CORE CURRICULUM COMPONENT APPLICATION
Sam Houston State University

Revised October, 2012

PART I – Course Information

Course Type
☒ Existing/Restructured
☐ New Course Proposed Fall 2013
If new, have you submitted a Form B to the SHSU Curriculum Committee? ☐ Yes ☐ No

Course Prefix & Number: GEOL1404

Texas Common Course Number (TCCN Matrix): GEOL1404

Course Title: Historical Geology

Course Catalog Description (Copy and paste from online catalog for existing courses):
An introduction to the history of the earth and its past inhabitants, including a section on the dinosaurs and their extinction. This course gives a broad overview of the tectonic evolution of the planet, indicated by various major mountain-building events; ancient environments and changing sea levels recorded in sedimentary deposits; and the evolution of life represented by the fossil record. No prerequisite. Fall, Spring, Summer. Credit 3.

Course Prerequisites: None

Available Online?
☐ Yes, currently developed in online delivery mode
☐ Anticipated development in online delivery mode (Semester, Year:)
☒ No

Number of Sections to be Offered per Academic Year: 5

Estimated Enrollment per Section: 40-70

Course Level (freshman, sophomore): Freshman

Designated Contact Person (for follow-up communication purposes): C. T. Baldwin

E-Mail Address: baldwin@shsu.edu

Phone: 936-294-1593

Approvals

Department Chair:	Brian Cooper Signature	10/18/12 Date
Academic Dean:	John B Pozorski Signature	10/19/12 Date

Submit completed, signed form to Core Curriculum Committee - Box 2478 or Fax 4-1271

PART II – THECB Foundational Component Areas

See Appendix for full description of each component area.

Select Component Area: <Select Component Area>

In one paragraph, describe how the proposed course will fulfill the core and skill objectives of the component area:

PART III – Course Objectives & Student Learning Outcomes (SLO)

Insert the applicable course objectives stated as student learning outcomes (e.g., Students completing the course will be able to...) that support the core component area objectives. Please reference the component rubric for additional information on core component area objectives.

Objective/SLO 1: Describe and explain Earth History using basic scientific methodologies and principles, especially the principle of uniformitarianism and its recent [post 1970s] "neo-catastrophic" developments

How will the objective be addressed (including strategies and techniques)?
Theoretical approaches and formal descriptions of the scientific method pervade the whole course but receive different emphases and subtly different approaches at various stages in the laboratory/field and lecture sections.

The development of scientific thought as it morphed from conventional theological (catastrophist) thought forms the first unit of the lecture course. Eventually the respectful and not so respectful emergence of the early dogmatic form of uniformitarianism is mapped and the utility of this absolute version is questioned and eventually replaced by more sound methodological approaches. But this convention is described and examined further in the light of 1970's era reworkings of uniformitarianism in the context of the so called "significance of rare events" (sometimes referred to as "neocatastrophism") and the overarching applicability of the concepts of "magnitude versus frequency". It finally is compared to ecological concepts of "actualism".

The actualistic roots of historical geology are constantly described and reworked back into the discussion of the components of the discipline including formal aspects of paleontology, paleoecology and functional analysis, paleoenvironmental and depositional analysis, stratigraphy, and long term Earth history. Considerable emphasis is given to notions of predictability and cyclicity.

In the lab/field component the scientific method as conventionally presented in science is given distinct emphasis in such areas as cladistics-based paleontology, basic rock recognition and all other units where quite formal scientific questions are posed. However, there are also two distinctly different lab units that involve classical fieldwork and both involve the selection and

collection of primary field data. In these students are confronted with the basic questions of what actually constitutes "signal" and "noise". And given the historical nature of geology they are confronted with what is likely to be an inherently biased array of field data – something that potentially undermines the purity of conventional scientific method approaches. These issues are specifically examined while in the field and both these field labs are used as vehicles to critique the uniqueness and general applicability of the "pure" scientific method.

Describe how the objective will be assessed: A faculty administered and graded early pre- and post test focused on "the scientific method" is employed in both the lab and lecture sections of the course in order to establish the basic "science" impact of the course. This is supplemented by the administration, at the end of the first four sections of the lecture course that overarchingly deal with paleontological uniformitarianism, of the standard Measure of Acceptance of the Theory of Evolution (MATE) survey which, by measuring students' attitudes towards evolution has been demonstrated to correlate with their understanding of science and their concepts of scientific theories.

Course Grading is completed with two minor multiple choice tests and a final that involve both definitions and basic concept recall. Their importance in the overall grading scheme is deliberately suppressed and the most import content-area grading derives from a comprehensive Power Point ™ poster that places considerable emphasis on formal scientific description and explanation of a chosen geological topic.

With regard to labs, apart from just two labs of the semester series, all labs are by their nature relatively open-ended and project-like. The intention is more to stimulate active participation with scientific data and materials and to encourage students to frame their own questions and develop their own sub-hypotheses. While each lab contains a set of deliverables the most important component is a closing group discussion where the TA steers and guides a review and recapitulation. Each student is required to deliver a written reflective summary of these reviews which are graded by the faculty member responsible for the course. As mentioned above, two of the labs are distinctive in that they involve students in primary field data collection, field note-taking, description, and interpretation. A series of "tasks" guide the student through a set of progressively more complex field observations and through questions that prompt the student observer to establish simplistic causal relationships between biological phenomena and physical processes. Both these field labs are led and field reports are evaluated by a faculty member. The lab portion of the course is completed by a cumulative final exam that includes systematics and namings as well as simulated field exercises that involve multiple working hypotheses approaches.

