).
3. **Inquiry questions**: higher level questions relating to the reading assignments and to be turned in for grading.
4. **Journal Critique:** Critique classic and current journal articles on a major paleontological topic of your choice, demonstrating ability to "read between the lines."
5. **Lay presentation:** Prepare a lay presentations on dinosaurs and biblical history and on fossils and human origins. Prepare a lay presentation or article (esp. for school or church groups)
   a. Contrasting evolutionary beliefs about human origins with the fossil evidence, and
   b. Relating dinosaur paleontology to biblical history.

6. **Discussion.** Participate in the module discussion board.

F COURSE CALENDAR

Module	Topic
1.	Fossils—Definition, Types, Formation
2.	Geologic Column Diagram (GCD)—Contrasting views
3.	Paleosystematics—Missing Links or Mosaics?
4.	Paleostratigraphy—Ecological or Evolutionary series?
5.	TEST # 1
6.	"Ice Age" and Florida Fossils; Vertebrates
7.	Invertebrates I: Cnidarians, Echinoderms, Brachiopods, Bryozoans
8.	Invertebrates II Arthropods, Mollusks
9.	Paleobotany; Micropaleontology TEST #2
10.	Journal Critiques and Lay Presentations due **Week 11:** Share Critiques, Presentations, Collections; Summary Essay.

G RESOURCES AND SUPPLEMENTARY MATERIAL

1. Ayala, F. & Valentine, J. (1986). *Evolving: The theory and processes of organic evolution.* Menlo Park, CA: Benjamin/Cummings Publ. Co.
2. Bliss, Parker, & Gish. (1980). *Fossils: Key to the present.* San Diego, CA: CLP Publishers.
3. Dobzhansky, Alayla, Stebbins, & Valentine. (1977). *Evolution.* San Francisco: W. H. Freeman.
4. Denton, M.(1985). *Evolution Theory in crisis.* Bethesda, MD: Adler & Adler.
5. Gish, D. (1986). *Evolution: The fossils still say no!* San Diego, CA: Creation-Life Publishers.
6. Lubenow, M.L. (1992). *Bones of contention.* Grand Rapids, MI: Baker Book House.
7. Morris, H. & Parker, G. (1986). *What is creation science?* El Cajon, CA: Master Books.
8. Oard, M.J. (2004). *Frozen in time: The woolly Mammoth, the Ice Age, and the Bible.* Green Forest, AR: Master Books.
9. Parker, S. (1990). *The practical paleontologist*. New York: Simon & Schuster.

GE 503F Principles and Patterns in Paleontology

Institute for Creation Research Graduate School

Dr. Gary E. Parker, course designer
Phone: (863) 494-9558 Email: creation@strato.net

Course Description. (Prerequisites: admission to geology minor, SE 502 admission to with lab or consent of professor) ***1.5 quarter hours***. Collect and identify fossils, especially from the Ice Age; participate in hands-on workshops; investigate fossil evidence relating to origins. (Cross-reference with BI 503L) Must be taken concurrently with or after completion of GE 503 or BI 503.

A. COURSE OBJECTIVES

The learner will be able to:

1. Identify a variety of fossils
2. Identify and categorize shark's found in the field.
3. Demonstrate the process of fossil preservation.
4. Assemble vertebrate fragments.
5. Recognize shell fossils.teeth.
6. Relate the "Ice Age" to post-flood catastrophism and to Florida fossils.
7. Make a study collection of fossils while learning identification and techniques for finding/excavating fossils and preparing/preserving and displaying them.
8. Design kits to be used in the classroom for fossil identification.

B TEXT AND MATERIALS

Textbooks

1. Ward, D. (2000). *Eye Witness Handbooks: Fossils* (1994). UK: Dorling Kindersley Publishers Ltd

2. Parker, S. (1991). *The Practical Paleontologists.* Fireside Publishers now a division of Simon and Schuster.

Materials

1. Parker, M. M. *Fossil Study Kit: 16 t.* Fossil Kit (will receive at site) with 16 fossils. Creation Adventures Museum, Arcadia, FL. Contact Mary Parker at creation@strato.net. Cash or money order only. $15.00 + Shipping.

C COURSE REQUIREMENTS

1. **Pre-requisites:**

a. Undergraduate: work in biology or geology.
b. Graduate: SE 502.
c. Read Chs. 1 and 3 of *Creation: Facts of Life,* Rev. ed. (2005), and watch DVD/Video, *From Evolution to Creation (1996).*

2. You will participate in the hands-on workshops, classes and field trips as you explore the world of fossils and the wonders of nature.

D GRADES

1. **Grading Scale**

Grade	Grade point		
A	4.00		
A-	3.67	C-	1.67
B+	3.33	D+	1.33
B	3.00	D	1.00
B-	2.67	D-	0.67
C+	2.33	F	00
C	2.00		

Courses with a D or F are not accepted and need to be retaken – your new grade will replace the old grade.

2. Graded assignments and their point values

a.	Participation grade	25%
b.	Fossil collection – labeled	25%
c.	Shark's teeth collection – labeled	25%
d.	Teaching notebook – notes	25%
	Total	**100%**

E COURSE ASSIGNMENTS

1. **Participation.** The ICRGS learner will have an enthusiastic attitude when helping, participate in all the activities, contribute to discussions, and show eagerness to learn.
2. **Fossil collection – labeled.** Fossils that have been collected will be graded on identification, display, accuracy, and quality of presentation.
3. **Shark's teeth collection – labeled**: You will categorize and display the shark's teeth you find.
4. **Teaching a notebook – notes.** You will receive a notebook with activities and information to take home. Notes will be "apparent" in the notebook and kits with lessons for at least one fossil identification lab will be required.

F COURSE CALENDAR (Topics and Assignments by Week)

A 1 week hands-on lab offered in Arcadia, FL April 13-18 and/or April 27-May 2.

G RESOURCES AND SUPPLEMENTARY MATERIAL

1. Brown, R.C. (1988). *Florida's fossils: Guide to location, identification and enjoyment.* .Sarasota, FL: Pineapple Press, Inc.
2. Case, G.R. (1992). *A pictorial guide to fossils.* Malabar, GL:Krieger Publishing Company.
3. Cocke, J. (2002). *Fossil shark teeth of the world: A collector's guide.* Torrance, CA: Lamna Books.
4. Garcia, F. A. and Miller, D. S. (1998). *Discovering Fossils: How to find and identify remains of the prehistoric past.* Mechanicsburg, PA: Stackpole Books.
5. Lubenow, M.L. (1992). *Bones of contention.*
6. Renz, M. *Fossiling in Florida: A guide for diggers and divers.* Gainsville, FL: University Press of Florida
7. Renz, M. (2002). *Megalodon: Hunting the hunter.* Lehigh Acres: FL: Paleo Press.

GE 504 Interpreting Earth History

Institute for Creation Research Graduate School

Instructor: John Baumgardner, PhD
Phone: (619) 596-6075; E-mail: jbaumgardner@icr.edu
Office Hours: M-F; 9-4; Office location: GE502 Classroom Forum

Course Description. (Prerequisites: admission to geology minor, SE 501, GE 501, GE 502,and GE 503 with lab and/or consent of instructor) ***4.5 quarter hours.*** Survey of the human quest to understand the earth's past. Overview of terminology and methodology for describing and interpreting earth history from geological and geophysically-inferred structures and processes. Analysis of uniformitarian and catastrophist approaches to interpreting earth history. Application of computational techniques to simulate geological and geophysical processes. Exploration of the limitations of both uniformitarian and catastrophist paradigms.

A COURSE OBJECTIVES

At the end of this course the student will be able to:

1. Understand and explain the various human interpretations of earth history, from the most ancient literature to the most recent applications of modern science.
2. Define and apply standard geological terminology to describe sedimentary strata and depositional processes, fossils and the processes by which they are formed and preserved, landforms and erosional processes, volcanic and magmatic features and processes, tectonic features and processes, and earth structure including core, mantle, and crust.
3. Develop methodology for interpreting earth history from observational data (e.g., sedimentary strata, fossils, landforms, volcanic features, tectonic features, geophysical and geochemical measurements).
4. Explain and utilize uniformitarian and catastrophist frameworks to analyze the observational data and derive two diverse interpretations of the earth's past.
5. Apply modern computational techniques to evaluate various models of mantle dynamics and plate tectonics.
6. Recognize and explain features of the earth that challenge either or both uniformitarian or catastrophist paradigms.

