OCN 401 – Biogeochemical Systems (*Writing Intensive*)

Course Information Sheet

Fall 2015

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


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**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*

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**Important Dates:**

**Term Project**
- Oct. 13 (Tu) - Term Paper Topic due at beginning of class
- Oct. 15 (Th) - Mini-presentations of Term Paper Topics
- Oct. 22 (Th) - Outlines due at beginning of class/assign peer reviewers
- Oct. 27 (Tu) - Peer reviews of Outlines due at beginning of class, class discussion
- Nov. 3 (Tu)  - Final Outlines due at beginning of class
- Nov. 10 (Tu) - Graded Outline returned
- Nov. 24 (Tu) - First drafts and Revised Outlines (with reviews) due at beginning of class
- Dec. 1 (Tu)  - First drafts returned
- Dec. 3 (Th)  - Student presentations-I
  - Meetings with students after class to discuss paper revisions
- Dec. 8 (Tu)  - Student presentations-II
- Dec. 10 (Th) - Student presentations-III
  - Final drafts due at beginning of class

**Exams**
- Oct. 13 - Midterm Exam
- Dec. 15 - Final Exam (12:00 to 2:00 p.m.)
Writing Assignments: Objectives & Requirements

Four types of writing exercises 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 thesis</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>
</tr>
<tr>
<td>Term Paper</td>
<td>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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§applies to first and final draft

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.
Homeworks

I) Mini Essays
  • Topics:
    i) Iron Toxicity for cyanobacteria delayed oxygen accumulation in early Earth’s atmosphere (Science Daily, 6/1/15)
    ii) Seafloor hot springs a significant source of iron in the oceans (Science Daily, 7/14/15)
  • Essays should be written using the guidance of the Mini-Essay Writing Rubric.
  • 11 pt (PC) or 12 pt (Mac) font; double-spaced; pages numbered.
  • Give your essay a title, and put your name, the date, the assignment type and the course in the header.
  • 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) Global Climate Change
    ii) Renewable Resources
  • 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 Extended Essay Writing Rubric.
    - 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. For your second reference, you may choose an article from a high-quality news source, which 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:
  - First draft
  - Peer review (both written review and completed rubrics) and annotated first draft if one was provided by your reviewer
  - Revision strategy drafted in class
  - Typewritten outline/list of how each critique made by the peer reviewer has been addressed.
    Final revised paper must clearly address comments made by the peer reviews!

• 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.

• Must have a title, your name, the date, the assignment type and the course # in the header.

• 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%)

Point 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
* 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:
  - Term paper topic (5 pts)
  - Term paper topic mini-presentation (5 pts)
  - Term paper detailed outline (15 pts)
  - Term paper first draft (20 pts)
  - Term paper final draft (25 points)
  - 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! (topic due date: Thursday, 10/13/15)

* Late assignments will be docked 10% each day until they are handed in.

* Required parameters for term paper:
  - Required Components: 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 September 15.
  - 11 pt (PC) or 12 pt (Mac) font, double-spaced, pagination is required!
  - 10 page minimum, 12 page limit (exclusive of figures and tables), will be STRICTLY ENFORCED!
  - 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; 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
Oral Presentation Instructions

You will be required to give the class an oral 10-minute summary of your term paper on December 3, 8 or 10; Order of talks will be alphabetical by students’ last name.

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

There will be time after each talk for questions; 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 Point Distribution

<table>
<thead>
<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 Term Project (term paper, oral presentation)</td>
<td>30%</td>
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<tr>
<td>Homework assignments</td>
<td>20%</td>
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<tr>
<td>Total Grade</td>
<td>100%</td>
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