Objective/SLO 2: Employing the plate tectonic paradigm describe, explain and predict geological and stratigraphic phenomena within a global geographical context and within the context of geological time.

How will the objective be addressed (including strategies and techniques)?
Plate Tectonics forms the final component of the first half of the course that deals with basic concepts and methodologies – essentially a set of tool boxes that are accessed in the remainder of the more chronologically and geographically focuses portion of the course.

The historical development of the Plate Tectonics paradigm is described and traced from its foundations in classical geosynclinal theory and continental drift theory and some emphasis is placed on the absence of a simple sequential chronology. Thus, the eclectic and at times contradictory stages in the building of substantial paradigm are emphasized. Eventually the

accepted paradigm emerges and is approached both from the perspective of what it provides by way of a descriptive unifying framework for earth-scale geological phenomena including the underlying metronome-like tempo of various Earth Cycles, and secondly what it provides in terms of a predictive tool for future developments and distributions.

Describe how the objective will be assessed: One of the conventional factual tests and the final exam include simple recall questions, maps and manipulations that relate to the components and concepts of Plate Tectonics. However, the principle focus for assessing this area resides with the long essay questions that constitute fifty percent of the final exam. Throughout the second half of the course students are informed of the underlying importance of understanding and being able to apply plate tectonics concepts in all aspects of historical geology. Therefore each final essay question indirectly asks for the plate tectonics component that underpins and drives the observed geological phenomen[a]on.

In the lab section one lab deals specifically with a quantitative exercise that covers relative and absolute plate motions. Given that the remainder of the labs deal mostly with local scale phenomena, including field relationships, plate tectonics concepts are only address very obliquely but remain as the controlling backdrop of tempo and place.

Objective/SLO 3: Describe and explain the patterns and characteristics in space and time of worldwide and North American geological phenomena including both additions and subtractions from the observed record.

How will the objective be addressed (including strategies and techniques)?
The first half of the course describes and explains an overlapping series of analytical methodologies and conceptual frameworks that are employed by all historical geologists. It culminates in a description and explanation of the unifying paradigm of Plate Tectonics. The second half is a partially chronological review, description and explanation of global and local scale phenomena that serve to add to and remove pieces of the geological record. Considerable emphasis is placed on time-dependent causality, particularly in terms of interactions through time of the biosphere with the other physical components of the earth system. The logic and predictability of cyclic and essentially homeostatic processes are emphasized and explained so that students are introduced to the essential simplicities and repeatability of earth systems and cycles.

This solidly descriptive portion of the course is used to explain and reinforce the more abstract concepts and rules that are framed in the "toolbox" portion of the course. Thus, aspects of unformitarian, neocatastrophist and magnitude/frequency thinking are threaded, as it were, subliminally throughout this section. By this method the predictable and knowable aspects of natural science are consciously reinforced by the student recalling previously described "toolbox" items and matching them to the "known" geological/stratigraphic record.

Describe how the objective will be assessed: The primary assessment of this portion of the course is the final examination that is divided evenly between multiple choice recall questions that mostly address terminology, chronology and basic stratigraphic concepts (50%) and a choice of long essays (50%) that require comprehensive descriptions and explanations of stratigraphic phenomena and relationships – all couched in the context of plate tectonic control mechanisms.

The lab portion of the course takes specific elements of stratigraphy and works them in the context of small case-studies that transform the student from a passive user of geological jargon

into a user of complexly intermeshed stratigraphic tools and process-based models. The continuity and interlinking of biological and physical data sets are emphasized in the lab sequence and are primarily assessed via the reflective capstone discussion and write-up at the end of each lab session.

The MATE (Measure of the Acceptance of the Theory of Evolution) is administered at the start of the chronological portion of the course and is reassessed by a series of questions embedded in the final exam. Thus, the underpinning theoretical constructs of time-based-change are reassessed following what amounts to a series of demonstrations of the utility of these approaches to the solution of complex descriptive and quasi-predictive examples and real cases.

Objective/SLO 4: Describe, explain and predict the impact upon humans of geological "events" of different magnitudes, frequencies and recurrence intervals.

How will the objective be addressed (including strategies and techniques)?
The concepts of "event stratigraphy" were pioneered in the 1970's following the seemingly counter uniformitarian interpretation of the demise of the dinosaurs at the end of the Cretaceous/start of the Tertiary (the so called "K/T Event"). This revolutionized stratigraphic thinking and placed considerable new emphasis on the "gappy" nature of the stratigraphic record and the inherently biased nature of the geological record (biased towards infrequent and powerful events).

The course focuses throughout on the naturalistic control aspects of the geological record and emphasizes and describes the differences between creationist non-science (miraculous causes/short time frame) and conventional geological science. As a familiar vehicle for these differentiated concepts a set of human catastrophes (storms, earthquakes, tsunamis, volcanic eruptions, etc.) are described and characterized in terms of their magnitude (typically number of human deaths) and frequency (recurrence interval – placed solidly in the context of geological rather than human time). As a precondition to this section both relative and absolute time concepts and analytical methodologies are described and the enormity of geological time is repeatedly emphasized. Thus, students are prepared for a different temporal perspective in which events that may be significant in human terms are demonstrated to be repetitive and essentially predictable in a geological timescale of potentially billions of years.

