

Graduate Seminar in Geosciences (GEOS 6001)

Kimbell School of Geosciences

McCoy College of Science, Mathematics, and Engineering

Fall, 2026

General Course Information

- Lecture Meetings: Mondays | 4:00 pm – 4:50 pm | Bolin Hall 125
- Course D2L Site: [Graduate Seminar in Geosciences D2L Site](#)

Instructor Information

- Dr. Steven J. Rosscoe | steven.rosscoe@msutexas.edu | 940.397.4448
Office Hours: MWF 8-8:50 am, 10-10:50 am | Bolin Hall 101A
Virtual Office Hours: M 10-10:50 am, By Appointment | [Zoom Office Hours Link](#)

Course Description

The Graduate Seminar in Geosciences will cover selected topics within the field of geosciences. Graduate seminar is offered each semester and must be taken at least four times prior to awarding either the combined Bachelor of Science/Master of Science degrees with a major in Geosciences or the two-year Master of Sciences degree with a major in Geosciences. (May be repeated for credit; see above.)

In any field of science, the key to scientific advancement is the adversarial nature of science. If the default mode of scientists is to agree with others without intentional and intensive critique, many poor scientific understandings would hinder the progress of science. As such, this seminar will focus on the role of critique, criticism, conflict, and controversy in science. Through the semester you will evaluate each other, other scientists, and a major controversy in the field today.

Course Learning Objectives

The successful completion of this course will be evaluated around the following course learning objectives. Each of these course learning objectives include aspects of both content knowledge and skills development. Students will:

1. Develop an understanding of how science works and how science benefits from disagreements and discussions about those disagreements.
2. Recognize the importance of understanding how scientific paradigms have changed, the history behind those changes and the importance of proponents of both the old paradigm and the new paradigm.
3. Develop skills in learning scientific information outside of your area of interest to be able to state and support your position on scientific issues.
4. Develop oral presentation and writing skills for communicating data, scientific assessments, and scientific arguments.

Instructional Materials

There is one required textbook for this course. It is not a traditional textbook. It is not expensive. There will also be required readings provided for you as handouts, not posted in D2L. ***You will be required to use specific software during the course.**

Textbooks (Required)

Technically speaking, the required textbook for this course is Jon McPhee's In Suspect Terrain. However, I'm providing you with two options for this book. You can simply purchase the book needed or purchase his larger book, Annals of the Former World, that includes In Suspect Terrain and four other works focused on the geology of North America.

- **McPhee, John. 1983.** In Suspect Terrain. Ferrar, Straus and Giroux. New York. ISBN 9780374517946
- **McPhee, John. 1998.** Annals of the Former World. Ferrar, Straus and Giroux. New York. ISBN 9780374518738

Other Readings (Required)

The following readings are required for other discussions in the course. These readings will be provided to you in paper copies, not PDFs.

- **Von Daniken, Eric. 1968.** "Chapter 8: The Birdmen of Easter Island" from Chariots of the Gods. Putnam, USA, pp. 110-117.
- **Diamond, Jared. 2005.** "Chapter 2: Twilight at Easter" from Collapse. Penguin Books, USA, pp. 79-119.
- **Falcon-Lang, H. J., Heckel, P. H., DiMichele, W. A., Blake, B. M., Easterday, C. R., Eble, C. F., Elrick, S., Gastaldo, R. A., Greb, S. F., Martino, R. L., Nelson, W. J., Pfefferkorn, H. W., Phillips, T. L., & Rosscoe, S. J. 2011A.** No major stratigraphic gap exists near the Des Moinesian-Missourian Stage Boundary in North America. *Palaios*, vol. 26, no. 2, pp. 125-139.
- **Wagner, R. H. 2011.** Comment on "No major stratigraphic gap exists near the Des Moinesian-Missourian Stage Boundary in North America. *Palaios*, vol. 26, no. 2, pp. 125-139." *Palaios*, vol. 26, no. 10, pp. 669-670.
- **Falcon-Lang, H. J., Heckel, P. H., DiMichele, W. A., Blake, B. M., Easterday, C. R., Eble, C. F., Elrick, S., Gastaldo, R. A., Greb, S. F., Martino, R. L., Nelson, W. J., Pfefferkorn, H. W., Phillips, T. L., & Rosscoe, S. J. 2011B.** Reply to comment on "No major stratigraphic gap exists near the Des Moinesian-Missourian Stage Boundary in North America. *Palaios*, vol. 26, no. 2, pp. 125-139." *Palaios*, vol. 26, no. 10, pp. 672-673.
- **Finney, S. C. and Edwards, L. E. 2016.** The "Anthropocene" epoch: scientific decision or political statement? *Geological Society of America. GSA Today* v. 26, no. 3-4, pp. 4-10.
- **Zalasiewicz, J., Head, M. J., Waters, C. N., Turner, S. D., Haff, P. K., and more. 2023.** The Anthropocene within the Geological Time Scale: a response to fundamental questions. *Episodes*, vol. 47, no. 1, pp. 65-83.