B TEXTS AND MATERIALS

Textbooks [Required]

1. Snelling, A. A. (2008). *Earth's catastrophic past*. Santee, California: Institute for Creation Research.
2. Austin, S. A., ed. (1994). *Grand Canyon: Monument to catastrophe.*

California: Institute for Creation Research, Santee.
3. Moores, E.M. & Twiss, R.J. (1995). *Tectonics*. New York: W. H. Freeman.
4. Vardiman, L., Snelling, A.A., & Chaffin, E.F., Eds. (2005). *Radioisotopes and the age of the earth, Vol. II: Results of a young-earth creationist research initiative.* El Cajon, California: Institute for Creation Research, & St. Joseph, Missouri: Creation Research Society.

Videos or DVD's [Required]

1. *Mount St. Helens: Explosive evidence for catastrophe*. Video. Santee, CA: Institute for Creation Research.

Access to Required Journals

1. *Bulletin of the American Museum of Natural History*
2. *Copeia*
3. *Evolution*
4. *Geological Society of American Bulletin*
5. *Geology*
6. *Journal of Geology*
7. *Journal of Geoscience Education*
8. *Journal of Heredity*
9. *Journal of Molecular Evolution*
10. *Journal of Paleontology*
11. *Journal of Oceanography*
12. *Journal of Vertebrate Paleontology*
13. *Molecular Biology and Evolution*
14. *Nature*
15. *Origins of Life and Evolution of Biospheres*
16. *Sedimentology*
17. *Science*
18. *Scientific American*

C COURSE REQUIREMENTS

1. **Prerequisites**
   a. Undergraduate: Algebra; Geometry; Calculus; Chemistry; Physics; Physical Geology; Geochemistry
   b. Graduate: SE 501, GE 501, GE 502, and GE 503 with Lab.
2. **Attendance:** Students are expected to access the website throughout the course and enter into discussion with one another and the instructor. Regular participation in web chats and discussion boards are necessary to learn and contribute to the class.
3. **Reading and viewing assignments:** Reading and viewing assignments must be completed according to the assigned schedule prior to chat room discussions on textual content in order for a fully informed interaction to occur. Because of the major contrast between the uniformitarian and

catastrophist perspectives of earth's history, all assignments in resources from both perspectives must be completed.

4. **Laboratory assignments:** All data analysis and computer work must be completed according to the assigned schedule prior to chat room discussions on the laboratory work in order for a fully informed interaction to occur. Due to the complexity of some of the data and challenges in displaying and interpreting the data on various hardware and software packages, it will be necessary for the student to complete as much progress as possible on a particular assignment before requesting help or discussing the results.
5. **Assigned Work:** All work must be completed by the end of the course. If an assignment is late it will result in dropping your grade by 10% for each week it is late. It will not be accepted after the final exam has been given.
6. **Attitude:** Do your work as unto the Lord. A negative person is unpleasant to be with. He brings a depressing shadow to every project. Being a complainer, a murmurer and a faultfinder, no matter how many good things are going on, such a person always seems to spot the one thing that could be a potential problem. *"For as he thinks in his heart, so is he"* Proverbs 23:7. In other words think we should ever be evaluating our thoughts and inquiring, are they pleasing to the Lord?
7. **Computer Literacy:** The following skills are necessary to successfully complete this course: ability to
   a. use a word processing program.
   b. conduct web searches.
   c. upload and download data and other information from the World Wide Web.
   d. offload and view data and other information from CDs.
   e. scan photos and other graphics that are not already digitized and insert them into a document.
   f. create charts and graphs using Excel.

D GRADING

1. Grading scale

Grade	**Grade point**		
A	4.00		
A-	3.67	C-	1.67
B+	3.33	D+	1.33
B	3.00	D	1.00
B-	2.67	D-	0.67
C+	2.33	F	00
C	2.00		

Courses with a D or F are not accepted and need to be retaken – your new grade will replace the old grade.

2. Course Grading Criteria

Class

a.	Inquiry Questions	20%
b.	Group Discussion	10%
c	Quizzes	10%
d.	Mid-term Exams	20%
e.	Term Paper	10%
f.	Final Exam	30%
	Total	**100%**

Lab

Written Practical Assignments **100%**

E COURSE ASSIGNMENTS

1. **Inquiry Questions:** Several questions will be posted for each module which address most of the main issues for a given module. The student should post answers to these questions before attempting to discuss them with the others in the class or taking the quizzes.
2. **Group Discussion:** This portion of the online course will beconducted in the Classroom Forum and possible chat rooms. Students will be expected to discuss questions raised by the instructor among one another. The instructor will monitor the discussion and determine how each student is contributing to the forum. Students are strongly encouraged to inquire and contribute to the discussion.
3. **Quizzes** These are designed to encourage the student to read and study continually through the course by testing progress in understanding and learning of the course material. The feedback he receives also informs the student of his progress and of the types of questions to be expected on the final exam, thus helping him to study for it.
4. **Mid-term Exams:** Each student will take a mid-term exam during week during week 6 that is designed to test comprehensively what s/he has studied in Modules 1-5.
5. **Term Paper:** This is a 4-8 page research paper on a topic related to the course. The preferred length is 4 pages addressing a topic selected by the student demonstrating his writing skills and ability to relate a technical topic for the general public. It should be referenced and similar to ICR's Impact Articles. The format and referencing should conform to the APA style manual.
6. **Final Exam:** Each student will take a Final Exam during week 11 that is designed to test comprehensively his knowledge of the course, its application, and the skills gained doing the Practical Assignment.

Lab:

Practical Assignment for Lab: The purpose of the Practical Assignment is to help the student understand and be conversant with the physics, mathematics, and methodology that earth scientists apply to investigate the forces involved with large-scale tectonic deformations in the lithosphere and mantle by actually taking real data and working through the required steps. Such a "hands-on" approach is the best learning method.

F COURSE CALENDAR

Module	Subject
1	Ancient Perceptions of the Earth's Physical History
2	The Modern Geological Synthesis, Part I
3	The Modern Geological Synthesis, Part II
	[Mid-Term Exam #1]
4	Evidences for Catastrophism in the Earth's Past
5	More Evidences for Catastrophism in the Earth's Past
6	A Biblical Model for Geological History: The Pre-Flood World
7	A Biblical Model for Geological History: The Flood and CPT
	[Mid-term Exam #2]
8	A Biblical Model for Geological History: The Post-Flood World
9	Radioisotope and Other Evidences for a Young Earth and Cosmos
10	Solutions to Challenges for the Catastrophist Framework
	Final Exam

G RESOURCES AND SUPPLEMENTARY MATERIAL

1. Austin, S.A., Baumgardner, J.R., Humphreys, D.R., Snelling, A.A., Vardiman, L. & Wise, K.P. (1994). Catastrophic plate tectonics: a global Flood model of earth history. *Proceedings of the third international conference on creationism*, R.E. Walsh, ed., Pittsburgh, PA: Creation Science Fellowship.
2. Baumgardner, J.R. (1987). Numerical simulation of the large-scale tectonic changes accompanying the flood. *Proceedings of the first international conference on creationism*, R.E. Walsh, C.L. Brooks and R.S. Crowell, eds. Pittsburgh, PA: Creation Science Fellowship.
3. Baumgardner, J.R. (1990). 3-D finite element simulation of the global tectonic changes accompanying Noah's Flood, in: *Proceedings of the second international conference on creationism*, R.E. Walsh and C.L. Brooks, eds. Pittsburgh, PA: Creation Science Fellowship.
4. Baumgardner, J.R. (1994). Computer modeling of the large-scale tectonics associated with the Genesis flood, *Proceedings of the third international conference on creationism*, R.E. Walsh, ed., Pittsburgh, PA: Creation Science Fellowship.

5. Baumgardner, J.R. (1994). Runaway subduction as the driving mechanism for the Genesis flood, *Proceedings of the third international conference on creationism*, R.E. Walsh, ed., Pittsburgh, PA: Creation Science Fellowship.
6. Baumgardner, J.R. (2003). Catastrophic plate tectonics: the physics behind the Genesis flood, *Proceedings of the fifth international conference on creationism*, R. Ivey, ed. Pittsburgh, PA: Creation Science Fellowship.
7. DeYoung, D. (2005). *Thousands…Not Billions: Challenging an Icon of Evolution, Questioning the Age of the Earth*, Master Books, Green Forest, Arkansas.

GE 505 Field Geology

Institute for Creation Research Graduate School

Instructor: Steven A. Austin
Phone: (619) 596-6082 (w); E-mail: saustin@icr.edu
Office Hours: Online TBA; Office Location: TBA online

Course Description. (Prerequisites: Admission to geology minor, GE 501 and GE 502) ***3 quarter hours*.** Field explorations for science educators at extraordinary geologic features in Southern California. Visits and instruction occur at shore-face strata sequence (Torrey Pines State Reserve), ancient delta of the Colorado River (Anza-Borrego Desert State Park), leading edge of the North American Plate boundary (San Andreas fault, Mojave Desert, and Owens Valley), craton-deposited marine flood strata (Sierra Nevada Mountains, Inyo Mountains and Mojave Desert), supervolcano structure and deposits (Owens Valley, Long Valley Caldera, Mammoth volcanic center, and Mono Craters), intrusive igneous structures (Peninsular Ranges Batholith, Sierra Nevada Batholith, and Independence dikes), and glacial landforms (Yosemite National Park).