Describe how the objective will be assessed: This objective is assessed in the pre- and post tests via a series of questions embedded in the otherwise predominantly "scientific method(s)" foci – but here the emphasis is upon temporal context and a restrictive range of magnitudes of natural phenomena. The MATE test at the end of the methodological first section also touches this area. Conventional recall and definition questions of the two tests and the final also cover this material. For the labs this objective forms a largely indirect contextual backdrop which is not assessed directly but is used as an underpinning of the reflective lab discussions of processes and rates.

Objective/SLO 5: Describe and explain how historical geology underpins and provides a temporal framework that forms the foundation for the economic exploitation of geological resources including both raw materials and energy resources.

How will the objective be addressed (including strategies and techniques)?
Within the temporal component of the course emphasis is placed at the appropriate geological time interval of associated economic resources – coal in association with the Carboniferous; oil and gas in the Mesozoic and Cenozoic sequences of Texas, etc.)

In these various applied cases the process context is described with emphasis on both biological and physical systems (plate tectonic, hydrological, atmospheric, rock, etc.). By emphasizing the processes involved the broader occurrences of resources are described and predicted. Thus, a set of predictive rules of resource occurences is derived and interpreted by students so that they can move beyond a simple and unique description to more general cases of world-wide importance.

Describe how the objective will be assessed: This objective is evaluated in both the lab and lecture sections of the course by students describing and interpreting synthetic and actual maps of energy resources. The final examination of the lecture section includes a choice of at least one resource-focused essay question that involves a comprehensive description of this resource occurrence and an interpretation of its full geological (including plate tectonics) context. The lab portion of the course involves an essentially geometrical (= structural) interpretation of a coal sequence using synthetic maps developed from real geological survey data sets. A second economic resource focused lab entails a simulated "oil field game" that involves students in a sequence of critical thinking strategies whereby teams of players 'buy' well-log, seismic and other paleogeographic and stratigraphic information in order to exploit and develop an oil play.

PART IV – THECB Skill Objectives

Address each of the THECB skill objectives required within the component area. Explain how the skill is addressed, including specific strategies to address the skill(s). *Address ALL skill objectives associated with the selected Component Area. (See Appendix)*

1. Critical Thinking Skills: to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information

How will the skill be addressed (including specific strategies, activities, and techniques)?
Critical thinking pervades all aspects of the course. Early on and throughout the lecture portion many students are confronted by a new set of alternatives to their conventional religion-bound thinking and the course offers what is to many a series of alternative and sometimes troubling scientific perspectives. The student is shown pathways through the maze, mostly via the Socratic Method and indirectly via questions structured in the various tests. Throughout students are required to critically assess the evidence presented and are encouraged to consider issues from the perspective of science.

An important individual vehicle for the exercise of critical thinking comes from the major scientific poster project that requires and innovative and creative presentation of an approved

scientific topic in essentially graphical form. The rubric for this project sets-up the student to conduct research in some depth, and to select relevant graphical information such that it conveys a synthesized scientific narrative to his/her peers. The exercise involves formal aspects of visual presentation, respect for the intellectual property of others, bibliographic completeness, editorial 'taste' and creative writing of both captions and an informative abstract.

Each lab of the sequence involves some aspect of data collection, data selection, initial analysis, synthesis and interpretation. For the majority of the exercises the tasks are essentially synthetic and effectively beg a "correct answer" or at least a largely known answer. However, two field-based labs provide significantly different opportunities for the exercise of critical thinking skills. The first deliberate challenge is to even recognize what actually constitutes data. From this initial confrontation the students, working in small groups, have to decide what and how to observe, how to sample effectively without unconscious bias, and how to meaningfully quantify and synthesize their observations, and to extrapolate their findings to some relevant scale. All components involve in-group discussion and evaluation of data, the derivation and building of consensus syntheses and critical analysis of provisional and final conclusions.

2. <u>Communication Skills</u>: to include effective development, interpretation and expression of ideas through written, oral and visual communication

How will the skill be addressed (including specific strategies, activities, and techniques)?
Writing skills are primarily assessed via the poster project and the long essay portion of the final examination.

In the lecture portion of the course oral communication forms a conscious part of the Socratic Method but it is recognized that students are still able choose to hide from verbal participation. Consequently, in the labs the weekly capstone recapitulation formally involves students in assessed discussions of both methodologies and the presentation of results. To this end working lab groups are built that involves the group in a pooling of ideas, the building of consensus syntheses and the eventual oral summaries and presentations made by a rotation of individual spokespersons.

Visual creativity and expression is almost entirely confined to the large scientific poster project but also forms a portion of most labs where graphical representations of data and results form a small to very large part of each lab exercise.

3. <u>Empirical and Quantitative Skills</u>: to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

How will the skill be addressed (including specific strategies, activities, and techniques)?
All labs involve the analysis of observable facts and the building of scientifically supportable classifications, hypotheses and conclusions. Three specific labs involve predominantly quantified data. Two labs involve students in the collection and organization of original field data from which logical causal models and relationships are proposed and expressed.

4. <u>Teamwork</u>: to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

How will the skill be addressed (including specific strategies, activities, and techniques)? Participation in all labs is via small interactive assigned teams. Each group includes a weekly rotation of one member who acts as the formal spokesperson from the group, and who makes an oral presentation to the whole class. Prior to the presentation phase and while completing the assigned lab task(s) group members keep their own notes but share ideas and preliminary results. Individual groups assign specific tasks within their own group – an important issue in a number of labs, including the field labs where the work load deliberately exceeds the capacity of any one individual. Thus, the focus on groups is as much in terms of organizing and assigning tasks as it is in cooperating on results.

