**GEOL 4820 – Capstone**

**Course Syllabus – Spring 2019**

**Instructor: Brad Carr**

 **Phone:** (307) 761-3884 **Email:** bcarr1@uwyo.edu

 **Office:** ESB 1008 **Office Hours:** T (9:00 – 10:30am), Th (9:00 – 10:30am)

**Course Information:** Class meets Tuesdays from 11 am to 12:10 pm in ESB 1038. Discussion sections are on Thursday: 11 a.m.-12:10 pm in GEO 213. This class fulfills the USP 2015 Communication 3 requirements.

**Prerequisites:** Junior standing and 26 hours in the department.

**Course Description:** Critical examination of scientific papers, reports and their influence on the Earth sciences. Through readings, discussions, and presentations (oral and written), the student will gain a broad perspective over the impact of key issues in the field.

**Course Objectives:**

* explore and expand your oral, written, and digital communication skills with an emphasis on interdisciplinary Earth Science topics,
* listen to and evaluate scientific lectures,
* critically assess scientific writing (including graphics) across Earth Science disciplines,
* verbally articulate your opinions, critiques, and analyses,
* identify the diversity of the Earth Sciences from a global perspective, and recognize that the discipline transcends political boundaries

**Course Text and Readings:** How to Build a Habitable Planet: The Story of Earth from the Big Bang to Humankind by Charles H. Langmuir and Wally Broecker, 2012, Princeton University Press

Additional reference to effective writing that are available online or through the library:

* ‘Chicago Guild to Communicating Science’, University of Chicago Press, by Scott L. Montgomery, 2003, 228 pages
* ‘Suggestions to authors of reports of the United States Geological Survey – 7th Edition’, revised and edited by Wallace R. Hansen.
* ‘Geowriting – a guide to writing, editing, and printing in Earth Science – Fifth Edition’, editing by Robert Bates and others, 1995.

**Course Requirements/Assignments:**

* **Class Discussions**: Each class will consist of seminars based on discussions of weekly readings. Readings will consist of textbook sections, relevant papers from academic journals, professional reports, and other scholarly sources.
* Each week 1-2 students will be selected in each discussion section to serve as “DISCUSSION LEADERS” for the following week. They will have two primary responsibilities:
	+ First, the group will create 2-3 PowerPoint slides that explain the major concepts of that week’s reading(s). If there is more than one reading, they will create a PowerPoint slide for each reading. The PowerPoint slide(s) will be shown at the beginning of class on Tuesday & Thursday for critique and will remain visible for the duration of the class as a point of reference for discussion.
	+ Second, the group will lead an in-class discussion of the readings. Aside from the single slide presented at the beginning of class, no formal presentations (i.e. PowerPoint) are necessary; this forum serves as a chance for informal, yet scholarly dialogue.
* **Written Assignments:** Scientific writing is the major component of this course. As such, two chief writing exercises will make up the majority of assignments for this class.
	+ At the beginning of each class period, students will be required to submit a concise summary (~1-3 page – dbl spaced) and critique of that day’s reading assignment. These summaries will be shared with another class member who will read, review structure and content and sign off on the work before beginning the group discussion. Along with their summaries, students will bring 3 questions – written and appended to the end of their summary – based on the reading assignment for that day. These assignments will be emailed to the instructor by 10 pm that same day (each Tues. or Thurs.) in either PDF or WORD format. In that email, please list the person who reviewed the document during class.
	+ In addition to weekly writing assignments, students will be tasked with writing one report & a research paper on a topic of their choice that is related to the material covered in class. Each student will submit two drafts for peer and/or instructor evaluation and then use this feedback to improve the quality of their final report/paper, which will be due before the last class of the semester. More information on the format and requirements for this paper will be provided later in the course.
* Total writing required for this course meets the 40 pages required for USP W3 courses (20 pages weekly summaries and abstracts, 10 page report and 10 page paper is typical in scope and content of writing in the Earth Sciences.
* **Presentations:** Along with a written report on a selected topic, students will also communicate a digital presentation of their topic to the class. This presentation, which will be limited to 7 minutes with 3 minutes for question (10 minutes total), will be made using a standard software program for presentations (i.e. MS PowerPoint, Prezi, Google Drive Presentations, etc.). Students will give their presentations twice during the semester, which will give them an opportunity to receive and respond to feedback from their peers and instructor.
* **Oral and Digital Communications:** In addition to developing your written communication skills through writing summaries, abstracts, and a research paper, you will also hone your oral and digital communication skills. Oral participation in the class includes weekly participation in discussions of the scientific literature, leading discussion of your “paper of the week,” and oral presentation of your research paper. Digital communication skills developed in this course include use of electronic databases to find, organize, and cite scientific literature, and the ability to create and evaluate discipline-relevant graphics and images. It is also expected that students will develop strategic word processing and presentation programs in the course of completing class assignments.