A COURSE OBJECTIVES

The learner will be able to:

1. Identify land forms.
2. Describe and give observable evidence for why land forms exist.
3. Make geological calculations after gathering data from geological sites.
4. Communicate observations in a technical paper.

B TEXTS AND MATERIAL

1. Maps of Southern California and the Eastern Sierra.
2. Rock study kit (prepared and purchased through ICR).
3. CD with stop descriptions laid out in “road log” format w/ photos.
4. List of what to pack.

C COURSE REQUIREMENTS

1. **Prerequisites:**
   a. Undergraduate: Geology (3 semester hours physical & historical); physics (3 semester hours, emphasis in mechanics); math (3 semester hours of algebra/statistics, 3 hours of calculus).
   b. Graduate: SE 501. GE 501 and GE 502 or permission of instructor.
2. Complete readings, study reports, maps and photos before the trip.

D GRADES

1. Grading Scale

Letter Grade	Grade point	Percent
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retaken—your new grade will replace the old grade.

2. Course Grading Criteria

a.	Participation Grade	10%
b.	Field Exercises	60%
c.	Field trip paper	30%
	Total	**100%**

E COURSE ASSIGNMENTS

1. **Participation Grade**: Visit field locations with professor on field trip.
2. **Field Exercises.** Perform assigned field exercises involving observing, measuring, and interpreting while on the field trip.
3. **Field Trip Paper.** Write a field trip paper on a topic related to the field trip and submit it to the professor no later than one month after the field trip.

E COURSE CALENDAR

Day 1 – Pick up 12 passenger rental van at LAX Airport in afternoon. ICR staff or faculty to meet students in airport baggage area. Board van and travel to hotel in Oceanside, Carlsbad or Encinitas.

Day 2 – Spend half day at Torrey Pines State Reserve and then travel to Julian or Borrego Springs to lodge for the night.

Day 3 – Instructional stops in Anza Borrego: Font's Point, Truckhaven Pediment. Lodge for the night in Indio/Palm Springs area.

Day 4 – Instructional stops at San Andreas Fault & Mojave Desert. Four to five hour drive to Lone Pine motel.

Day 5– Instructional stops at Owens Valley Fault, Whitney Portal, Independence Dike Swarm. Lodge in Mammoth Lakes (2 nights).

Day 6 – Instructional stops: Bishop Tuff, Convict Lake, and Long Valley Caldera; return to Mammoth Lakes for night.

Day 7 – Instructional stops: Mono craters, Devil's Postpile, Panum Crater. Spend the night in Lee Vining.

Day 8 – Instructional stops: Tuolumne Meadows, Olmstead Point, and Glacier Point. Lodge in Wawona Inn (Yosemite) or nearby.

Day 9 – Drive for 5.5 hours; arrive LAX in early afternoon.

G RESOURCES AND SUPPLEMENTARY MATERIAL

1. ***Map Archives:*** a collection of digitized maps used by teachers and students, archived at the Institute for Creation Research and distributed to students in PDF and JPEG formats.
2. ***Photo Archives:*** a very large collection of digitized photography used by teachers and students, archived at the Institute for Creation Research and distributed to students in PDF, TIF and JPEG formats. Hard copies (film and print photos) are housed at Institute for Creation Research. Primary subject of the photo archive is physical process geology. Classic photography distributed by US Geological Survey is included in this collection. Natural disaster photo databases are also available online.
3. ***Rock Sample Archive*****:** an enormous collection of catalogued rocks and minerals is archived at ICR. The collection includes microscopic thin sections polished slabs, prepared display and research fossils, X-ray diffraction (XRD) data files, scanning-electron micrographs (SEM), and x-ray fluorescence data files (XRF).

SC 501 The History and Nature of Science

Institute for Creation Research Graduate School

Instructor: TBA
Phone: (214) 615-8300; E-mail: pnason@icr.edu
Office Hours: Online TBA;
Office Location: Yahoo Messenger Conference Room

Course Description: (Prerequisites: SE 501, science content classes and consent of instructor. This course is an elective) ***4.5 credits.*** Study of historical science and survey of literature of major philosophers of science reveals clashes in perception throughout history. Individuals will discover how interpretation of the meaning of the nature of science has affected science as well as the science education system. Topics include: philosophy of science, STS (science-technology-society), inquiry, the nature of science, history of science.

A COURSE OBJECTIVES

The learner will be able to:

1. Describe several scientific discoveries that were not used for .
2. Evaluate the concepts behind each of the nature of science tenets as they have changed to fit the worldview of particular historical time period.
3. Assess the various tenets of the nature of science to determine how each could be used to undermine and/or support alternative science concepts.
4. Contemplate the consequences of using the power of inquiry to mess with someone's mind.
5. Evaluate the relationship among science, technology, and society.

B TEXT AND MATERIALS

Texts

1. AAAS (1993). *Benchmarks*, ch. 1 The Nature of Science. Washington, DC: American Association for the Advancement of Science.
2. Dantonio, M. & Beisenherz, P.C. (1990). *How can we create thinkers?: Questioning strategies that work for teachers.* Boston: Allyn & Bacon.
3. Darwin, C. (2006 edition). *The Voyage of the Beagle: Charles Darwin's Journal of Researches.* Pittsburg, CA: White Star Publications.
4. Hellemans, A. & Bunch, B. (1991). *The timetables of science*. NY: Simon & Schuster.
5. Kuhn, T.S. (1996). *The structure of science revolutions.* 3rd ed. Chicago: The University of Chicago Press.
6. Graves, D. (1996). *Scientists of faith: 48 biographies of historic scientists and their Christian faith*. Grand Rapids, MI: Kregel Publications.

7. Olson, S. & Horsley, S.L., eds. (2002). *Inquiry and the national science education standards: A guide for teaching and learning*. Washington, DC: National Academies Press.

C COURSE REQUIREMENTS

1. **Prerequisites:**
   a. Undergraduate: Meet acceptance requirements.
   b. Graduate: SE 501.
2. **Attendance:** Since there will be a lot of interaction in the class, your presence during web chats is necessary to learn and contribute to the class.
3. **Read Assignments** & **Participation in Discussion:** Individuals will not be able to process the reading assignments if they have not read the assignments BEFORE class starts. Reading the assignments and then discussing them helps everyone construct meaning of a difficult concept.
4. **Completion of work:** All work must be completed by the end of the course. If an assignment is late it will result in dropping your grade 10% for each week it is late. It will NOT be accepted after the final exam has been given.
5. **Attitude:** "Let He who would love life and see good days, Let him refrain his tongue from evil and his lips from speaking deceit" Ps. 34: 12-13. Do your work as unto the Lord. A negative person is not fun to be with. He brings a depressing shadow to every project. He is a complainer, a murmurer and a faultfinder. No matter how many good things are going on, he always seems to spot the one thing that could be a potential problem. "For as he thinks in his heart, so is he" Proverbs 23:7. In other words think about what you are thinking about and saying. Is it pleasing to the Lord?
6. **Computer Literacy:** The ability to use a word processing program, do web searches, upload and download information from the World Wide Web, scan photos and other graphics that are not already digitized and insert them into a document, create web pages and create charts and graphs using a program like Excel are necessary to successfully complete this course.

D GRADES

1. **Grading Scale.**

Letter Grade	Grade point	Percent
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retaken—your new grade will replace the old grade.

2. Course Grading Criteria.

a.	Vignette on Nature of Science	150 points	18.75%
b.	Discussion Board	100 points	12.5%
c.	Nature of Science research paper	200 points	25%
d.	Biography of a Scientist	200 points	25%
e.	Inquiry Questions	150 points	18.75%
	Total	**800 points**	

E COURSE ASSIGNMENTS

1. **Vignette:** Write a teacher's story about the how and why of a science concept focusing on the nature of science. A quality model or investigation is described that supports the concept being taught; several higher level questions are asked in the written dialog; at least two diagrams or charts or pictures are included to help explain the concept; alternative perspectives are presented.
2. **Discussion Board.** Participation in asynchronous discussion over *The Structure of Science Revolutions.*
3. **Nature of Science Research Paper:** Write a paper that describes and assesses one of the tenets of the nature of science tenets including the historical aspects, how it affects meaning affects scientific knowledge and the philosophy of science.
4. **Biography of a Scientist.** PowerPoint presentation of a scientist whose ideas were not accepted during his/her lifetime but are now considered "truth."
5. **Inquiry questions:** Answer assigned higher level thinking questions over V*oyage of the Beagle*.