5. Personal Responsibility: to include the ability to connect choices, actions and consequences to ethical decision-making

How will the skill be addressed (including specific strategies, activities, and techniques)?

6. Social Responsibility: to include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities

How will the skill be addressed (including specific strategies, activities, and techniques)?

PART V – SHSU Core Curriculum Committee Requirements

1. Using a 15-week class schedule, identify the topics to be covered during each week of the semester. Provide sufficient detail to allow readers to understand the scope and sequence of topics covered.

Week 1	Introduction Science and Methods
Week 2	THE (GENERAL) RECORD I Catastophism-Uniformitarianism
Week 3	Neo-catastrophism/Actualism
Week 4	THE (GENERAL) RECORD II Fossils and Design: functional morphology
Week 5	Mapping and Correlation
Week 6	Relative and Absolute Dating
Week 7	THE (ROCK) RECORD III Depositional Processes and Places (Ice & Water)
Week 8	Depositional Processes and Places (Air & Oceans)
Week 9	CONTINENTAL DRIFT TO PLATE TECTONICS The drivers of mobilism and Continental Drift
Week 10	Earth Structure, Paleomagnetism and the Plate Paradigm
Week 11	CRYPTOZOIC – EARLY Life and the Atmosphere
Week 12	CRYPTOZOIC – LATE Snowball Earth and Ediacara
Week 13	PALEOZOIC Cratonic Sequences; the Burgess shale
Week 14	MESOZOIC Extinctions; Sequences
Week 15	CENOZOIC Hot to Cold

2. Attachments (Syllabus Required)

Syllabus Attached? ☒ Yes ☐ No

Other Attached? ☐ Yes ☐ No If yes, specify:

Appendix: THECB Component Area Descriptions and Skill Requirements

I. Communication (Courses in this category focus on developing ideas and expressing them clearly, considering the effect of the message, fostering understanding, and building the skills needed to communicate persuasively. Courses involve the command of oral, aural, written, and visual literacy skills that enable people to exchange messages appropriate to the subject, occasion, and audience.)

II. Mathematics (Courses in this category focus on quantitative literacy in logic, patterns, and relationships. Courses involve the understanding of key mathematical concepts and the application of appropriate quantitative tools to everyday experience.)

III. Life and Physical Sciences (Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.)

IV. Language, Philosophy, and Culture (Courses in this category focus on how ideas, values, beliefs, and other aspects of culture express and affect human experience. Courses involve the exploration of ideas that foster aesthetic and intellectual creation in order to understand the human condition across cultures.)

V. Creative Arts (Courses in this category focus on the appreciation and analysis of creative artifacts and works of the human imagination. Courses involve the synthesis and interpretation of artistic expression and enable critical, creative, and innovative communication about works of art.)

VI. American History (Courses in this category focus on the consideration of past events and ideas relative to the United States, with the option of including Texas History for a portion of this component area. Courses involve the interaction among individuals, communities, states, the nation, and the world, considering how these interactions have contributed to the development of the United States and its global role.)

VII. Government/ Political Science (Courses in this category focus on consideration of the Constitution of the United States and the constitutions of the states, with special emphasis on that of Texas. Courses involve the analysis of governmental institutions, political behavior, civic engagement, and their political and philosophical foundations.)

VIII. Social and Behavioral Sciences (Courses in this category focus on the application of empirical and scientific methods that contribute to the understanding of what makes us human.
Courses involve the exploration of behavior and interactions among individuals, groups, institutions, and events, examining their impact on the individual, society, and culture.)

Required Skill Objectives

Foundational Component Areas	**Skill Objectives**					
	Critical Thinking	**Communication**	**Empirical & Quantitative**	**Team Work**	**Social Responsibility**	**Personal Responsibility**
Communication	✓	✓		✓		✓
Mathematics	✓	✓	✓			
Life and Physical Sciences	✓	✓	✓	✓		
Language, Philosophy & Culture	✓	✓			✓	✓
Creative Arts	✓	✓		✓	✓	
American History	✓	✓			✓	✓
Government/Political Science	✓	✓			✓	✓
Social and Behavioral Sciences	✓	✓	✓		✓	