**Grading Standards:** There will be no examinations. Grades will be based on class participation (10%), weekly summaries (30%), one report (15%), one research paper (30%), and class presentations (15%). Be prepared to ask questions, discuss your opinions of topics in class, argue your point, and participate during discussions. The goal of discussions is not to uncover the ‘right’ answer, but for each of you to explore your personal assumptions, beliefs and understanding. **Late assignments are accepted but 10% will be taken off for each day late.**

**Grading Scale:** A-F; A ≥ 95, A- = 90-94, B+ = 85-89, B = 80-84, B- = 75-79, C+ = 70-74, C = 60-69,

D = 50-59, F = < 50

**Disability Statement:** The University of Wyoming is committed to providing equitable access to learning opportunities for all students. If you have a disability, including but not limited to physical, learning, sensory or psychological disabilities, and would like to request accommodations in this course due to your disability, , please register with and provide documentation of your disability as soon as possible to Disability Support Services (DSS), Room 109 Knight Hall. You may also contact DSS at (307) 766-3073 or udss@uwyo.edu. It is in the student’s best interest to request accommodations within the first week of classes, understanding that accommodations are not retroactive. Visit the DSS website for more information at: [www.uwyo.edu/udss](http://www.uwyo.edu/udss)

**Attendance/Participation Policy:** Attendance is mandatory. If you plane to be gone at any time during the semester and UW will officially authorize your absence, please contact me beforehand so that we can work out some way for you to make up any assignments. *Remember: University sponsored absences are cleared through the Office of Student Life. Also, University policies on excused absences are outlined in UW Regulation 2-108 (Student Attendance Policy).*

**Academic Dishonesty Policies:** UW Regulation 2-114. The University of Wyoming is built upon a strong foundation of integrity, respect and trust. All members of the university community have a responsibility to be honest and the right to expect honesty from others. Any form of academic dishonesty is unacceptable to our community and will not be tolerated (from the University Catalog). Teachers and Student should report suspected violations of standards of academic honesty to the instructor, department head, or dean. Other University regulations can be found at: <http://www.uwyo.edu/generalcounsel/new-regulatory-structure/index.html>). Academic dishonesty will not be tolerated in this class. Cases of academic dishonesty will be treated in accordance with UW Regulation 2-114. The penalties for academic dishonesty can include, at my discretion, an “F” on an exam, an “F” on the class component exercise, and/or an “F” in the entire course. Academic dishonesty means anything that represents someone else’s ideas as your own without attribution. It is intellectual theft – stealing - and includes (but is not limited to) unapproved assistance on examinations, plagiarism (use of any amount of another person’s writings, blog posts, publications, and other materials without attributing that material to that person with citations), or fabrication of referenced information. Facilitation of another person’s academic dishonesty is also considered academic dishonesty and will be treated identically.

Faculty and teaching assistants in the Department of Geology and Geophysics set a high standard for themselves as educators, and expect that students will do the same for their own education. Academic dishonesty will not be tolerated.

University Regulation 802 (Revision 2) defines academic dishonesty as “an action attempted or performed that misrepresents one’s involvement in an academic task in any way, or assists another student in misrepresenting his or her involvement in an academic endeavor”. Examples of academic dishonesty relevant to this course include, but are not limited to:

1. Plagiarism: presenting the work (i.e. ideas, data, creations) of another, wholly or on part, as one’s own work without customary and proper acknowledgement of sources and extent of use, unless authorized by the instructor.
2. Fraud: altering or inventing data, research, or citations for an academic endeavor; fabricating, forging or otherwise misrepresenting to an instructor or an institution one’s past or current academic or professional activities; impersonating someone or allowing oneself to be impersonated for an examination or other academic endeavor; using a ghost writer, commercial or otherwise, or any type of assignment.
3. Multiple Submissions: submitting, wholly or in part, the same academic endeavor to earn credit in two or more courses without explicit approval by all concerned instructors.

**Classroom Statement on Diversity:** The University of Wyoming values an educational environment that is diverse, equitable, and inclusive. The diversity that students and faculty bring to class, including age, country of origin, culture, disability, economic class, ethnicity, gender identity, immigration status, linguistic, political affiliation, race, religion, sexual orientation, veteran status, worldview, and other social and cultural diversity is valued, respected, and considered a resource for learning.

