

Louisiana State University Department of Oceanography and Coastal Sciences

OCS 4128: Wetland Hydrology and Hydrodynamics – Fall 2018

MWF 9:30-10:30 Location TBD

instructor: Dr. Matt Hiatt

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office hours: MWF 10:30-11:30, or whenever my door is open.

Prerequisites: MATH 1550, MATH 1552, GEOL 1001 or equivalent.

Though not a prerequisite, I strongly suggest you have taken or take concurrently PHYS 2001, since we will be dealing with the mechanics of water motion.



Salt marsh during low tide in the Western Scheldt estuary, Netherlands

Textbook (strongly recommended): Elements of Physical Hydrology (Second Edition preferred, 2014) by G.M. Hornberger, P.L. Wiberg, J.P. Raffensperger, and P. D’Odorico, ISBN: 1421413736. The text will be used for supplemental reading and for problems worked inside and outside of class.

Other suggested books include: Wetlands by M.J. Mitsch and J.G. Gosselink; Physical Hydrology by S. Lawrence Dingman. Some of the content will be pulled from other sources, but I’ll be provide all of those materials.

Course description: This course is a quantitative and qualitative introduction to hydrology and hydrodynamics, with an emphasis on wetland environments. Hydrology, or literally “water science”, is the study of the occurrence, movement, properties of water on and beneath the Earth’s surface, while hydrodynamics, “water motions”, is the concerned with the physics of water motion. We will focus on the **physical processes** governing water movement on Earth’s surface and subsurface. Broadly, the course will cover the water cycle, surface flow, and groundwater flow applied to wetland environments. Some specific topics include the water cycle, mass balances, evapotranspiration, precipitation, fluid dynamics, inundation and flooding, groundwater hydraulics, free surface flows, vegetation hydrodynamics, sheet flow, flow measurement techniques, and wetland responses to sea level rise and climate change.

Course philosophy: My goal with this course is that students will develop problem-solving and critical thinking skills and apply those skills to hydrology and hydrodynamics. While this course involves computation, it is not a math course, so the goal is to use mathematical and analytical tools to gain insight into the processes governing water motion, not to solve a bunch of difficult equations. This course is also focused on the development of communication skills, both written and oral.

Core learning objectives: Understand first principles of water flow on the surface and in the subsurface through a study of hydrological and hydrodynamic processes

1. Problem solve and think critically about issues related to hydrology and hydrodynamics
2. Know and appreciate basic concepts of wetland ecosystems
3. Solve real-world problems related to hydrology and hydrodynamics using the mathematical principles learned in class
4. Conduct a research project addressing a contemporary issue in wetland hydrology
5. Develop oral presentation and scientific writing skills

Grading: The class grade will be calculated by a weighted average as follows:

- Homework (40%)
- Exams (20%)
- Course Project (20%)
- In-class exercises (15%) and participation (5%)

Final letter grades will be determined according to the following point distribution:

Letter Grade	A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
Numerical Score	>97	96.9-93	92.9-90	89.9-87	86.9-83	82.9-80	79.9-77	76.9-73	72.9-70	69.9-67	66.9-63	62.9-60	<60
Grade Points	4.3	4.0	3.7	3.3	3.0	2.7	2.3	2.0	1.7	1.3	1.0	0.7	0

It is not my intention to need to adjust grades for this course. Grades will not be *curved* in this course and grades will only be increased uniformly (i.e., the same amount for each student), if needed. So, your grade can only increase if grades need to be adjusted. Your performance in this class is only determined by your point total, and does not depend on your scores relative to other students'. So, it is possible that everyone gets an A (or an F).

Homework (40%): There will be eight (8) homework assignments, each worth 5% of your total grade. Homework assignments must be presented in a clear and professional manner. This means:

- Handwriting, calculations, and sketches are clear and neatly-presented (typed is okay)
- All pages are stapled and in order (numbered pages are helpful).
- Your name should appear near the top of the page on each page
- For calculations, the final answer(s) is(are) indicated (e.g., boxed, circled, bold underline).
- Longer calculations should be presented logically so I can follow your work. The easier it is for me to follow your work, the easier it will be to determine partial credit. You need to show each step or enough steps that I can follow it.
- Units need to be indicated

It is my intention that these homework sets will deepen your understanding of the concepts we learn in class. The problems will be designed to challenge your understanding and intuition of hydrological and hydrodynamics processes. I do not intend to make these problem sets very difficult, but they will require some time and thought in setting up the problem.

