Surface and Ground Water Interactions

**GLY5247; Section 2E51 - spring 2016**

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**Office Hours:** 2-3 pm Mon./Wed. or by appointment (call or email first)

**Meeting Place:** 218 Williamson Hall

**Meeting Time:** Open for discussion (possibly: Monday or Wednesday, 8:35 to 11:30)

**Objectives:**

In this course we will read, discuss and critically evaluate papers that deal with at least three environments where surface water and groundwater mixing is common: the coastal zone, hyporheic zone of stream beds, and carbonate karst aquifers. These topics may change depending on interests of students in the class. Papers will include classic or review papers, as well as papers that have been published within the last few years. The course has several objectives. One is for you to become familiar with our current understanding of these hydrologic and hydrogeologic environments, processes that shape them, and techniques used to observe them. The second is to learn how to read and critically evaluate scientific literature. The third is to learn how to clearly lead, present and contribute to group discussions. The fourth is to hone your ability to compile information from the primary literature and synthesize it into a written document that clearly describes a scientific hypothesis and means to test the hypothesis.

**Readings:**

The attached bibliography includes most of the papers we will read, although we will certainly not get through all of them. Further, this bibliography is not an exhaustive listing of the pertinent literature. Although the bibliography is broken into sections, there will be considerable flexibility as to which papers we will read and their sequence. We also may read papers not on the list, particularly if new ones appear during the semester. I welcome your suggestions for papers and especially encourage your suggestions for papers that deal with your thesis topic if it pertains to surface water and groundwater interactions. Typically papers will be assigned at least one week in advance of the class discussion. Papers and selected information may be posted on the class Canvas website: https://ufl.instructure.com/courses/325963.

**Expectations and evaluations:**

Since this is not a standard lecture/testing class, the expectations for your work and behavior in class may be a bit different from what you are probably used to. In particularly, I expect the following from you:

(1) Come to all classes. Absences must be excused by a note from a doctor or a mortician and unexcused absences will significantly impact your grade (see below).

(2) Read all of the assigned papers. In this iteration of the class, I am going to attempt a team-based learning (TBL) approach. How TBL works will be explained verbally and demonstrated in the first class. The approach may be modified throughout the semester.

(3) Participate in the discussions. At the end of class I will assign you a value of 1, 2, or 3 where 1 = never said a word, 2 = briefly spoke one or two times, 3 = actively participated and contributed to the discussion. These points will contribute to your final grade according to the grading rubric below.

(4) Write and present to the class a short proposal (5 pages including figures, but not references) on a topic of your choice. I will evaluate the proposal according the attached rubric. At some point during the semester, I may offer a lecture on “How to write a good proposal”, but for the time being I’ve posted a description of information I would provide in the lecture. Various parts of the proposal will be due throughout the semester according to the following schedule. These due dates assume class will be on Wednesday.

January 27: short (2-3 sentences) description of proposal topic

February 24: Annotated bibliography for proposal

Week of Feb. 29th: Spring break, no classes

March 30: Extended abstract of proposal (1 page)

April 13: Proposal due, proposal presentations.

The proposal will be graded according to the following rubric:

**Rubric for proposal**

|  |  |  |
| --- | --- | --- |
| **Section** | **Topics that should be covered** | **Value (%)** |
| Introduction | Hypothesis introduced early | 20 |
| Background information provided to explain unknowns |
| Background | Detailed and thorough review of literature. Only information included that supports hypothesis and why important to test | 20 |
| Work plan | Description of how hypothesis will be tested – what will be done, what will be found, how results provide a test | 20 |
| Conclusion | Summary of timeline, next steps | 10 |
| Writing | Grammar, punctuation, spelling | 15 |
|  | Clarity of thought | 15 |

**Grading:**

|  |  |
| --- | --- |
| **Att** | **Total Value (%)** |
| Attendance | Variable\* |
| Class participation | 25 |
| iRAT (TBL stuff) | 15 |
| tRAT (TBL stuff) | 25 |
| Proposal | 20 |
| Proposal presentation | 15 |
| **Total** | **100** |

 \* Each unexcused absence will lower your class score by 5 percentage points.

**Some additional information**

(1) Attendance is mandatory.

(2) No make-up work will be allowed.

(3) Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

(4) There is no text book required.

(5) Letter grades will include minus grades. The grading scale is >93 = A; 90-92 = A-; 87-89 = B+; 83-86 = B; 80-82 = B-, etc. Values will be rounded to nearest whole numbers

Alternate: > 90 = A, 87-89 A-, 83-86 = B+,

(6) Class demeanor:

a) Class will start on time. Please be punctual. Turn off cell phones.

b) I except lively discussions in this class, but demand respect for each other’s views and backgrounds. Personal slights, either overt or covert, will not be tolerated. Everyone should talk and everyone should respect what others have to say.

(7) All students are expected to follow the University honor code: neither give nor receive unauthorized aid in doing any assignment. Not adhering to this policy will result in a failing grade for the class.

**Readings:**

**Week 1-6**: Submarine groundwater discharge and sea level rise effects on coastal aquifers

Aller, R. C. (1980) Quantifying solute distributions in the bioturbated zone of marine sediments by defining an average micro-environment, *Geochim. Cosmochim. Acta* 44: 1955-1965.

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Cardenas, M. B., P. L. M. Cook, H. Jiang and P. Traykovski (2008) Constraining denitrification in permeable wave-influenced marine sediment using linked hydrodynamic and biogeochemical modeling, *Earth and Planetary Science Letters* 275: 127-137.

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**Weeks 7-10:** Hyporheic flow and carbonate streams

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