F COURSE CALENDAR

Module	**Topic**
1	Philosophy of Science - History of science—Ancient
2	Science, Technology and Society
3	History of science—Overview
4	History of science—Evolution
5	History of science—Creation
6	Nature of science—Historical
7	Nature of science—Recent
8	Contributions in the Biological Sciences
9	Contributions in the Geological Sciences
10	Contributions in Physics

G RESOURCES AND SUPPLEMENTARY MATERIAL

1. Etheredge, S. & Rudnitsky, A. (2002). *Introducing students to scientific inquiry: How do we know what we know?* NY: Allyn & Bacon
2. Flick, L. & Lederman, N.G., eds. (2005). *Scientific inquiry and nature of science : Implications for teaching, learning, and teacher education.* NY: Springer.
3. Hakim, J. (2004). *The story of science, book one: Aristotle leads the way* Washington, D.C.: Smithsonian Books.
4. Trefil, J. (2003). *The nature of science: An A-Z guide to the laws and principles governing our universe.* Boston: Houghton Mifflin.

SE 501 Advanced Educational Psychology

Institute for Creation Research Graduate School

Instructor: Dr. Patricia Nason
Phone: (214) 615-8312 (w); E-mail: pnason@icr.edu
Office Hours: TBA

Course Description: (Prerequisites: Admission to ICRGS.) ***4.5 quarter hours*.** Survey of principles of developmentalism with an emphasis on skills that apply to successful science teaching. Topics include the importance of developmentalism; intellectual, social, moral, emotional, and spiritual development; ethnicity and cultures; individual uniqueness; cognitive psychology: constructing knowledge, thinking skills; behavioral approaches to learning; motivation; brain research and multiple intelligence. Note: There is an observation component to this course.

A COURSE OBJECTIVES

The learners will be able to:

1. Evaluate theories of cognitive and linguistic development.
2. Assess theories of moral and social development.
3. Compare and contrast ethnic and cultural theories.
4. Analyze temperament and self-esteem perspectives.
5. Describe cognitive processes.
6. Give examples of how individuals construct knowledge as it relates to worldviews.
7. Support teaching students to use higher-level teaching skills.
8. Compare and contrast the behaviorist and social cognitive views of learning.
9. Determine a variety of factors that motivate any one individual to learn or inhibit them from learning.
10. Describe and defend physical, intellectual, emotional, social and moral development.
11. Apply theories of development to individuals.

B TEXT AND MATERIALS

Textbooks

1. Ormrod, J. E. (2006). *Educational psychology: Developing learners*, 5th ed. Upper Saddle River, NJ: Prentice-Hall.
2. Wilhoit, J. C. & Dettoni, J. (2002). *Nurture that is Christian: Developmental perspectives on Christian education.* Grand Rapids, MI: Baker Books (through chapter 11; appendix).

Videos

1. Kerby, C. (2003). *Racism: Is there an answer?* Hebron, KY: Answers in Genesis.

2. Menton, D. (2005). *Fearfully & wonderfully made.* Hebron, KY: Answers in Genesis.

Access to Required Journals

1. *American Educational Research Journal*
2. *Christian Education Journal*
3. *Christian Educational Association Update*
4. *Christianity Today.*
5. *Counselor Education and Supervision*
6. *Education and Psychological Measurement*
7. *Educational Psychologist*
8. *Educational Psychology Review*
9. *Exceptional Children*
10. *Journal of Educational Psychology*
11. *Journal of Experimental Psychology*
12. *Psychology for Living*
13. *Psychology in the Schools*
14. *School Psychology Review*
15. *Science Scope*
16. *Teachers in Focus*
17. *Teaching Exceptional Children*
18. *The Science Teacher*

C COURSE REQUIREMENTS

1. Prerequisites:

a. Undergraduate: Meet acceptance requirements.

b. Graduate: First course in program sequence.

2. **Attendance:** Since there will be a lot of interaction in the class, your presence during web chats is necessary to learn and contribute to the class.
3. **Read Assignments and Participation in Discussion:** Individuals will not be able to process the reading assignments if they have not red the assignments BEFORE class starts. Reading the assignments and then discussing them helps everyone construct meaning of a difficult concept.
4. **Complete work:** All work must be completed by the end of the course. If an assignment is late it will result in dropping your grade 10% for each week it is late. It will NOT be accepted after the final exam has been given.
5. **Attitude:** *"Let He who would love life and see good days, Let him refrain his tongue from evil and his lips from speaking deceit"* Ps. 34: 12-13. Do your work as unto the Lord. A negative person is not fun to be with. He brings a depressing shadow to every project. He is a complainer, a murmurer and a faultfinder. No matter how many good things are going on, he always seems to spot the one thing that could be a potential problem. *"For as he thinks in his heart, so is he"* Proverbs 23:7. In other words think about what you are thinking about and saying. Is it pleasing to the Lord?
6. **Computer Literacy:** The ability to use a word processing program, do web searches, upload and download information from the World Wide Web, scan

photos and other graphics that are not already digitized and insert them into a document, create web pages and create charts and graphs using a program like Excel are necessary to successfully complete this course.

D GRADES

1. Grading Scale.

Letter Grade	Grade point	Percent
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retake—your new grade will replace the old grade.

2. Course Grading Criteria.

a.	Quizzes	100 points	10%
b.	Inquiry Questions	160 point	16%
c.	Group discussions	140 points	14%
d.	Course Paper	150 points	15%
e.	Case Study	300 points	30%
f.	Final exam	150 points	15%
	Total	**1000 points**	**100%**

E COURSE ASSIGNMENTS

1. **Quizzes:** Ten quizzes over Ormrod's textbook *Educational Psychology: Developing Learners.*
2. **Inquiry Questions:** Answer TWO of the bold inquiry question for each chapter over Ormrod's textbook *Educational Psychology: Developing Learners* in a MS document file and send them to your instructor.
3. **Group Discussions:** Participation in asynchronous discussion over Wilhoit & Dettoni's book *Nurture that is Christian: Developmental perspectives on Christian education.*
4. **Course Paper:** How do individuals develop morally, emotionally, intellectually, spiritually and socially? You will choose one of these areas to research and present in a course paper. Other questions such as: Why is it important for a teacher to know about the development of their students? What part does learning, worldview, environment, etc. play in their development?

5. **Case Study:** Each learner will study a variety of developmental characteristics of a particular individual and write a descriptive case study report. There will be weekly assignments that will collect data to upload in each module.
6. **Final exam:** Students will take an on-line final exam over the course objectives.

F COURSE CALENDAR

Module	Topic
1	Teachers and Educational Psychology
2	Development of Self, social Skills, and Morality
3	Grouping People by Their Differences
4	Man's Uniqueness
5	Cognitive Psychology
6	Constructing Knowledge
7	Thinking Skills
8	Behavioral Approaches to Learning
9	Social Cognitive Approaches to Learning
10	Motivation
Exam week	Final Exam and Course Paper due

G RESOURCES AND SUPPLEMENTARY MATERIALS

1. Bellah, R. N., Sullivan, W. M., Swidler, A., & Tipton, S. M. (1985). *Habits of the heart: Individualism and commitment in American life.* NY: Harper & Row.
2. Borba, M. (2002). *Building Moral Intelligence: The seven essential virtues that teach you to do the right thing.* NY: Jossey-Bass.
3. Buzan, T. (1993). *The mind map book.* NY; Penguin books.
4. Caine, R. N. & Caine, G. (1991). *Teaching and the human brain: Making connections*. Alexandria, VA: Association for Supervision and Curriculum Development.
5. Calvin, W. H. & Ojemann, G. A. (1994). *Conversations with Neil's brain: The neural nature of thought and language.* Reading, MS: Addison-Wesley Publishing Company.
6. Collins, G. R. (1998). *Christian counseling: A comprehensive guide.* Nashville, TN: Thomas Nelson, Inc.
7. Crabb, L. J. (1975). *Basic Biblical counseling*. Grand Rapids, MI: Zondervan Publishing House.
8. Crabb, L. J. (1977). *Effective Biblical counseling*. Grand Rapids, MI: Zondervan Publishing House.
9. Crain, W. (2000). *Theories of development: Concepts and applications, 4th Ed.* Upper Saddle River, NJ: Prentice Hall.
10. Lowery, L. F. (1993). *Thinking and learning: Matching developmental stages with curriculum and instruction*. Pacific Grove, CA: Critical Thinking Press and Software.