Due Date: The due dates for each homework assignment will be given when its assigned (usually weekly).

Assignments are due at the beginning of class. If you must miss class on the date it is due, please bring it to me beforehand or slide it under my office door before class. **Late homework will be accepted until the end of the day (before midnight), but 50% will automatically be deducted from its score.** Since homework is worth so much in this class, it really is in your best interest to hand in every homework assignment, even if you must do so late.

Solutions to the homework will be posted online the day after the due date around 8:00am (maybe a little later on the weekends).

Exams (20%): There will be two exams including the final. The final will not be comprehensive and will be worth the same amount of points as the previous exam. All exams will be carefully graded with most points going towards pursuing the correct approach. IF the grader cannot follow your work, fewer points will be given. You must show your work, as little to no points will be given if you just give a numerical answer (unless the problem calls for that). Please provide as much detail as possible to explain your answers.

Missed exams – LSU has a policy on missed classes (PS-22) and we'll follow that to determine when/if a makeup exam will be granted. It is the student's responsibility to let the instructor know as soon as you know you'll need to miss a class. The student must provide written documentation documenting the reason for your absence within a reasonable time frame, otherwise a makeup exam will not be granted. Examples of things that will not be considered for a makeup exam include, but are not limited to: oversleeping, being a

spectator at an event, vacations, weddings, breaking up with your partner, zombie outbreaks. If you have a reasonable excuse to miss, please just let me know as soon as possible and I will work with you.

PS – 22 reads “Valid reasons for an absence include: 1. Illness, 2. Serious family emergency, 3. Special curricular requirements such as judging trips or field trips, 4. Court-imposed legal obligations such as subpoenas or jury duty, 5. Military obligations, 6. Serious weather conditions, 7. Religious observances. See the interfaith calendar website (www.interfaithcalendar.org), 8. Participation in varsity athletic competitions or university musical events.”

Regrading of exams: If you believe I made an error in grading your exam, please submit a request to **me in writing**. Please type up a justification as to why you think I made a mistake or overlooked some portion of your answer. Please email me this request with a scanned copy of your exam in question. If you cannot scan it, please print out the justification letter and deliver it and the attached exam to me. You must do this within one week (7 days) of the receipt of your graded exam. Doing so ensures that I will carefully review your request and will respond with a written explanation of why points were or were not added to your exam score.

Notes for the exam: You are welcome to bring a handwritten or typed sheet of notes (1 sided) to the exams. I strongly suggest doing this, as it will prove useful and will help you study.

Semester Project (20%): The semester project will involve analysis of real data related to hydrology or hydrodynamics (from a database, your own research, or a journal article, for example). I will provide some options and data sets to help students choose their topics. Undergraduates will be allowed to work in pairs or a small team of three (only if necessary), while graduate students will be working alone. The project comprises two elements: 1) a written project report and 2) an oral presentation. We will use the last few class periods to have these presentations. The course project information will be disseminated and discussed in class on September 5, 2018. The written project reports will be due on November 30, 2018 in class. A rubric for the grading of the semester project will be given out along with the project information. Some general guidelines are listed below.

Written project report (45%):

- The written report will be worth 50% of your project grade
- The report should be typed in a word processor (e.g., Word) or typesetting program (e.g., LaTeX)
- While there is no minimum page limit, please keep it less than ten pages (not including references and any necessary data appendices). However, if you hand in a 1-page document, you probably won't get full credit. Aim for 5-7 pages
- Single space, 11-12 point, in a readable font like Times New Roman or Garamond
- Include clear, readable figures with a legend
- Please follow a standard convention for citation (more information will be provided)
- Sources must be cited (textbooks, journals, on-line databases, Wikipedia, etc.)
- Grading will be based on both the technical merits of the project as well as the professionalism of the document itself

Oral presentation (45%):

- Each group or individual will be required to give a 15-minute oral presentation about their findings
- The speakers must also include a visual aid. In most cases, this will be a power point presentation. However, if you would like to practice a poster presentation, that is also fine, but please discuss this with me first.
- A professional presentation is expected, but the structure of the talk is up to the speakers.
- I will be grading on content, but mostly focusing on presentation delivery and clarity (e.g., eye contact, clarity/volume of speech, presentation cohesiveness and clarity, presentation style).
- Each group member must contribute equally to the oral presentation (i.e., everyone must speak).
- A grading rubric will be handed out along with the project information on September 5, 2018

Presentation evaluation (10%):

- Evaluation sheets will be provided for each student to fill out during their peers' presentations.
- These must be completed to receive credit for this portion of the grade. If you have an excused absence on that day (following PS-22 guidelines a above) you will be asked to evaluate the power point presentations posted in the class webpage and submit an evaluation.