**Duty to Report:** UW faculty are committed to supporting students and upholding the University’s non-discrimination policy. Under Title IX, discrimination based upon sex and gender is prohibited. If you experience an incident of sex- or gender-based discrimination, we encourage you to report it. While you may talk to a faculty member, understand that as a "Responsible Employee" of the University, the faculty member MUST report information you share about the incident to the university’s Title IX Coordinator (you may choose whether you or anyone involved is identified by name). If you would like to speak with someone who may be able to afford you privacy or confidentiality, there are people who can meet with you. Faculty can help direct you or you may find info about UW policy and resources at <http://www.uwyo.edu/reportit>

You do not have to go through the experience alone. Assistance and resources are available, and you are not required to make a formal complaint or participate in an investigation to access them.

**Late Arrival and Early Dismissal:** Please email your instructor at least 30 minutes ahead of the beginning of each course for permission to arrange an approved late arrival or opportunity to leave early. Late arrivals or early departures may result in being marked absent otherwise. Students may not arrive late or leave early from class, in order to attend other classes, without submitting paperwork.

**Classroom Behavior Policy:** At all times, treat your presence in the classroom and your enrollment in this course as you would a job. Act professionally, arrive on time, pay attention, complete your work in a timely and professional manner, and treat all deadlines seriously. You will be respectful towards you classmates and instructor. Spirited debate and disagreement are to be expected in any classroom and all views will be heard fully, but at all times we will behave civilly and with respect towards one another. Personal attacks, offensive language, name-calling, and dismissive gestures are not warranted in a learning atmosphere. As the instructor, I have the right to dismiss you from the classroom, study sessions, electronic forums, and other areas where disruptive behavior occurs.

**Cell Phones and other Electronic Devices:** As a courtesy to others do not make or receive phone calls, texts, tweets, posts, etc., while in class. No headphones/earpieces are allowed during critiques, lectures or discussions. Only academic use of computers will be allowed while anyone is presenting in class. Non-academic use of computers during class may result in an unexcused absence for the day or the student may be asked to leave the class. Repeated non-academic use of computers during class may result in a lowered grade in the course.

**Substantive changes to syllabus:** All deadlines, requirements, and course structure is subject to change if deemed necessary by the instructor. Students will be notified verbally in class, on our WyoCourses page announcement, and via email of these changes.

**Student Resources:**

*DISABILITY SUPPORT SERVICES:* *udss@uwyo.edu**, 766-3073, 109 Knight Hall,* [*www.uwyo.edu/udss*](http://www.uwyo.edu/udss)

*COUNSELING CENTER:* *uccstaff@uwyo.edu**, 766-2187, 766-8989 (After hours), 341 Knight Hall,* [*www.uwyo.edu/ucc*](http://www.uwyo.edu/ucc)

*ACADEMIC AFFAIRS: 766-4286, 312 Old Main,* [*www.uwyo.edu/acadaffairs*](http://www.uwyo.edu/acadaffairs)

*DEAN OF STUDENTS OFFICE:* *dos@uwyo.edu**, 766-3296, 128 Knight Hall,* [*www.uwyo.edu/dos*](http://www.uwyo.edu/dos)

*UW POLICE DEPARTMENT:* *uwpd@uwyo.edu**, 766-5179, 1426 E Flint St,* [*www.uwyo.edu/uwpd*](http://www.uwyo.edu/uwpd)

*STUDENT CODE OF CONDUCT WEBSITE:* [*www.uwyo.edu/dos/conduct*](http://www.uwyo.edu/dos/conduct)

**2015 USP COM3 requirements:** This course fulfills the Communication 3 (COM3) requirement of the 2015 University Studies Program. Students will develop skills in written, oral, and digital communication as appropriate to specific disciplines and courses at the introductory, intermediate, and advanced level. Through repeated instruction, practice, and feedback, the communication sequence will emphasize and progressively develop transferrable skills for students’ academic work and future professions. Advanced courses (COM3) will emphasize using the discourse of a discipline or interdisciplinary field to communicate to academic or professional audiences through written, oral, and digital communication.

**Student learning outcomes for USP COM3 courses:** This course meets all seven of the COM3 Student Learning Outcomes:

1. Use the discourse of a discipline or interdisciplinary field to communicate that field’s subject matter to academic or professional audiences through written, oral, and digital communication.
2. Find, analyze, evaluate, and document information appropriately as applicable to the discipline, interdisciplinary field, or professional setting as demonstrated by completing a substantial communication project that requires appropriate research skills.
3. Recognize and evaluate more advanced aspects of communication that respond to the purposes and needs of audiences in a discipline, interdisciplinary field, or professional.
4. Make effective use of multiple drafts, revision, computer technology, peer and instructor comments, and collaboration to show understanding of communication standards in a discipline or interdisciplinary field.
5. Observe the accepted conventions of spelling, grammar, organizational structure,

punctuation, delivery and documentation expected in disciplinary, interdisciplinary, or professional contexts.

1. Deliver presentations in a confident and professional manner, consistent with the standards of the discipline or interdisciplinary field.
2. Interact effectively with audience members, engage opposing viewpoints constructively, and demonstrate active listening skills.