11. Gardner, H. (1993). *Frames of mind: The theory of multiple intelligences*. NY, NY: BasicBooks.
12. Gardner, H. (1993). *Multiple intelligences: The theory in practice*. NY: Harper Collins.
13. Goleman, D. (1994). *Emotional intelligence: Why it can matter more than IQ*. NY, NY: Bantam Books.
14. Healy, J. M. (1990). *Endangered minds: Why children don't think and what we can do about It.* NY: Simon and Schuster.
15. Howard, P. J. (1994). *The owner's manual for the brain: Everyday applications from mind-brain research*. Austin, TX: Leornian Press.
16. Jensen, E. (1995). *The learning brain.* San Diego, CA: The Brain Store.
17. Kotulak, R. (1997). *Inside the brain: Revolutionary discoveries of how the mind works.* Kansas City: Andrews McMeel Publishing.
18. Lefever, M. D. (2002). *Learning styles: Reaching everyone God gave you to teach.* Colorado Springs, CO: David C. Cook Publishing Company.
19. Magid, K. & McKelvey, C. A. (1989). *High risk children without a conscience.* NY: Bantam Books.
20. Maxwell, J. C. (2003). *Thinking for a change*. NY, NY: Warner Books, Inc.
21. Novak, J. D. and Gowin, D. B. (1994). *Learning how to learn.* NY: Cambridge University Press.
22. Morris, H. (2002). *The law of the harvest: You reap what you sow, 2nd Ed.* Wilson, NC: Nantucket Publishing (Unshackled, Inc.).
23. Ormrod, J. E. (2004). *Human learning.* Upper Saddle River, NJ: Prentice-Hall, Inc.
24. Pert, C. B. (1997). *Molecules of emotion: Why you feel the way you feel*. New York: Scribner.
25. Schunk, D. H. (2000). *Learning theories: An educational perspective, 3rd Ed.* Upper Saddle River, NJ: Prentice-Hall, Inc.
26. Sanford, D. (1991). *Love letters: Responding to children in pain*. Portland, OR: Multnomah Press.
27. Silver, H., Strong, R., & Perini, M. J. (2000). *So each may learn: Integrating learning styles and multiple intelligences.* Alexandria, VA: Association for Supervision & Curriculum Development.
28. Tobias, C. U. (1998).*The way they learn*. Colorado Springs, CO: Focus on the Family.
29. Venolia, C. (1988). *Healing environments: Your guide to indoor well-being.* Berkeley, CA: Celestial Arts.
30. Wink, J. and Putney, L. (2002). *A vision of Vygotsky*. Boston, MA: Allyn and Bacon.
31. Wolfe, P. *Brain matters: Translating research into classroom practice*. Alexandria, VA: Association for Supervision and Curriculum Development.

SE 502 The Science Curriculum

Institute for Creation Research Graduate School

Instructor: Dr. Patricia Nason
Phone: 936.564.5469 (w, h) 936.559.3626; E-mail: doc_nason@earthlink.net
Virtual Office Hours: TBA

Course Description: (Prerequisite: SE 501 and completion of content area courses or consent of instructor). ***4.5 quarter hours*.** Study of curricular trends in science education in the United States, examination of philosophical implications of various approaches to curriculum design, evaluation of current science curricula. Topics include: NSES; progressivism, cognitive, traditional, behavioral, and structure of the disciplines curriculum approaches; process skills, behavioral objectives, inter- and intra-disciplinary, inquiry and assessment approaches, hands-on science, societal trends and issues. Includes individual/group scope and sequence project.

A COURSE OBJECTIVES

The learner will be able to:

1. Compare and contrast curriculum philosophies.
2. Portray the history of development of national science standards
3. Assess the importance of the National Science Education Standards (NSES).
4. Define curriculum and describe who determines the curriculum.
5. Design a curriculum guide (outcomes).
6. Portray the history of science education in the United States from the mid-1800's.
7. Justify his/her position on what content should be taught in science education.
8. Defend integrating the science process skills into the curriculum.

B TEXT AND MATERIALS

Texts

1. Posner, G. L. (2004). *Analyzing the curriculum*. 3rd ed. NY: McGraw Hill.
2. DeBoer, G. E. (1991). *A history of ideas in science education: Implications for practice*. NY: Teachers College Press.
3. Noebel, D. A. (2000). *Thinking like a Christian: Understanding and living a Biblical worldview*. Nashville, TN: Broadman & Holman Publishers.
4. National Committee on Science Standards and Assessment; National Research Council. (1996). *National science education standards*. Washington, DC: National Academy Press.
5. National Academy of Sciences. (1998). *Teaching about evolution and the nature of science.* Washington, DC: National Academy Press.
6. American Association for Advancement of Science. (1993). *Benchmarks for science literacy*. NY: Oxford University Press.
7. Whipple, G.M., Editor. (1932). *The thirty-first yearbook of the national society for the study of education, part 1: A program for teaching science.* Chicago, IL:

The University of Chicago Press (available with permission on distance education website).

Access to Required Journals

1. *Journal of College Science Teaching*
2. *Journal of Research in Science Teaching (JRST)*
3. *Journal of Science Teacher Education (JSTE)*
4. *Science Scope*
5. *The Science Teacher*

C COURSE REQUIREMENTS

1. **Prerequisites:**
   a. Undergraduate: Meet acceptance requirements.
   b. Graduate: SE 501, completion of science content area courses.
2. **Attendance:** Since there will be a lot of interaction in the class, your presence during web chats is necessary to learn and contribute to the class.
3. **Read Assignments & Participate in Discussions:** Individuals will not be able to process the reading assignments if they have not read the assignments BEFORE class starts. Reading the assignments and then discussing them helps everyone construct meaning of a difficult concept.
4. **Completion of work:** All work must be completed by the end of the course. If an assignment is late it will result in dropping your grade 10% for each week it is late. It will NOT be accepted after the final exam has been given.
5. **Attitude:** "Let He who would love life and see good days, Let him refrain his tongue from evil and his lips from speaking deceit" Ps. 34: 12-13. Do your work as unto the Lord. A negative person is not fun to be with. He brings a depressing shadow to every project. He is a complainer, a murmurer and a faultfinder. No matter how many good things are going on, he always seems to spot the one thing that could be a potential problem. "For as he thinks in his heart, so is he" Proverbs 23:7. In other words think about what you are thinking about and saying. Is it pleasing to the Lord?
6. **Computer Literacy:** The ability to use a word processing program, do web searches, upload and download information from the World Wide Web, scan photos and other graphics that are not already digitized and insert them into a document, create web pages and create charts and graphs using a program like Excel are necessary to successfully complete this course.

D GRADES

1. **Grading Scale.**

Letter Grade	Grade point	**Percent**
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89

B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retake—your new grade will replace the old grade.

2. Course Grading Criteria.

a.	Vignette	200 points	20%
b.	Curriculum assignments	100 points	10%
c.	Inquiry questions	200 points	10%
d.	Discussion Board	200 points	10%
e.	Science Process Skills	100 points	10%
f.	Presentation of curriculum	100 points	10%
g.	Curriculum Chart	150 points	15%
	Total	**1000 points**	**100%**

E COURSE ASSIGNMENTS

1. **Vignette:** Write a teacher's story about the how and why of a science concept using inquiry. A quality model or investigation is described that supports the concept being taught; several higher level questions are asked in the written dialog; at least two diagrams or charts or pictures are included to help explain the concept; alternative perspectives are presented.
2. **Curriculum Assignments:** includes evaluation of goals and objectives from other works; practice writing goals and objectives.
3. **Inquiry questions o**ver Posner's textbook and *National Science Education Standards* and other assigned readings.
4. **Discussion Board:** Discussions over *Teaching about Evolution and the Nature of Science* and four chats over *Thinking Like a Christian: Understanding and Living a Biblical Worldview*.
5. **Science Process Skills.** Each week at least one new science process skill will be introduced. You will find a recent scientific discovery related to the creation evolution controversy and discuss the process skill[s] used.
6. **Presentation of Curriculum History.** Assigned presentation (pdf or PowerPoint) of chapters from DeBoer book: *A history of ideas in science education.*
7. **Curriculum chart:** Filling in a curriculum chart will be the final exam.