COURSE SYLLABUS

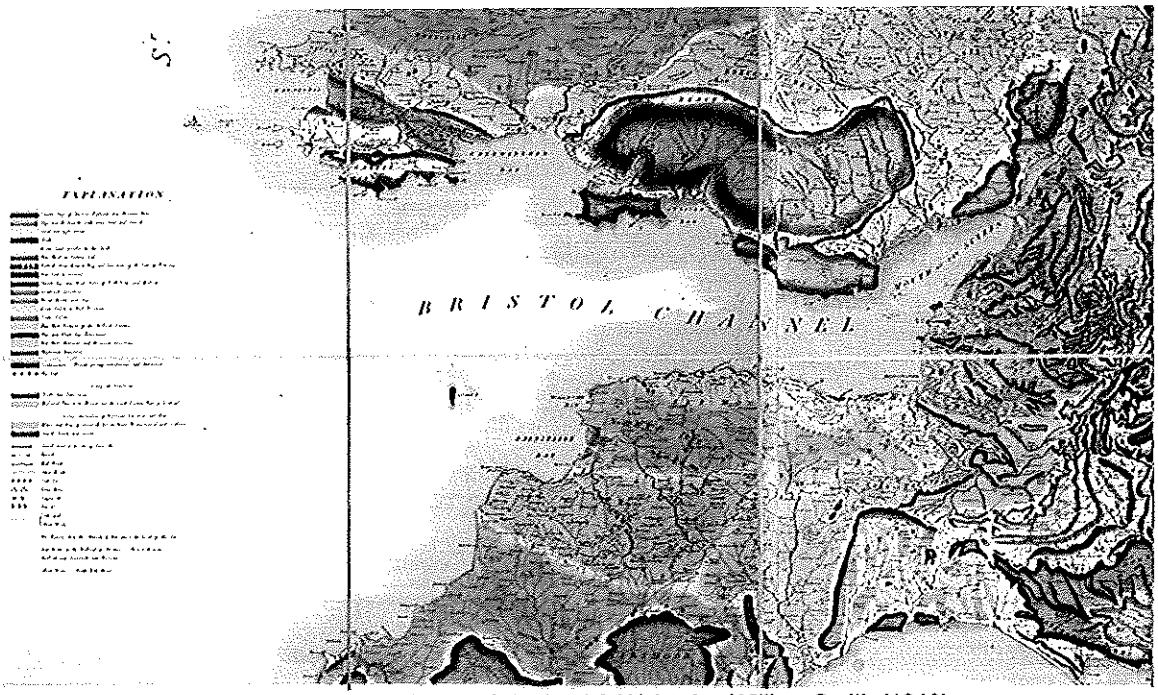
GEOL 1304

HISTORICAL GEOLOGY

3 SEMESTER CREDIT HOURS

Spring 2012

Professor: Dr. Chris Baldwin
(SHSU Tel: 43274)
(e-mail: baldwin@shsu.edu)



Geological map of England & Wales by William Smith (1819)

COURSE SYLLABUS

GEOL 1304 Historical Geology

3 Semester Credit Hours
Spring 2012

Room:	**Section 01** LDB 213	**Section 02** LDB 213
Classes meet:	**Section 01** MWF 11.00-12.00	**Section 02** TuTh 9.30-11.00

Professor: Chris Baldwin
Office: LDB 312
Tel: 41592
e-mail: baldwin@shsu.edu
Office Hours: Any afternoon or by appointment

Course Description

This course will introduce you to some of the basic (and more interesting!) concepts relating to the changes that have taken place through time to the surface and to the interior of the Earth. What are the mechanisms that have driven these changes and how are we able to infer these mechanisms from what we can observe in the geological record? What is this "geological record" anyway, and how trustworthy are its components? We will look at rocks and fossils, mountains and grains of sand, ocean basins and tectonic plates (and much more) – all in the context of science.

While this is a course that forms a part of the required curriculum for Geology majors it is intended to introduce you to science in general and to the physical background of the continent upon which you live. It contains a significant amount of the history of science – with particular reference to the evolution of geological ideas. It also contains a lot about how and why we employ scientific concepts in order to understand natural phenomena.

Prerequisites: None
Methods: Lectures
Assessment: Book Quizzes (3@ 10% =30%), Scientific Poster (40%), Final Exam (30%)
Grading: Tests are multiple choice format with questions taken from the text book publisher. Emphasis will be on terms and defining basic concepts that are introduced in lectures.
Poster outline and grading is shown below (page 4-5)
The Final Exam is cumulative with half exam based on 2 short essays .
Exam Week: May 7th-10th. (Check your personal exam schedule via the SHSU web page)

Objectives:

- Scientific thinking and analysis
- The origin and evolution of geology as a scientific discipline
- The nature of scientific (geological) evidence
    - Natural Earth systems
    - Earth History
    - Geological History of North America

Course text: Prothero and Dott: *Evolution of the Earth* (8th. Edn.)
ISBN: 978-0-07-282684-5 (Paper back)
Supplies: 4 Large Scantron sheets
Blue Book
Power Point Slides: A complete set of slides is available on Blackboard under the "Course Documents" tab.

Attendance

All lectures are compulsory. Please note that both the final exam and other tests will include questions that may make use of a large number of Power Point slides. These slides will only be shown during lectures and many will not be duplicated in the textbook or on Blackboard. If you miss lectures you will place yourself at a considerable disadvantage.

The University requires each instructor to keep a record of student attendance. Attendance based on a sign-in sheet will be recorded at the beginning of the class period. **Tardies count as an absence.** Please do not be late – it disturbs other members of the class.

Six (6) class hours of absence are allowed without penalty. *Absences, for whatever reason unless specifically PRE-approved, in excess of six class hours will result in a 5 point penalty for each hour in excess of the allowed six, deducted from the total grade for the course.*

Please note that this class policy will be closely adhered to throughout the semester. It is not to be considered an invitation to skip an eighth of your course. Rather it is an understanding that as adults you have a variety of responsibilities that put pressure on your time. The flexibility of up to six hours will permit you to manage your affairs so that you can derive the maximum benefit from course lectures.

An absence from a quiz or exam (including for religious reasons - see Religious Holidays, page 6) may be approved, dependent upon the merits of the case, but will only be approved in cases of the utmost emergency such as the death or injury of an *immediate* family member. In such cases the onus is upon the student seeking the absence to show supporting evidence as to the nature of the emergency. A class average grade for the particular quiz or exam will be awarded.

