OCN 401 – Biogeochemical Systems (*Writing Intensive*)

Course Information Sheet

Fall 2014

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Course Instructors: Dr. Kathleen Ruttenberg
Dr. Frank Sansone
Dr. Chris Measures
Dr. Brian Glazer

Student Learning Outcomes: Upon successful completion of the course, students are expected to be able to:

1) Explain the underlying principles of biogeochemical cycling in aquatic and terrestrial systems
2) Identify the major global pathways of bioactive elements, and the ways in which human activities affect these pathways
3) Use written and oral communication to clearly explain biogeochemical phenomena and related contemporary research; this is a Writing Intensive (WI) course
4) Achieve facility using electronic resources (e.g. on-line journals, electronic searches for science references) to develop a bibliography for a research area

Important Dates:

**Term Project**
- Oct. 9 - Term Paper Topic due at beginning of class
- Oct. 16 - Mini-presentations of Term Paper Topics
- Oct. 23 - Outlines due at beginning of class/assign peer reviewers
- Oct. 28 - Peer reviews of Outlines due at beginning of class, class discussion
- Nov. 6 - Final Outlines due at beginning of class
- Nov. 13 - Graded Outline returned
- Nov. 20 - First drafts due at beginning of class
- Dec. 2 - First drafts returned
- Dec. 9 - Student presentations-I
- Dec. 11 - Student presentations-II
- Dec. 11 - Final drafts due at beginning of class

**Exams**
- Oct. 14 - Midterm Exam
- Dec. 18 - Final Exam (12:00 to 2:00 p.m.)
Writing Assignments:

Three types of writing assignments will be assigned during the semester.

<table>
<thead>
<tr>
<th>Assignment Type</th>
<th>Focus</th>
<th>Minimum Required Pages/Page limit</th>
<th>#</th>
<th>Single draft? or 1st Draft and Final paper</th>
<th>Peer Review?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mini-essays</td>
<td>Mechanics of Writing</td>
<td>2 / 3</td>
<td>2</td>
<td>Single draft only</td>
<td>Mini-essay # 2 only</td>
</tr>
<tr>
<td>Extended essays</td>
<td>Organize information from literature sources into a balanced argument</td>
<td>3 / 5</td>
<td>1</td>
<td>First and Final drafts</td>
<td>Yes</td>
</tr>
<tr>
<td>Term Paper Outline</td>
<td>Organization of ideas and structure of term paper</td>
<td>1 / 2</td>
<td>1</td>
<td>First and Final drafts</td>
<td>Yes</td>
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<tr>
<td>Term Paper</td>
<td>More extensive literature research, excellence in writing, smooth synthesis of information, independent thought</td>
<td>10 / 12</td>
<td>1</td>
<td>First and Final drafts</td>
<td>No</td>
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Each writing assignment builds upon the previous one, culminating in your term project. The learning objectives each writing assignment type are:

• Mini-essays focus on the mechanics of writing. These are essentially writing exercises.
• Extended essays – Work on developing the skill set required to critically review published materials on a technical subject, to organize content, clearly and objectively delineate and distinguish arguments, ideas, facts, and opinions.

**See ‘Homeworks’ column in syllabus for relevant due dates.**

• Term Project – Synthesize the skill sets developed in prior homework projects.

  Objective: Clearly describe and organize facts, ideas, and arguments to write a cohesive, cogent and readable term paper, and then to convert this into a compelling oral presentation.

**See ‘Term Project’ column in syllabus for relevant due dates.**

• **Utilize rubrics** for writing and peer reviewing.

I) Mini Essays

• Topics:
  i) Oldest air in the world may be trapped in the Antarctic Ice Sheet, LA Times (2013)
  ii) Saharan dust key to formation of Bahamas’ Great Banks (Science Daily, 2014)

• Essays should be written using the guidance of the writing rubric provided.
• 11 pt (PC) or 12 pt (Mac) font; double-spaced; pages numbered.
• Peer reviews of Mini-essay#2 will be completed as a homework assignment, will be discussed in pairs (writer/reviewer) in class, and turned in to instructor for grading.
  - **Complete** the writing rubric (rankings and comments) and the grading template.
  - **Submit these with your type-written peer review;** use the writing rubric as a guide to comment on where the draft is strong, and to make constructive suggestions about how it can be improved.
  - Your type-written peer review should be brief, concise, and most of all constructive.

• Theme Areas:
  i) Volcanos and Biogeochemistry (e.g., Icelandic eruptions, other historic eruptions, impact on oceanic or terrestrial biogeochemistry)
  ii) Speculation versus data: Revisiting controversial environmental impact events (e.g., the Macondo oil spill in the Gulf of Mexico; the effect of fracking on groundwater quality)

• Students will be assigned a topic under one of the two theme areas.