F COURSE CALENDAR

Module	**Topic**
1	Curriculum Perspectives

2	National Science Education Standards
3	Process Skills-based curriculum
4	Teaching and Inquiry
5	Societal trends and issues
6	Curriculum Conflicts
7	Equity in Science Education
8	Policies and Laws
9	Content Standards—Inquiry, Physical Science, and Life Science
10	Content Standards—Life Sciences, Earth-Space Science History-Nature of Science

G RESOURCES AND SUPPLEMENTARY MATERIAL

1. Anderson, L. W., Krathwohl, D. R. Airasian, P.W., Cruikshank, K. A., Mayer, R. E., Pintrich, P. R., Raths, J., & Wittrock, M. C. (2001). *Taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives, Abridged Edition.* Upper Saddle River, NJ: Allyn & Bacon.
2. Colson, C. & Pearcey, N. (1999). *How now shall we live?* Wheaton, IL: Tyndale House Publishers, Inc.
3. Denton, M. (1985). *Evolution: A theory in crisis*. Bethesda, Maryland: Adler & Adler Publishers, Inc.
4. Glatthorn, A. A. (1994). *Developing a quality curriculum.* Alexandria, VA: Association for Supervision and Curriculum Development.
5. Hellemans, A. & Bunch, B. (1991). *The timetables of science*. NY: Simon & Schuster.
6. Morris, H. M. & Morris, J. D. (1996). *The modern creation trilogy: Science & creation.* Vol. 2. Green Forest, AR: Master Books, Inc.
7. Oliva, P. (2001). *Developing the curriculum.* Upper Saddle River, NJ: Allyn and Bacon.
8. Ornstein, A. C. & Hunkins, F. P. (1998). *Curriculum: Foundations, principles, and issues*. Upper Saddle River, NJ: Allyn and Bacon.
9. Saylor, J. G. (1982). *Who planned the curriculum? A curriculum plans reservoir model with historical examples*. West Lafayette, IN: Kappa Delta Pi Press.
10. Tanner, L. N., Ed. (1988). *Critical issues in curriculum: Eighty-seventh yearbook of the National Society for the Study of Education.* Chicago: National Society for the Study of Education.

SE 503 Planning Science Instruction: Methods

Institute for Creation Research Graduate School

Instructor: *Dr. Patti Nason*
Phone: (214) 615-8312 (office); (936) 559-3626 (cell);
E-mail: pnason@icr.edu; Office Hours: TBA online

Course Description: (Pre-requisites: completion of science content courses, SE 501, and SE 502 or consent of instructor). ***4.5 credit hours*.** Planning and developing instruction that maximizes and supports learning through the use of the 5-E approach including active participation of students. Topics include: lab investigations (scientific method), discrepant events, brainstorming, cooperative learning, mind mapping, scientific inquiry, the use of technology, simulations, authentic assessment, interactive lectures, student projects. Variety of strategies required to be used in lesson plans.

A COURSE OBJECTIVES

The student will be able to:

1. Design instructional strategies that teach the origins science content from two perspectives.
2. Propose science lesson plans from the creationist perspective using the Engage-Explore-Explain-Extend-Evaluate (5-E) model.
3. Evaluate science lesson plans found on the Internet.
4. Incorporate questioning strategies into lesson planning that help students develop an understanding of science.
5. Create instructional aids that engage students.
6. Plan lab and field investigations that present opportunities for their students to participate in investigative science.
7. Utilize charts for data collection and graphs to communicate results in scientific investigations.

B TEXT AND MATERIALS

1. Trowbridge, L.W., Bybee, R.W., & Carlson-Power, J. (2008). *Teaching secondary school science: Strategies for developing scientific literacy*. Upper Saddle River , NJ : Prentice Hall.
2. Hyerle, D. (1995). *Thinking maps: Tools for learning*. Royal Oak, MI: Innovative Learning Group.
3. Olson, S. and Loucks-Horsley, eds. & the National Research Council. (1999). *Inquiry and the National Science Education Standards: A Guide for Teaching and Learning.* Washington, DC.: National Academy Press.
4. National Committee on Science Standards and Assessment; National Research Council. (1996). *National Science Education Standards: Chapter 6 - Science Content Standards*. Washington, DC: National Academy Press.

5. Wilhoit, J. C. & Dettoni, J. (2002). *Nurture that is Christian: Developmental perspectives on Christian education.* Grand Rapids, MI: Baker Books (also used in SE 501).

Access to Required Journals

1. *American Biology Teacher*
2. *Journal of Research in Science Teaching (JRST)*
3. *Journal of Science Teacher Education (JSTE)*
4. *Science Scope*
5. *The Science Teacher*

C COURSE REQUIREMENTS

1. **Prerequisites:**
   a. Undergraduate: Meets acceptance requirements.
   b. Graduate: SE 501 & SE 502.
2. **Attendance:** since there will be a lot of interaction in the class, your presence during web chats is necessary to learn and contribute to the class.
3. **Read Assignments and Participation in Discussion:** Individuals will not be able to process the reading assignments if they have not read the assignments. Reading the assignments and then discussing them helps everyone construct the same meaning of difficult concepts.
4. **Complete work:** All work must be completed by the end of the course. If an assignment is late it will result in dropping your grade 10% for each week it is late. It will NOT be accepted after the final exam has been given.
5. **Attitude:** *"Let He who would love life and see good days, Let him refrain his tongue from evil and his lips from speaking deceit"* Ps. 34: 12-13. Do your work as unto the Lord. A negative person is not fun to be with. He brings a depressing shadow to every project. He is a complainer, a murmurer and a faultfinder. No matter how many good things are going on, he always seems to spot the one thing that could be a potential problem. *"For as he thinks in his heart, so is he"* Proverbs 23:7. In other words think about what you are thinking about and saying. Is it pleasing to the Lord?
6. **Computer Literacy:** The ability to use a word processing program, do web searches, upload and download information from the World Wide Web, scan photos and other graphics that are not already digitized and insert them into a document, create web pages and create charts and graphs using a program like Excel, creating PowerPoint presentations are necessary to successfully complete this course.

D GRADES

1. Grading Scale.

Letter Grade	Grade point	Percent
A	4.00	93-100

A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retake—your new grade will replace the old grade.

2. Course Grading Criteria.

a.	Graphic organizers	8/12.5 pts. each	100 pts.
b.	5-E lesson plans	2 /50 pts. each	100 pts.
c.	Instructional Strategies		500 pts.
d.	Discussion I	10 pts. each	100 pts.
e.	Assessing Lesson Plans-Discussion	10 pts. each	100 pts.
f.	Final Exam	10 pts.	100 pts.
	Total		**1000 pts.**

E COURSE ASSIGNMENTS

1. **Graphic organizers:** You will develop 8 graphic organizers that will be used in your unit.
2. **Lesson Plans:** You will design 2 lessons plans using the 5E learning cycle design and be graded on the components of each lesson plan. The instructional strategies will be part of the lesson plan but will only be graded on their utility in meeting the objectives and part of the learning cycle in which they are used; each strategy will be graded separately.
3. **Instructional Strategies:** You will use instructional strategies that require the use of technology and hands-on science investigations. The topic, objectives and strategies will support the creation worldview. Note: You will choose from the strategies listed below; strategies will add up to 450 points; some are required. NOTE that each lesson must have 1 power point presentation (c), 1 lab (d), and a series of inquiry (higher level) questions (g).
   a. *Web page for data collection and using Excel for data analysis.* (1) Part of a lesson plan.(50 points)
   b. *Virtual field trip web page*. Contains notes, pictures, discussions and ideas relating to a trip that fits into one of your lesson plans. (50 points)
   c. *Power Point Presentation.* (2) for the Engage or Explain portion of the learning cycle; you MUST include at least one in your lesson plan. (25 poitns)

d. *Labs.* (2) Use the scientific method; you MUST include at least one lab. (50 points)
e. *Demonstrations.* Demonstration or discrepant event for the Engage or Explain portion of the lesson. (25 points)
f. *Biographic Web page*. Web page of that is a biography of a scientist with an overview of his/her worldview and how the discoveries/work fit into the creation world view; you MUST include this activity in the lesson. (25 points)
g. *Inquiry Questions*. (2) Each lesson will have a series of higher level questions in the Explore part of the lesson plan that help guide the students to "discover" the objective. You MUST have inquiry questions in all 3 of your lesson plans. (25 points EACH)
h. *Game or simulation*. Develop a game or simulation or find one on-line and write a critique of it. (50 points)
i. *Field Investigation*. Develop a field investigation for your students to do. (100 points)

4. **Discussion I:** Discussions will vary throughout the quarter; topics will include reading material, various instructional strategies and articles, over *Inquiry and the National Science Education Standards: A Guide for Teaching and Learning, National Science Education Standards: Chapter 6 —Science Content Standards* and articles relevant to designing instructional strategies.
5. **Assessing Lesson Plans - Discussion:** You will upload the assigned parts of your lesson plan so that your peers can look at them and make comments. Grades will include your ability to assess and make constructive criticism by giving your peers ideas about their own lesson plans.
6. **Final Exam.** Comprehensive exam over 5-E lesson planning, appropriate use of instructional strategies, and use of graphic organizers.