Assignments and Assessment:

3 Book Tests @10% each (Large Scantron sheet required for each)

Note that the first of these quizzes is held very early in the course. They are designed to give you feedback about how well you are grasping the material. TOTAL VALUE 30%

Power Point Scientific Poster **(See details below)**

You will produce a carefully researched and formatted technical poster using Power Point. Note that what is required is a single, large format poster, NOT a set of linked Power Point slides. The poster must be turned in on a CD or USB flash drive and it must be accompanied by an 8"x11" paper hard copy.

You must hand in your poster at ***the start of class (Section 01: Monday, April 2nd.)***
the start of class (Section 02: Tuesday, April 3rd.)

TOTALVALUE 40%

Cumulative Final Exam (Large Scantron sheet plus a Blue Book required)

Exam will contain a section of multiple choice and two long essay questions. TOTALVALUE 30%

Due Dates and Timetables

I do not give makeup exams.

Any due assignments handed in after the due time/date and for which there is no **WRITTEN EXTENSION** will be penalized by –10% per day down to zero.

Class-users'guide

"A high school is a place where knowledge is taught, while a university is a place where knowledge is sought"

1. You are no longer in high school. The great majority of you, not having done so already, will have to discard high school notions of teaching and learning and replace them by university-level notions. This may be difficult, but it must happen sooner or later, so sooner is better. My goal is more than just getting you to reproduce what was told to you in the classroom.

2. Expect to have material covered at *two to three* times the pace of high school. Above that, I aim for greater command of, and a deeper understanding of the material of the course. Simple rote learning and memorization of most of the material will not be sufficient for you to do well in my class. Far more important is a basic **understanding** of concepts and the ability to cite examples to illustrate and amplify this understanding.

3. Lecture time is at a premium, so it must be used efficiently. You cannot be "taught" everything in the classroom. **It is *your* responsibility to learn the material.** Most of this learning must take place *outside* the classroom. You should be willing to put in two hours outside the classroom for each hour of class.

4. The professor's job is primarily to provide a framework, with *some* of the particulars, to guide you in doing your learning of the concepts and methods that comprise the material of the course. It is not to "program" you with isolated facts. I also try to add some "color" and personal connection with our subject.

5. During lectures take notes. Lecture-by-lecture construct a set of key words, key phrases, and particularly, key concepts. Use these keys as "look-up" or search terms that can be applied via the textbook index or to other supplemental research/readings for further development of the information presented during the lectures. Pay particular attention to words and diagrams that are added via the blackboard. As PowerPoint™ slides are available for your lectures make your notes directly on printouts of the slides. Use your notes and the slides as prompts for further work on material that is still unclear. Ask me for additional help if you need it – but only after you have made an effort on your own.

6. You are expected to read the textbook for comprehension. It gives the detailed account of the material of the course. It also contains many basic definitions and examples, and these should be used to supplement those you see in the lecture. The textbook is not a novel, so the reading must often be slow-going and careful. However, there is the clear advantage that you can read it at your own pace. Use pencil and paper to add notes that clarify, organize and expand upon the brief notes that you take in lectures. My best advice is to use the textbook as an encyclopedia in which you "look-up" both broad and specific topics.

7. As for *when* you engage the textbook, you have the following dichotomy:

a. [*recommended for most students*] Read for the first time the appropriate section(s) of the book *before* the material is presented in lecture. That is, come prepared for class. Then the faster-paced college-style lecture will make more sense.
b. If you haven't looked at the book beforehand, try to pick up what you can from the lecture (absorb the general idea and/or take thorough notes) and count on sorting it out later while studying from the book outside of class.

Adapted from: Steven Zucker in Teaching at the University Level, August 1996 *The Notices of the American Mathematical Society.*

SCIENTIFIC POSTER

Your poster can be up to a maximum of any size, but no smaller than 3 feet by 4 feet. It must be presented in Microsoft Power Point – and it must be in the format of a single poster rather than a set of conventional Power Point slides. A short lecture and demonstration will be given during class time in order to introduce the basic methodology and in order to present and discuss examples and problems.

Content

The content of your poster should be scientific, and it should explain some aspect or certain aspects of the subject in scientific terms. It should not be exclusively descriptive, though description might form a significant part. That means that your poster should NOT be exclusively composed of pretty pictures of things or places. It might answer some question. It might make some comparison(s), or it might characterize something in space and/or time. Whatever the subject the purpose of the poster is to EXPLAIN.

It should be of a level of sophistication that is appropriate for your peers and cuddly-looking Barney-esque purple dinosaurs and their ilk should be excluded in favor of sophisticated university level graphics! The poster must tell a clear and concise information-laden story, effectively and legibly.

The poster must contain

(1) A TITLE
(2) YOUR NAME
(3) a short ABSTRACT summarizing the content (= YOUR 'story') [this is NOT a general introduction]
(4) it **must** also contain a BIBLIOGRAPHY which **must** be included on the poster itself.
None of these items should be on a separate slide – they are key components of the poster.

Citation and Bibliography

Any conventional format for citation will suffice. Any text or figure caption should be in your own words (NOT cut and pasted from a publication or web site) and should cite the author by name and the year of publication (e.g. Smith, 1998 or Anon[1], 2004 for a web page where you don't know the name of the author.) A very effective way of linking your images and graphics to your Bibliography is to number each of you images using a sequence of numbers in a square bracket (e.g. [2] or [5] etc.) where the numbers are keyed to full references in a numbered bibliography. Please note that the conventional MLA style of citation and referencing does not work for science because its emphasis is on page numbers rather than year of publication. Choose the *Chicago* format instead.