Required Software Applications

- Microsoft Office: Word, PowerPoint [Free Access to Microsoft Office 365](#)
 - Required for completion of laboratory activities.

- Full versions are better – Bolin 105 is available to you with these installed.
- PDF Reader
 - PDFs are used to provide some course materials; a browser PDF reader or Adobe Acrobat will be necessary to view them.

Grading Information

The formal grade for this course is determined by your performance on class discussions, presentations, papers, and participation/attendance. Your grade is calculated by dividing the points you earned during the semester by completing assignments by the total number of points possible in the semester. The letter grade for the course follows the traditional university style.

Table 1: Allocation of Points by Assignment Type

The table below shows the total number of points for each major category of assignment that are possible this semester. For more details about the assignments see the section for that assignment in this portion of the syllabus.

Assignments (Quantity)	Points
Class Discussions (5)	100
Persuasive Presentation (1)	050
Position Paper (1)	100
Participation & Attendance	050
Total Points	300

Table 2: Points, Percentage, and Letter Grade Values

The table on the following page shows the point-value and percentage-value required to reach a particular letter grade in the course. The table reflects the optimal running of the course where there are no missed days or activities. The instructor reserves the right to change the point distributions to reflect such changes. The percentage requirements will remain unchanged throughout the semester. Percentage grades are rounded to the nearest whole percent.

Grade	Points	Percentage
A	270 and up	90% and up
B	240 to 269	80% to 89%
C	210 to 239	70% to 79%
D	180 to 209	60% to 69%
F	Less than 180	59% or less

Class Discussions

There will be four group led discussions and one class led discussion in this course. Each discussion is worth 20 points. Early in the semester you will select two partners to work with and select one of the discussions to lead. As the leading group it will be your responsibility to come up with questions and thoughts that will drive a discussion related to class material and assigned readings. The group is responsible for engaging the rest of the class in the discussion. When not

in the leading group, each student is responsible for adding new information/opinions to the discussion and moving the discussion forward. The more willing you are to participate, the easier the leading group has it. That means they might actually make it easy on you when your group leads! The leading group will be evaluated on evidence of knowledge of the material, evidence of preparation, and participation of all group members in the leadership of the discussion. As an individual participant in the discussion (not leading) you will be evaluated on evidence of knowledge of the material, evidence of preparation, and participating in a constructive manner. If you are going to miss a discussion, you will need to submit questions and comments about the reading to Dr. Rosscoe in advance of the absence so that your participation can be added on your behalf. A missed discussion with no submission of material to Dr. Rosscoe will be given a zero.

Persuasive Presentation

A good scientific communicator should be able to give a presentation that establishes their analysis of a scientific controversy and supports their analysis with supporting evidence. They should be able to do this without showing bias and without resorting to the argumentative techniques that are commonly used as crutches in pseudoscience. Each student will prepare and present a five-minute oral presentation with backing PowerPoint slides that establishes their opinion on whether or not the modern era of geologic time should be formally named the “Anthropocene”. Following the presentation there will be a couple of minutes during which the student will field questions from the class. More detailed instructions and a grading rubric will be provided later in the semester.