• First Drafts and Peer Review:
  - First drafts are to be written using the guidance of the writing rubric provided.
  - Citation Format: Use one of the formats suggested in the ‘References for AGU Publications’ handout. A minimum of 2 references is required, at least 1 from the scientific literature. Articles from high-quality news sources are allowable, and may be beneficial, or even essential, to place the topic in context.
  - You will review one other student’s draft as a homework assignment, as follows:
    o Complete the writing rubric (rankings and comments) and the grading template.
    o Submit these with your brief, concise, and constructive type-written peer review; use the writing rubric as a guide to identifying strengths, and to make constructive suggestions for improvement
  - Students will meet in class with their peer reviewers to discuss their drafts, and will complete a written revision strategy.
  - All drafts, peer reviews, and revision strategies will be handed to the instructor at the end of class for evaluation and for instructor input.

• Final Drafts must be accompanied by a written outline/list of how each critique made by the peer reviewer or the instructor has been addressed. Final revised paper must clearly address comments made by both the peer and instructor reviews. First draft and peer review sheets must be turned in with final draft.

• Strive for a clear, well-written presentation of the topic.
  Make clear distinctions between facts and speculation. Present a balanced presentation of opposing arguments, if there are two sides to the story; it is not your job to argue in favor of one side over another, but to provide enough information that readers can draw their own conclusions, based upon solid evidence. Clearly state whether strong evidence is lacking either to support or to discredit an argument, or if there is conflicting evidence / arguments.

• Format: 11 pt (PC) or 12 pt (Mac) font; double spaced; pages numbered.

• Grading:
  - 1st draft meets rubric guidelines (20%)
  - quality of peer review (30%)
  - comprehensive revision plan (20%)
  - final draft addresses reviewer critiques and meets rubric guidelines (30%)

Distribution of Homework (Together worth 20% of your final grade):
• Mini-essays are worth 5% of your homework grade
• Extended essay is worth 15% of your homework grade
• Class participation (attending class, being attentive, asking questions) will be used to weight borderline grades.
• Late assignments will be docked 10% each day until they are handed in.
Term Project

• Term project is worth 30% of your course grade (paper = 70%, oral presentation 30%)
• Grading categories and points:
  o Term paper topic (5 pts)
  o Term paper topic mini-presentation (5 pts)
  o Term paper detailed outline (15 pts)
  o Term paper first draft (20 pts)
  o Term paper final draft (25 points)
  o final oral presentation (30 points)

TERM PAPER INSTRUCTIONS

• Pick a topic of interest.
  - can be related to your senior thesis, but must be distinct from it
  - an opportunity to explore possible areas of interest for your senior thesis
  - you MUST discuss topic choices with an instructor, and obtain instructor approval well before the topic due date! (see important dates, above)
• Late assignments will be docked 10% each day until they are handed in.
• Required parameters for term paper:
  - 11 pt (PC) or 12 pt (Mac) font, double-spaced, pagination is required!
  - 10 page minimum, 12 page limit (exclusive of figures and tables)
  - Required: abstract, conclusions, references, figure(s) &/or table(s)
  - Minimum of 4 references from the original scientific literature (excluding internet sources, and not limited to text books). Citations should follow one of the formats suggested in the ‘References for AGU Publications’ handout. Be sure to look over the information we provided on referencing and library research techniques during class on Sept. 16.
  - Use a spell-checker; you will be penalized for spelling and grammar errors.
  - Consider having a fellow student proofread your paper.
  - Final paper must address instructor comments made on your first draft!!
  - Turn in your first draft, rubric and grading template along with your final paper.
• We are looking for a synthesis/integration of information – you should strive to present a coherent story, supported with figures and/or tables from the scientific literature. Your main points should be summarized in the Conclusions section. The truly excellent paper will provide an independent synthesis of information.

Grading of term papers will be based on the following criteria (see Rubric):

Comprehensive coverage of the topic, synthesis of information presented; indication of critical thinking

Written presentation, judged by writing skills, spelling, grammar, adherence to the rules

Use of references, judged by quality and type

Use of figures to illustrate ideas, judged by quality and appropriateness
PRESENTATION INSTRUCTIONS

You will also be required to give the class an oral 10-minute summary of your term paper on either December 9 or 11; the date for each student will be chosen later in the semester.

Be sure to prepare visual aids, such as a PowerPoint or Acrobat presentation.

There will be time after each talk for questions. As noted below, some of your grade will be based on your participation in the question-answer sessions.

Your grade for the presentation will count for 30% of your Term Project grade.

Grading of the presentations will be based on the following criteria:

Comprehensiveness of the material covered: 20%

Organization of talk, including the quality of the conclusions given: 20%

Quality and use of figures: 20%

Keeping within the allotted time: 15%

Participation in discussions: 15%

Quality of speaking style: 10%

Course Grade

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<tr>
<th>Component</th>
<th>% of Total Grade</th>
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<tbody>
<tr>
<td>Mid-term Exam</td>
<td>25%</td>
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<tr>
<td>Final Exam</td>
<td>25%</td>
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<tr>
<td>Class Project (term paper, oral presentation)</td>
<td>30%</td>
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<tr>
<td>Homework assignments and class participation</td>
<td>20%</td>
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<tr>
<td>Total Grade</td>
<td>100%</td>
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