Subjects

- Invertebrate fossils (any genus or grouping)
- Geological Extinctions
- Any Geological Process(es) and/or Landform(s)
- Any Sedimentary Environment or Sedimentary Structures
- Some specific aspect of dinosaur paleontology or paleoecology (NOT a general review of Dinosaurs)
- A topic of your own choice APPROVED IN WRITING by me

The following topics do not make good posters and are not acceptable:

- General "Continental Drift" and/or "Plate Tectonics" (but specific aspects of these topics are acceptable
- Posters based on places you have visited and perhaps photographed (hard to get at the science)

Graphics

The rules pertaining to plagiarism apply to figures and diagrams. You can't use someone else's diagram or figure without properly referencing or citing them – just as you would with written material.

Layout

Your poster must contain **text (< 30%)** and graphics or **diagrams (>70%)**, and the format should do a job of effectively presenting the scientific story for you . You will not be presenting it verbally.

Deliverables

An electronic version on a CD or USB device ***plus*** an 8"x11" hard copy (either color of B&W)

Grading

The bulk of your grade will derive from the scientific content that you present	50%
The effectiveness of your poster in relating technical information	25%
Care and sophistication of preparation	20%
Completeness of required content	5%

TOTAL VALUE 40% of final grade

Date Due

Section 01 (MWF) Monday, April 2nd.	**Section 02** (Tu/Th) Tuesday, April 3rd.

General Tips and Comments

- In order to do well at this project you will need to do extensive reading and on-line research. You have to demonstrate that you know and understand your topic and that you are able to present in a format that can be understood by your peers. This is no simply an exercise in cutting and pasting pretty pictures.

- The best posters are ones that contain a lot of information presented in an essentially hierarchical manner – just like a good essay or paper is structured to introduce the general context and then deals with specific issues or cases within that context. With the poster you are going to present your information mostly in the form of graphics, pictures and images. These graphics have to get over the broad context as well as the more detailed aspects of your content. Written text should form only a very small part of your poster and the poster should "work" on the basis of the graphics alone.

- Please take time to study the examples of posters that are available with the Power Point sets on BlackBoard. Note that the effective posters make use of sub-panels that act in the same way that chapters of paragraphs would work in a paper: they group together material that has a similar focus.

- The abstract should be a written summary of the content of YOUR poster. It is therefore an entirely original component of the poster. It should not contain any citations. Your poster may or may not require a written Introduction in order to properly "set-the-scene". An Introduction is not the same as an Abstract.

- This poster counts for 40% of your final grade and is therefore a very major project: it will make or break your grade for this course. My grading scheme runs from zero to forty percent – if you turn in a project that indicates little or no research on your part you will make a very poor grade (by poor I don't mean a 50, 60 or 70% - I mean perhaps just 5 or 10%!) . The poster therefore should contain a lot of non-duplicative information. Your graphics should be carefully selected and set out on the poster with care and precision.

Academic Conduct

University statement: *All students are expected to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. The University and its official representatives may initiate disciplinary proceedings against a student accused of academic dishonesty including, but not limited to, cheating on examinations or other academic work which is to be submitted, plagiarism, collusion and the abuse of resource materials.*

I assume that a basic honor system applies to this course and that you must take care to respect your fellow students.

You will be completing a scientific poster project that may contain new material created entirely by you. However, it is more likely that you will largely collect, select, and present in a new configuration intellectual materials in the form of text books, journal articles, and web material that was created by others. This published work must be acknowledged in the conventional form of citation linked to a full bibliography. I explicitly assume that you have read and understood the sections on Academic Conduct in the current SHSU Student Handbook and that you particularly are aware of the issues surrounding **plagiarism.** If you are in doubt – ask first. I will pay particular attention to proper citation and referencing of web material.

Classroom Rules and Conduct

University statement: *Students are expected assist in maintaining a classroom environment that is conducive to learning. Students will refrain from behavior in the classroom that intentionally or unintentionally disrupts the learning process and, thus, impedes the mission of the university. Cellular telephones and pagers must be turned off before class begins. Students are prohibited from eating or drinking in class, using tobacco products, making offensive remarks, reading newspapers, sleeping, talking at inappropriate times, wearing inappropriate clothing, or engaging in any other form of distraction. Inappropriate behavior in the classroom shall result in a directive to leave class. Students who are especially disruptive also may be reported to the Dean of Students for disciplinary action in accordance with university policy.*

- Come to class on time—there is no reason to be late to class on a frequent basis. Habitual tardiness **is unacceptable. <u>If you arrive late you will be counted as absent.</u>**
- Remain in class until it finishes. **Leaving early will count as an absence unless you have cleared it with me or unless it is an emergency.**
- **You cannot leave the class during an exam** unless there is a medical emergency.
- **If you arrive after the first person has left an exam or quiz you will not be permitted to take the exam.** (Note: makeup exams are not given).

Use of Telephones and Text Messagers in Academic Classrooms and Facilities

University statement: *Telephones and similar devices have become increasingly a part of everyday life. In the academic classroom, however, during class these devices can be a serious distraction and during tests they can be a serious problem. The technology is constantly changing and evolving. So, the present policy does not specify particular devices or device types. Rather, the policy applies to any device that performs the function of a telephone or text messager.*

1.0 Each course syllabus must contain a policy statement as to the disposition of telephones and text messagers (1) in the classroom, (2) during testing periods, and (3) for emergency considerations.