Position Paper

After reading and researching on the topic of the “Anthropocene”, each student will prepare a position paper where they line out the arguments for and against the formal naming of the “Anthropocene”, establish their position on the issue, and clearly line out their reasoning for taking this position (and clearly line out their reasoning why the other side is wrong). Students will be provided with initial readings and be required to find other scientifically valid publications to research the issue. While work on the paper should begin around midsemester, students are encouraged to adapt their paper following class presentations by their peers and the class discussion on the issue. More detailed instructions and a grading rubric will be provided later in the semester.

Participation & Attendance

This seminar works to develop you as a scientist by giving you information not commonly taught in traditional geology courses and getting you involved in past and current controversial topics in science and the geosciences. The seminar employs class discussions and will be more interactive than a traditional lecture course. That means you have to be there and be involved to get the most out of it. I should hear from you in every meeting of the seminar, and you should be there for every meeting of the seminar. Participation and attendance scores will be awarded as follows:

- 50 points – Attended and participated in 90% or more of the class meetings
- 45 points – Attended and participated in 80-89% of the class meetings
- 40 points – Attended and participated in 70-79% of the class meetings
- 25 points – Attended and participated in 50-69% of the class meetings

- 10 points – Attended and participated in 25-50% of the class meetings
- 0 points – Attended and participated in less than 25% of the class meetings

Extra Credit

There are no planned extra credit activities for this course. It is possible that extra credit assignments may be assigned as the semester progresses at the discretion of the instructor. Extra credit assignments are assignments that have due dates; no late credit will be given.

Late Work Policy

This is a graduate level where nearly all assignments have a week or more of lead time before their due date. ***No late work will be accepted.** Missed labs and examinations may be made up with a legal, paper-documented, excuse.

Make-Up Work/Tests

For legal, paper-documented excuses make-ups for labs and examinations can be completed. Make-up work should be arranged for in advance wherever possible. The instructor will give you a new deadline that is reasonable for the course timeline. ***No make-up work (lecture or lab) will be allowed beyond 10 days past the original deadline.**

No Substitute Assignments

You must complete the assignments, laboratories, and examinations presented in this syllabus. ***No substitute assignments will be allowed to compensate for poor performance or missed deadlines.**

Course Grades and Grade Bumps Policy

In my courses, a grade is earned by accumulating points throughout the semester. The grade you earn in the course is determined by the number of points you earn through the timely completion of assignments. As such, at the end of the semester, there are no grade bumps given out. Do not ask how or if you can be bumped up to the next letter grade, if you haven't earned the points, you will not be able to get that grade.

If you believe there to be an error in the calculation of your grade, whether it is on a specific assignment or the whole course feel free to ask me to re-evaluate and double check. I will do so happily. For specific assignments, be prepared to give me specific reasons you feel the grade is wrong (which wrong answer do you think was right, etc.).

Instructor Classroom Policies

The following policies are the policies that are integral for our successful completion of the course and should be read thoroughly. If you have any questions, please see the instructor.

Academic Honesty Policy

Academic dishonesty is considered cheating, collusion, and plagiarism. Any unauthorized assistance during the completion of assignments, using on aids beyond those authorized for an

assignment, or the use of other people or services to complete assignments is considered cheating. Working with others in a way that is not authorized by the instructor to complete assignments is considered to be collusion. Plagiarism is the use of another person's materials (by paraphrase or direct quotation) without giving them full and clear acknowledgement. The use of material prepared by another person or agency selling term papers and academic materials is also considered plagiarism. ***If a student is caught cheating, colluding, or plagiarizing on any assignment the assignment grade will automatically be a zero. Two or more violations will result in failure of the course.**

Artificial Intelligence Policy

This course is classified as an ***AI Prohibited Course**. The use of any artificial intelligence (AI) in completing course assignments is NOT allowed. AI in this sense is any technology that summarizes, writes, or answers questions on its own. Recent court rulings have allowed lawsuits to go forward against Chat GPT and other AI operators because it directly plagiarizes the use of others. College is about you learning to write, you developing your voice, and you learning how to process, summarize, and properly cite information. Any use of AI is considered a violation of this academic honesty policy.