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| Week | Week/Day | Topic & COM3 Goals | Readings | Discussion |
| 1 | T: 01/29 | Introduction, Scientific Thought & Practice-- COM3 Goals: 1,3-7 -- | Th: Schwartz 2008 | Th: Weekly Peer Evals |
|  | R: 01/31 | Th: Chamberlin 1890 |   |
|  |  | Th: Chapters 1 & 2 |  |
| 2 | T: 02/05 | Minerals & Molecules-- COM3 Goals: 1,3-7 --  | T: Chapters 3 & 4 | T: Weekly Peer Evals |
|  | R: 02/07 | Th: Report #1 | Th: Weekly Peer Evals |
|  |  | Th: Paper #1  |  |
| 3 | T: 02/12 | Timescale & Radionuclides-- COM3 Goals: 1-7 -- | T: Chapters 5 & 6 | T: Weekly Peer Evals |
|  | R: 02/14 | Th: Paper #2 | **Th: ABSTRACTS DUE** |
|  |  | Th: Paper #3\_Reviewer |  |
| 4 | T: 02/19 | Earth’s Many Layers & Atmosphere-- COM3 Goals: 1-7 -- | T: Chapter 7, 8 & 9 | T-Th: Weekly Peer Evals |
|  | R: 02/21 | Th: Thesis #1  | Th: Group# 1 papers |
|  |  | Th: Paper #4 | Th: Group#2 papers |
| 5 | T: 02/26 | Science & Bias -- COM3 Goals: 1-7 -- | T: SB1, SB2, SB3, SB4 | T-Th: Weekly Peer Evals |
|  | R: 02/28 | Th: Group#1 paper | Th: Group#3 papers |
|  |  | Th: Group#2 paper |  |
| 6 | T: 03/05 | Plate Tectonics & Solid-Liquid-gas-- COM3 Goals: 1-7 -- | T: Chapters 10, 11 & 12 | T-Th: Weekly Peer Evals |
|  | R: 03/07 | Th: Paper#5 |  |
|  |  | Th: Group #3 paper |  |
| 7 | T: 03/12 |  Life, Evolution & Extinction-- COM3 Goals: 1-7 -- | T: Chapter 13 & 14 | T-Th: Weekly Peer Evals |
|  | R: 03/14 |  | Th: Report Peer Evals |
|  |  | Th: Group#1 papers | **FRIDAY: REPORTS DUE** |
| **Spring Break (03/18 – 03/22)** |
| 8 | T: 03/26 | Planetary Fuel Cell & The Record of Oxidation-- COM3 Goals: 1-7 -- | T: Chapters 15 & 16 | T-Th: Weekly Peer Evals |
|  | R: 03/28 | Th: Group#2 papers | Th: Paper Peer Evals |
|  |  |  |  |
| 9 | T: 04/02 | Planetary Evolution-- COM3 Goals: 1-7 -- | T: Chapters 17 & 18 | T-Th: Weekly Peer Evals |
|  | R: 04/04 | Th: Group#3 papers | Th: Paper Peer Evals |
|  |  |  |  |
| 10 | T: 04/09 | Coping with Climate Change & Student Group #1 Papers-- COM3 Goals: 1-7 -- | T: Chapters 19, 20 & 21 | T-Th: Weekly Peer Evals |
|  | R: 04/11 | Th: Group #1 papers | \*Th: Present Peer Evals |
|  |  |  | Th: Paper Peer Evals |
| 11 | T: 04/16 | Presentations & Student Group #2 Papers-- COM3 Goals: 1-7 -- | **T: G#1 Presentations** | T-Th: Weekly Peer Evals |
|  | R: 04/18 | Th: Group #2 papers | \*Th: Present Peer Evals |
|  |  |  | Th: Paper Peer Evals |
| 12 | T: 04/23 | Presentations & Student Group #3 Papers-- COM3 Goals: 1-7 -- | **T: G#2 Presentations** | T-Th: Weekly Peer Evals |
|  | R: 04/25 | Th: Group #3 papers | \*Th: Present Peer Evals |
|  |  |  | Th: Paper Peer Evals |
| 13 | T: 04/30 |  Presentations-- COM3 Goals: 1-7 -- | **T: G#3 Presentations** | T: Weekly Peer Evals |
|  | R: 05/02 | Th: Paper Peer Evals | Th: Paper Peer Evals |
| 14 | T: 05/07 | Final Research Paper -- COM3 Goals: 1-7 -- | T: Paper Peer Evals |  |
|  | R: 05/09 | **Th: Final Papers/Reports Due** | **Th: Final Papers/Reports Due** |
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| 15 | **Finals Week (05/13 – 05/17)** |