- **During lectures, tests and exams cell phones and any other equipment capable of receiving, recording and/or transmitting information, must be put away in a book bag or purse. (In short, it must not be readily accessible or accessed during an exam or used during class time.) <u>The only exception is when there is an emergency and you have notified me before class starts of the need for phone access.</u>**

USE OF TELEPHONES AND TEXT MESSAGERS (Continued)

2.0 The use by students of electronic devices that perform the function of a telephone or text messager during class-time may be prohibited if deemed disruptive by the instructor to the conduct of the class. Arrangements for handling potential emergency situations may be granted at the discretion of the instructor. Failure to comply with the instructor's policy could result in expulsion from the classroom or with multiple offenses, failure of the course.

3.0 Any use of a telephone or text messager or any device that performs these functions during a test period is prohibited. These devices should not be present during a test or should be stored securely in such a way that they cannot be seen or used by the student. Even the visible presence of such a device during the test period will result in a zero for that test. Use of these devices during a test is considered de facto evidence of cheating and could result in a charge of academic dishonesty (see student code of conduct. http://www.shsu.edu/students/guide/StudentGuidelines2010-2012.pdf#page=29).

USE OF LAPTOP COMPUTERS

Students are encouraged to use laptops for note-taking or for accessing Power Point slide sets during lectures. Accessing material other than that directly relevant to the class is strictly forbidden – it disturbs other students sitting behind the abuser. Laptops must be put away during all tests and exams.

VISITORS IN THE CLASSROOM:

University statement: *Unannounced visitors to the classroom must present a current, official SHSU identification card to be permitted in the classroom. They must not present a disruption to the class by their attendance. If the visitor is not a registered student, it is at the instructor's discretion whether or not the visitor will be allowed to remain in the classroom. This policy is not intended to discourage occasional visiting of classes by responsible persons.*

Americans with Disabilities Act:

University statement: *It is the policy of Sam Houston State University that no otherwise qualified disabled individual shall, solely by reason of his/her handicap, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any academic or Student Life program or activity. Disabled students may request assistance with academically related problems stemming from individual disabilities by contacting the Director of the Counseling Center in the Lee Drain Annex or by calling (936) 294-1720. Any student seeking accommodations should go to the Counseling Center and Services for Students with Disabilities in a timely manner and complete a form that will grant permission to receive special accommodations.*

Religious Holidays:

Students who are absent from class for the observance of a religious holy day are allowed to take an examination or complete an assignment scheduled for that day within reasonable time after the absence. The period of time during which assignments and exams will be excused includes travel time associated with the observance of the religious holy day. A student who wishes to be excused for a religious holy day must present the instructor of each scheduled class that he/she will be absent from class for religious reasons with a written statement concerning the holy day(s) and the travel involved. The instructor should provide the student with a written description of the deadline for the completion of missed exams or assignments. In such cases, the student will be required to take the test or submit the assignment early—unless there are good reasons for not being able to do so and the instructor has agreed to those reasons.

COURSE OUTLINE (Chapter in P&D)

Part I

INTRODUCTION **(1 & 2)**
Course introduction: structure, expectations, policies, housekeeping
Geology as a science: Rates and Change

THE (GENERAL) RECORD I **(1 & 2)**
Catastrophism-Uniformitarianism-New Catastrophism

Book Test #1
Tuesday February 14th/Wednesday February 15th.

THE (GENERAL) RECORD II **(2, 3, 4 & 5)**
Fossils and Design
Mapping and Correlation
Relative and Absolute Chronologies

Book Test #2
Tuesday March 6th/Wednesday March 7th.

SPRING BREAK

THE (ROCK) RECORD III **(4 [+ 7])**
Depositional processes and places: paleoenvironments

THE ROCK RECORD IV **(4)**
Depositional processes and environments in time: facies and cycles

Part II

PLATE TECTONICS **(7)**
Background and History
Continental Drift
Earth Structure
Paradigm shifts
Mechanisms and the Record
Rates and Places

Book test #3
Tuesday April 9th/Wednesday April 10th.

Part III

THE PRECAMBRIAN (CRYPTOZOIC) I **(6 & 8)**
Origins and Differentiation
Archean Era

THE PRECAMBRIAN (CRYPTOZOIC) II **(8)**
The Proterozoic Era

THE P€ PALEOZOIC TRANSITION **(8, 9 & 10)**
Snowball Earth (Nice idea…but?)
Ediacara – a different biology…perhaps?
The Invention of Shells

THE PALEOZOIC I **(10)**
Paleogeography and Climate
Grand (SAUK) transgressions and Cycles

THE PALEOZOIC II **(11, 12 & 13)**
The Caledonian/Appalachian Case Study
Cratons, Cover, and Collisions
Salt and stagnant stinking basins
Gondwana Glaciations & Coal

THE MESOZOIC I **(14)**
Pangea break-Up
Global Cycles and Events
The Tethys

THE MESOZOIC II **(14)**
N. American paleogeography and Events
Oil – (in Texas of course!)

THE CENOZOIC **(15 & 16)**
Paleogeography and Paleoclimates

FINAL EXAMINATION
Week of May 7th – 10th
(Check personal schedule on SHSU web page)