Classroom Civility Policy

Learning, especially in science, can be a very challenging process. Learning often requires putting yourself out there and being vulnerable. Science also happens to be at the forefront of information which may conflict with personal beliefs. Your beliefs are yours and nothing will change that, though those beliefs may not get you credit on the exam. We are focused on science and what understandings have been developed in the field. Additionally, no scientist thinks the same way as every other scientist. To develop the best understandings of our universe, we must seek input from all people in the field.

In my classroom, we strive to create an environment where everyone is respected and valued for who they are. We are all here together, learning together, and working toward the same goal. This is not a place for hate of any kind. The use of derogatory language, hate speech, or violence is absolutely unacceptable in this classroom and in any setting related to the course. Learn to work with and value all people. Be civil and treat each other with respect. Do your best to listen to each other, in any conversation. Use of derogatory language, hate speech, or violence will result in removal to the classroom or the course.

Dr. Rosscoe is available to help if you have any concerns or questions about building a positive classroom environment. The campus also has numerous resources related to a safe and welcoming experience at MSU. Also, don't forget the MSU Safety App.

- [Title IX Misconduct](#): Dating violence, sexual assault, sexual harassment, stalking, and other forms of sexual misconduct.
- [Bias Incident Reporting](#): Bias and hate incidents related to race, gender, or sexual identity.
- [Disability Grievance Procedures](#): Discrimination on the basis of disability.

COVID-19 and Illnesses Policy

Since COVID-19, classroom health has been a necessary and probably long overdue focus. While there are no longer COVID-19 policies in place by the university the following procedures are scientific best practices. These same principles can be applied to any viral infection (flu, cold, etc.).

- If you become ill and have symptoms, get tested.
- If you are positive for COVID-19, stay home. It's good for your recovery and good for protecting your peers.
- Illness happens and if you absolutely must be in public, wear a mask. Even a cloth mask reduces the chance you will spread the illness to others.
- If you stay home or miss assignments, be sure to get a doctor's note and excuse. It allows the instructor to help you make things up.

In the case of long-term illnesses or medical situations that will prevent you from attending classes regularly, contact the professor as soon as possible. We will work together to make sure that you can succeed, just make sure it is Doctor-documented. I can't do much to help, if I don't know until the day before the semester ends.

Electronic Devices Policy

Use of electronic devices for taking notes is allowed in my classroom. The use of social media or streaming anything is not an appropriate use of technology during class. If your use of technology is non-educational or is being disruptive to your peers, you will be asked to leave. If you're in the back of the room, ear buds in, and smiling as you watch something on your device, I do notice. Don't be that person.

Recording Classes Policy

***Recording classes is generally prohibited without the professor's explicit permission.** Such recordings, when permitted are for personal use only and may not be uploaded to the internet or otherwise shared, transmitted, or published without the professor's prior consent. Some faculty may not permit recordings of their classes. When it is feasible and appropriate, students may record classes to accommodate disabilities under the Americans with Disabilities Act, with prior approval of Disability Support Services. Such recordings may not be uploaded to the internet or otherwise shared, transmitted, or published.

Desire-to-Learn (D2L)

Extensive use of the MSU D2L learning management system is required in this course. Each student is expected to be familiar with this program as it provides a primary source of communication regarding assignments, examination materials, and general course information. You can log into D2L through the MSU Homepage. If you experience difficulties, please contact the technicians listed for the program or contact your instructor.

Computer Requirements

Taking this course involves the completion of all lecture exams, reading quizzes, and discussions in the course learning management system (D2L). This class requires you to have access to a

computer (with Internet access) to complete and upload your assignments. It is your responsibility to have (or have access to) a working computer in this class. ***Assignments and tests are due by the due date, and personal computer technical difficulties will not be considered a reason for the instructor to allow students extra time to submit assignments, tests, or discussion postings.** Computers are available on campus in various areas of the buildings as well as the Academic Success Center. ***Your computer being down is not an excuse for missing a deadline!!** There are many places to access your class! Our online classes can be accessed from any computer in the world which is connected to the internet. Contact your instructor immediately upon having computer trouble. If you have technical difficulties in the course, there is also a student helpdesk available to you. The college cannot work directly on student computers due to both liability and resource limitations however they are able to help you get connected to our online services. For help, log into D2L.