F COURSE CALENDAR

Module	Topic
1	Overview of 5-E Lesson Cycle and Mind Maps
2	Engaging Your Students; Discrepant Events
3	Students Explore concepts; The Scientific Method
4	Explaining the concepts; Interactive Lectures; Socratic Discussion
5	Extending on the Concepts; Games, Simulations, Technology
6	Evaluating Learning; Authentic Assessments
	Entire Lesson 1 due
7	Inquiry as an Instructional Tool
8	Using "Driving" Questions to Design and Carry Out Projects
9	Cooperative Learning
10	Field Investigations; Virtual Field Trips (technology)
	Dead week —Entire Lesson 2 due
	Final Exam

G RESOURCES AND SUPPLEMENTARY MATERIAL

1. Baker, D.R. & Piburn, M.D. (1997). *Constructing science in middle and secondary school classrooms*. Boston, MA: Allyn & Bacon.
2. Carin, A.A. & Bass, J.E. & Contant, T.L. (2004). *Teaching science as inquiry, 10th Ed.* Upper Saddle River, NJ: Merrill-Prentice Hall,
3. Chiappetta, E.L. & Koballa, T.R. (2005). *Science instruction in the middle and secondary schools, 5th Ed*. Upper Saddle River, NJ: Merrill-Prentice Hall.
4. Grun, B. (1991). *The timetables of history: A horizontal linkage of people and events, 3rd edition.* NY: Simon & Schuster Books.
5. Hellemans, A. & Bunch, B. (1993) *The timetables of science: A chronology of the most important people and events in the history of science*. Englewood Cliffs, NJ: Simon & Schuster Books.
6. Henry, C.G. & Nath, J. L. (2001), *Becoming a teacher in Texas*. Belmont, CA: Wadsworth/Thomson Learning.
7. Johnson, D.W. & Johnson, R.T. (2002). *Meaningful assessment: A manageable and cooperative process.* Boston: Allyn and Bacon.
8. Lever-Duffy, J., McDonald, J.B., & Mizell, A. P. (2004). *Teaching and learning with technology, 2nd Ed.* Boston, MA: Allyn & Bacon.
9. Liem, T. (1991). *Invitation to science inquiry, 2nd Edition*. Placerville, CA: Science Inquiry Enterprise.
10. Obourn, E.S. (1961). *Aids for teaching science observation-bias for effective science learning. Office of Education Publication No. 29024.* Washington, DC: U.S. Government Printing Office.
11. Sebranek, P., Kemper, D., & Meyer, V. (1999). *Write source 2000: A guide to writing, thinking, and learning.* Wilmington, MA: Houghton Mifflin Company (191-194).
12. Stepans, J. (2003). *Targeting students' science misconceptions: Physical science concepts using the conceptual change model, 3rd Ed*. Riverview, FL: Idea Factory.

SE 504 Research in Science Education

Institute for Creation Research Graduate School

Instructor: Dr. Eddy Miller
Phone: (619) 596 6035 (w); E-mail: emiller@icr.edu
Office Hours: TBA **Office Location**: virtual

Course Description. (Prerequisites: SE 501, SE 502, and SE 503; completion of content area courses or permission from instructor.) ***4.5 quarter hours***. Survey of the basic principles of science education research through analysis of research in science education. Topics include: interpreting science education research; qualitative and quantitative research designs; formulating a research problem, collecting data, using research tools, communicating the results; historical research; evaluation research; case studies, action research, and statistical techniques. Students will conduct interviews, surveys, observations; collect and analyze data as class project. Students design proposal for research paper to be completed before graduation.

A PROGRAM AND COURSE OBJECTIVES

The learner will be able to:

1. Compare and contrast qualitative and quantitative research methods as they relate to social and natural science.
2. Interpret science education research and describe its implications from a Christian worldview.
3. Design a variety of support materials for various research methodologies.
4. Write a proposal for the Science Education research paper relating to science and/or science education using the appropriate research methods.

B TEXT AND MATERIALS

Textbooks

1. Gall, M. D., Gall, J. P., & Borg, W.R. (2003). *Educational research: An introduction*. 7th ed. Boston: Allyn and Bacon.

Web Resources

1. National Center for Education Statistics. *Digest of Education Statistics*. http://nces.ed.gov

Access to Required Journals

1. *American Educational Research Journal*
2. *Journal of Research in Science Teaching*
3. *Journal of Science Teacher Education*
4. *Review of Educational Research*

C COURSE REQUIREMENTS

1. **Prerequisites:**
   a. Undergraduate: Meets admission requirements.
   b. graduate: SE 501, SE 502, and SE 503.
2. **Attendance**: Students are expected to access the website throughout the course and enter into discussion with one another and the instructor. Regular participation in web chats and discussion boards are necessary to learn and contribute to the class.
3. **Read Assignments and Participate in Discussion:** Individuals will not be able to process the reading assignments if they have not read the assignments BEFORE class starts. Reading the assignments and then discussing them helps everyone construct meaning of a difficult concept.
4. **Completion of research proposal:** To be completed no later than three (3) weeks after the end of the course. Each week that it is late after the three (3) week cut-off will result in dropping your grade 10% for each week it is late. It will NOT be accepted three (3) weeks after the due date.
5. **Attitude:** "Let He who would love life and see good days, Let him refrain his tongue from evil And his lips from speaking deceit" Ps. 34: 12-13. Do your work as unto the Lord. A negative person is not fun to be with. He brings a depressing shadow to every project. He is a complainer, a murmurer and a faultfinder. No matter how many good things are going on, he always seems to spot the one thing that could be a potential problem. "For as he thinks in his heart, so is he" Proverbs 23:7. In other words think about what you are thinking about and saying. Is it pleasing to the Lord?
6. **Computer Literacy:** The ability to use a word processing program, do web searches, upload and download information from the World Wide Web, scan photos and other graphics that are not already digitized and insert them into a document, and create charts and graphs using a program like Excel are necessary to successfully complete this course.

D GRADES

1. Grading Scale

Letter Grade	Grade point	Percent
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retaken—your new grade will replace the old grade.

1. **Course Grading Criteria**

a.	Quizzes	100 points	10%
b.	Research Proposal	400 points	50%
c.	Application assignments	150 points	15%
d.	Discussion Board	100 points	10%
e.	Final exam	150 points	15%
	Total	**1000 points**	**100%**

E COURSE ASSIGNMENTS

1. **Quizzes:** Chapter quizzes over the text *Educational Research* by Gall, Gall, and Borg.
2. **Research proposal:** You will design a science or science education research proposal that will become the final paper required for your science education program.
3. **Application Assignments:** Listed are some of the weekly assignments that utilize learned information throughout the course. Completed assignments will be e-mailed to the professor.
   a. Creating a consent form.
   b. Writing and conducting an interview.
   c. Designing a questionnaire.
   d. Creating and using an observation form for data collection.
   e. Interpreting statistical research paper.
   f. Conducting and analyzing an interview.
   g. Analyzing qualitative research.
   h. Finding citations for a particular topic.
   i. Communicating to collect data through a listserv.
   j. Interpreting results of meta-analysis.
   k. Analyzing a literature review for flaws.
   l. Analyzing a research study for merit.
4. **Discussion Board:** Participation in Discussion Board over a variety of research articles.
5. **Final exam:** Students will take an on-line comprehensive final exam over the course materials.

F COURSE CALENDAR

Module	Topic
1	The Nature of Research
2	Developing a Research Proposal
3	Review of the Literature; Selecting a Sample
4	Collecting Research Data: Tests, Self-report Measures,

	Questionnaires and Interviews
5	Collecting Research Data: Observation, Content Analysis
6	Historical research; Case Study Research
7	Evaluation Research; Action Research
8	Non-experimental Research: Descriptive and Causal-Comparative Designs; Correlational Designs
9	Statistical Techniques
10	Experimental Research

G RESOURCES AND SUPPLEMENTARY MATERIAL

Books

1. Denzin, N.K. (1989). *Interpretive biography*. Newbury Park, CA: Sage Publications, Inc.
2. Elandson, D.A., Harris, E.L., Skipper, B.L., & Allen, S.D. (1993). *Doing naturalistic inquiry: A guide to methods.* Newbury Park, CA: Sage Publications, Inc.
3. Fay, L.R. *Educational research: Competencies for analysis and application, 4th Ed.* New York: Macmillan Publishing Company.
4. Glass, G.V., & Hopkins, K.D. (1996). *Statistical methods in education and psychology, 3rd Ed.* Boston: Allyn & Bacon.
5. Gess-Newsome, J. & Lederman, N.G., Editors. (1999). *Examining pedagogical content knowledge.* Boston: Kuwer Academic Publishers.
6. Guba, E.G. & Lincoln, Y.S. (1989). *Fourth generation evaluation.* Newbury Park, CA: Sage Publications, Inc.
7. Hopkins, D. (1993). *A teacher's guide to classroom research, 2nd Ed.* Philadelphia, PA: Open University Press.
8. Lincoln, Y.S. & Guba, E.G. (1985). *Naturalistic inquiry.* Newbury Park, CA: Sage Publications, Inc.
9. Spradley, J.P. (1979). *The ethnographic interview.* New York: Holt, Rinehart and Winston.
10. Spradley, J.P. (1980). *Participant observation.* Fort Worth, TX: Harcourt Brace Jovanovich College Publishers.
11. Wiersma, W. (1995). *Research methods in education: An introduction*. 6th ed. Boston: Allyn & Bacon.