Inclement Weather Policy

In cases of extreme weather events that delay or close campus and where those delays or closures impact the course:

- If the closure or delay includes lecture meeting time, the lecture will not meet and the lecture schedule for the semester will be modified.
- If the closure or delay includes a laboratory meeting time, the laboratory will not meet and all remaining laboratory meetings for the week will be cancelled to keep the lab sections on the same schedule. Lab due dates and lab quiz dates will be adjusted.
- If due dates are impacted by the delay or closure, they will be rescheduled.
- All changes to the course schedule will be posted, in writing, in D2L.

NOTE: Because all students do not have equal or reliable access to technology and internet, especially in times of inclement weather, we WILL NOT shift to online in cases of inclement weather.

University Policies and Information

The following information and policies apply to this course. Please read each of these policies and ask your instructor if you have any questions.

Important Dates

- First Day of Classes: August 24th, 2026
- Change of Schedule and Late Registration: August 24th-27th, 2026
- Labor Day Holiday, No Classes: September 7th, 2026
- Last Day to File for December Graduation: September 21st, 2026
- Priority Deadline for Filing for May Graduation: October 5th, 2026
- Last Day for "W" (Drops after this date receive "F"): November 23rd, 2026
- Thanksgiving Holiday, No Classes: November 25th-29th, 2026
- Last Day of Classes: December 4th, 2026
- Final Examinations: December 5th to 10th, 2026
- Commencement: December 11th, 2026 (Graduate), December 12th, 2026 (Undergraduate)

Attendance

Students are expected to attend all meetings of the classes in which they are enrolled. Although in general students are graded on intellectual effort and performance rather than attendance, absences may lower the student's grade where class attendance and class participation are deemed essential by the faculty member. In those classes where attendance is considered as part of the grade, the instructor should so inform students of the specifics in writing at the beginning of the semester in a syllabus or separate attendance policy statement. An instructor who has an attendance policy must keep records on a daily basis. The instructor must give the student a verbal or written warning prior to being dropped from the class. Instructor's records will stand as evidence of absences. A student with excessive absences may be dropped from a course by the instructor. Any individual faculty member or college has the authority to establish an attendance policy, providing the policy is in accordance with the General University Policies.

Change of Schedule

A student dropping a course (but not withdrawing from the University) within the first 12 class days of a regular semester or the first four class days of a summer semester is eligible for a 100% refund of applicable tuition and fees. Dates are published in the Schedule of Classes each semester.

Refund and Repayment Policy

A student who withdraws or is administratively withdrawn from Midwestern State University (MSU) may be eligible to receive a refund for all or a portion of the tuition, fees and room/board charges that were paid to MSU for the semester. HOWEVER, if the student received financial aid (federal/state/institutional grants, loans and/or scholarships), all or a portion of the refund may be returned to the financial aid programs. As described below, two formulas (federal and state) exist in determining the amount of the refund. (Examples of each refund calculation will be made available upon request).

Services for Students with Disabilities

In accordance with Section 504 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, Midwestern State University endeavors to make reasonable accommodations to ensure equal opportunity for qualified persons with disabilities to participate in all educational, social, and recreational programs and activities. After notification of acceptance, students requiring accommodations should make application for such assistance through Disability Support Services, located in the Clark Student Center, Room 168, (940) 397-4140. Current documentation of a disability will be required in order to provide appropriate services, and each request will be individually reviewed. For more details, please go to [Disability Support Services](#).

Emergency Aid Resources for Basic Needs

Unexpected life circumstances can affect anyone. If you are experiencing challenges meeting basic needs – such as housing, utilities, food, transportation, healthcare, technology, textbooks, or other life necessities, resources may be available to help. Visit the [Student Emergency Support and Resources webpage](#) to learn more, and explore emergency support opportunities through

MSU and how to access them. For additional information, please contact the Office of Student Affairs: Clark Student Center # 108, (940) 397-7500, student.affairs@msutexas.edu.

Campus Carry Rules/Policies

Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. The new Constitutional Carry law does not change this process. Concealed carry still requires a License to Carry permit, and openly carrying handguns is not allowed on college campuses. For more information, visit [Campus Carry Rules and Policies](#).

Active Shooter

The safety and security of our campus is the responsibility of everyone in our community. Each of us has an obligation to be prepared to appropriately respond to threats to our campus, such as an active aggressor. Please review the information provided by MSU Police Department regarding the options and strategies we can all use to stay safe during difficult situations. For more information, visit [Safety / Emergency Procedures](#).

Smoking and Tobacco Policy

Midwestern State University seeks to provide a safe, healthy, pleasant environment for its faculty, staff, and students. To this end, the use of tobacco products, including smoke and smokeless tobacco, and the advertising, sale, free distribution, and discarding of tobacco products shall be prohibited in all indoor and outdoor facilities and in all university vehicles. The policy extends to faculty, staff, students, vendors, guests, and visitors.

Alcohol and Drug Policy

To comply with the Drug Free Schools and Communities Act of 1989 and subsequent amendments, students and employees of Midwestern State are informed that strictly enforced policies are in place which prohibits the unlawful possession, use or distribution of any illicit drugs, including alcohol, on university property or as part of any university-sponsored activity. Students and employees are also subject to all applicable legal sanctions under local, state and federal law for any offenses involving illicit drugs on University property or at University-sponsored activities.

Grade Appeal Process

Following the appropriate procedure for grade appeals requires you to speak to your instructor first, so talk to your instructor. Students who wish to appeal a grade should consult the Midwestern State University [Undergraduate Catalog](#).

Course Topic Schedule

The following is the schedule for the seminar topics and activities for the semester. This schedule may vary over the semester as some topics may move quicker or slower than expected. ***Note: Changes in the course syllabus, procedures, assignments, and schedule may be made at the discretion of the instructor.**

Week	Date	Topic / Activity	Readings / Assignments
1	Aug 24	Course Introduction and The Nature of Science	
2	Aug 31	Scientific Paradigms, Proof, and Scientific Progress	Read Von Daniken & Diamond for September 21 st
3	Sep 07	No Seminar Meeting <i>Labor Day Holiday</i>	
4	Sep 14	Biases and Pseudoscience	
5	Sep 21	Easter Island Discussion <i>Discussion Leaders – Group A</i>	Read Wagner's Gap Paper & Comment and Replies for October 5 th
6	Sep 28	The Peer Review Process and Argumentative Science	
7	Oct 05	Wagner's Gap Discussion <i>Discussion Leaders – Group B</i>	Finish Reading <u>In Suspect Terrain</u> for October 19 th
8	Oct 12	No Seminar Meeting <i>Geological Society of America - Denver</i>	
9	Oct 19	<u>In Suspect Terrain</u> Discussion 1: Geosynclinal Theory vs. Plate Tectonics <i>Discussion Leaders – Group C</i>	Read Anthropocene Papers for November 2 nd
10	Oct 26	<u>In Suspect Terrain</u> Discussion 2: Anita Harris: Hero or Villain? <i>Discussion Leaders – Group D</i>	
11	Nov 02	Geologic Time: How the Sausage is Made	First Presenters Presentations Due by 11:59 pm on November 8 th
12	Nov 09	Persuasive Presentations Day 1 <i>Individual Presentations</i>	Second Presenters Presentations Due by 11:59 pm on November 15 th
13	Nov 16	Persuasive Presentations Day 2 <i>Individual Presentations</i>	
14	Nov 23	Anthropocene Discussion <i>Class Driven</i>	
15	Nov 30	Your Thesis Your Science	Position Paper Due by 11:59 pm on November 30 th