SE 505 Implementing and Assessing Science Teaching

Institute for Creation Research Graduate School

Instructor: Dr. Patricia Nason
Phone: (214) 615-8312 (w); E-mail: pnason@icr.edu
Office Hours: TBA; Virtual Office Location: TBA

Course Description: (prerequisites: capstone course; all coursework must be completed except SE 507 – Independent Study.) ***4.5 quarter hours***. Application and evaluation of content knowledge, instructional and assessment skills in the learning environment. Assessment of effectiveness in the classroom setting. Self-critique of video-taped instruction implementing the 5-E learning cycle. Topics include: effective communication, formative and evaluative assessment strategies (applied), positive feedback, reflective evaluation, engaging students. *Note: this course has a practicum – the student is required to apply what s/he has learned as a graduate student as ICRGS while in the field.*

A COURSE OBJECTIVES

The ICRGS student who is an effective science teacher will:

1. implement instruction that engages students through:
   a. Effective communication.
   b. The use of a variety of teaching/learning strategies.
   c. The incorporation of technology.
   d. The use of scientific instruments and the scientific method.
   e. Continual evaluation of student performance.
   f. The use of questioning strategies to promote thinking.
   g. Comparison and contrasting of evolutionary and creationist science approaches.
2. assess the students throughout the instruction by:
   a. Giving positive yet informative feedback.
   b. Providing formative assessment as well as evaluative assessment to allow the students to correct for misinformation.
   c. Applying a variety of assessment strategies.
   d. Using student self-assessment procedures.
3. assess his/her own teaching practices through continual reflective evaluation and analyzes his/her teaching practices to enhance teaching to benefit the learning of his/her students; effectiveness includes (not an inclusive list):
   a. the accuracy of knowledge.
   b. the use of proper English.

B TEXT AND MATERIALS

Textbooks

1. Glcikman, C.D. (2002). *Leadership for learning: How to help teachers succeed.* Alexandria, VA: Association for Supervision and Curriculum Assessment (ASCD).
2. Johnson, D.W. & Johnson, R.T. (2002). *Meaningful assessment: A manageable and cooperative process*. Boston: Allyn and Bacon. (Chapters 6-13 will be used most extensively.).
3. MacArthur, J. (2004). Nashville, TN: *The book on leadership.* Nelson Books.

Access to Required Journals

1. *Educational Leadership*
2. *Journal of Research in Science Teaching* (JRST)
3. *Journal of Science Teacher Education (*JSTE)
4. *Kappan*

C COURSE REQUIREMENTS

1. **Prerequisites:**
   a. undergraduate: meet admission requirements.
   b. graduate: Completion of all program requirements in Science Education and in the minor including an elective EXCEPT 2 credits in research.
2. **Attendance**: Students are expected to access the website throughout the course and enter into discussion with one another and the instructor. Regular participation in web chats and discussion boards are necessary to learn and contribute to the class.
2. **Read Assignments and Participation in Discussion:** Individuals will not be able to process the reading assignments if they have not read the assignments BEFORE class starts. Reading the assignments and then discussing them helps everyone construct meaning of a difficult concept.
3. **Completion of work:** All work must be completed by the dates indicated. Late work will accepted up to the end of the course and will result in dropping your grade 10% for each week it is late. All work must be completed by the end of the course; an incomplete course will result in an F in the course. No withholds or incomplete's will be offered in the course.
4. **Attitude:** "Let He who would love life and see good days, Let him refrain his tongue from evil and his lips from speaking deceit" Ps. 34: 12-13. Do your work as unto the Lord. A negative person is not fun to be with. He brings a depressing shadow to every project. He is a complainer, a murmurer and a faultfinder. No matter how many good things are going on, he always seems to spot the one thing that could be a potential problem. "For as he thinks in his heart, so is he" Proverbs 23:7. In other words think about what you are thinking about and saying. Is it pleasing to the Lord?
5. **Computer Literacy:** The ability to use a word processing program, do web searches, upload and download information from the World Wide Web, scan photos and other graphics that are not already digitized and insert them into a document, and create charts and graphs using a program like Excel are necessary to successfully complete this course.

D GRADES

1. Grading Scale

Letter Grade	Grade point	Percent
A	4.00	93-100
A-	3.67	90-92
B+	3.33	87-89
B	3.00	83-86
B-	2.67	80-82
C+	2.33	77-79
C	2.00	73-76
C-	1.67	70-72

Courses with a D or F are not accepted and need to be retaken—your new grade will replace the old grade.

2. Course Grading Criteria

a.	Quizzes		100 pts	10%
b.	Implementation of Assessment Strategies		350 pts	35%
	(1) Assessment #1	50 pts		
	(2) Assessment #2	50 pts		
	(3) Assessment #3	100 pts		
	(4) Assessment #4	150 pts		
c.	Discussion Board		100 pts	10%
d.	Video Taped Analysis		450 pts	45%
	Total:		**1000 pts**	**100%**

E COURSE ASSIGNMENTS

1. **Quizzes:** on-line objective quizzes over reading assignments in *Meaningful Assessment, a Manageable and Cooperative Process*.
2. **Implementation of Assessment Strategies:** Learners will implement four of the alternative assessment strategies found in *Meaningful Assessment, a Manageable and Cooperative Process in* a classroom situation..
3. **Discussion Board:** Learners will have 7 interactive discussions over the book *Teaching to Change Lives*.
4. **Video taped analysis:** Each student will video-tape a lesson s/he has planned, use a reflective model to analyze the quality of that lesson and make suggestions for improvement.

F COURSE CALENDAR

Module	Topic
1	Learner Centered Communication
2	Observation Interactions
3	Planning Assessments:
4	Assessing Classroom Behaviors
5	Assessing Cooperative Learning
6	Assessing Using Rubrics and Check Lists
7	Implementing Assessments
8	Diagnosing Assessments
9	Reflecting on Instruction
10	Leadership for Learning

G RESOURCES AND SUPPLEMENTARY MATERIAL

1. Anderson, L.W., Krathwohl, D.R., Airasian, P.W., Cruikshank, K.A., Mayer, R.E., Pintrich, P.R., Raths, J., & Wittrock, M.C. (2001). *Taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. Abridged ed. Boston: Allyn & Bacon.
2. Dougherty, J. (1997). *Ensuring success for all students: Programs that work.* Westerville, OH: NMSA.
3. Eby, J.W. (2001). *Reflective planning, teaching, and evaluation, K-12.* Upper Saddle River, NJ: Prentice-Hall, Inc.
4. Gess-Newsome, J. & Ledderman, N.G., Editors. (1999). *Examining pedagogical content knowledge.* (1999). *B*oston, Massachusetts: Kluwer Academic Publishers.
5. Hennniger, M.I. (2003). *The teaching experience.* Upper Saddle River, NJ: Prentice-Hall, Inc.
6. Lockledge, A. & Hayn, J., Eds. (2000). *Using portfolios across the curriculum.* Westerville, OH: National Middle School Association.
7. Lustig, K. (1996). *Portfolio assessment: A handbook for middle level teachers.* Westerville, OH: National Middle School Association.
8. Maxwell, J.C. (2001). *Developing the leader within you.* Nashville, TN: Thomas Nelson, Inc.
   Maxwell, J. (1998). *The 21 irrefutable laws of leadership.* Nashville, TN: Thomas Nelson, Inc.
9. Schurr, S. (1999). *Authentic assessment using product, performance, and portfolio measures from A to Z.* Westerville, OH: National Middle School Association.
10. Spector, B.S. & Barnes, M.B. (1988). *Laboratory instruction: Planning, implementing, and evaluating.* Dubuque, IA: Kendall/Hunt Publishing Company.
11. Tauber, R.T. (1997). *Self-fulfilling prophecy: A practical guide to its use in education.* Westport, CN: Praeger.

Appendix T

Exploring the Limitations of the Scientific Method

The information in this Appendix contains copies of three recent articles from ICR's monthly publication, *Acts and Facts*. These articles address the issues of evidence from the perspective of a senior research scientist, a legal specialist, and a Nobel Prize winner's difficulty in surmounting the "established" thinking of this era.

NOTE: If you are viewing this document online, please link to the articles here:

"Exploring the Limitations of the Scientific Method" (http://www.icr.org/article/3749/)
"The Evidence of Nothing" (http://www.icr.org/article/3763/)
"Ernst Chain: Antibiotics Pioneer" (http://www.icr.org/article/3767)