In-class exercises (15%): Portions of some class periods (often Fridays) will often be dedicated to in-class exercises where we will break out into groups to do more in-depth homework-style calculations and work through the problems together. I will lead portions of these exercises but it's my intention that students will lead the discussion (i.e., student participation will be needed to complete the exercise). There are two points available: 2 points for a mostly complete exercise, 1 point for an attempted solution, and 0 points for turning nothing in. Generally, these will be completed in pairs, so make sure BOTH names are on the exercise.

Participation (5%): Class participation is required. Please ask questions and engaged in each lecture/class exercise. Of these 5 percentage points, 4 are devoted to in-class participation, and 1 percentage point is for visiting me in office hours (or when my door is open) at least one time throughout the semester to ask a question or discuss some of the material. Simply introducing yourself is also acceptable. So, it's very easy to get this 1% of your total grade!

The remaining 4 total percentage points are allocated according to your participation in each class. Attendance is mandatory, but I will not be taking attendance except during guest lectures. Earn these points by asking questions, paying attention, taking notes, and answering questions.

Course Policies and requirements:

General Rules:

1. Every student needs to participate and attendance is mandatory
2. Assignments are due on the date posted. **Homework turned in after the beginning of class will automatically receive a 50% deduction.**
3. Assignments should be stapled and have the student's name on each page.
4. Phones and texting aren't allowed during class. Laptops/tablets are allowed for note taking only.
5. Electronic devices other than calculators must be turned off and out of sight during exams.
6. If you need special accommodations for test-taking, assignments, taking notes, etc. due to a disability, come talk with me and we'll work something out.
7. Extra credit is only available if every student can participate and will not be provided at the end of the semester when you're worrying about grades
8. The course schedule is subject to change

Office Hours: I have posted office hours, but you are welcome to visit me in my office any time my door is open.

If you want to schedule a meeting outside of office hours, please just send me an email or give me a call. Office hours are the best times to receive feedback on your homework, exams, and projects. This is also a good time to ask questions about the material or to receive help on any homework. If you are seeking assistance on homework, please come prepared with a question and some evidence that you've attempted working the problem. I will not simply tell you how to do a problem, but am happy to guide you through the process. Note, however, I WILL NOT help will homework problems the morning of the due date (e.g., if you come looking for help at 8:15 am on Friday morning and the assignment is due at the start of class at 9:30 am that same day, I will not be providing any assistance). You are welcomed and encouraged to come to office hours to discuss topics not related to class (academic, career, graduate school, etc.).

Laptop/tablet and cell phone use: Laptop/tablet use will be allowed, but ONLY for taking notes. However, laptops can very easily become a distraction, so I strongly suggest taking notes by hand unless you are certain that working from a laptop is best for you. We will be going through any calculations during lecture, so keep that in mind. The use of cell phones is not allowed, and the sound should be turned off. Cell phone, laptop, and tablet (etc.) use is not allowed during exams.

Email policy: Email is a great way to get in touch with me to ask questions about the class. I am committed to being as responsive as possible to your email queries. I do have a life outside of work, so if you email me at 11:00pm, do not expect a response that same day. I will get back to you at a reasonable hour and will generally be available for quick responses during business hours.

One of the purposes of a college education is to prepare you for professional life. Therefore, emails regarding this course need to be sent with a professional decorum. All initial emails sent to the instructor need to begin with a greeting (e.g., Hi Dr. Hiatt), have a subject (e.g., question about evapotranspiration and wind speed) with a related email body (e.g., I have a question about equation XX from the lecture on November 4), and a signature (Sincerely, Smarty McSmartpants). If you don't follow this format, please do not expect a reply. After the initial email exchange about a topic, we can drop the above formalities. However, your next opening email on a different subject should follow the course's email decorum.

Course Schedule: The *tentative* course schedule is attached and is subject to change. The only thing that is not subject to change is the time and date of the final as per university guidelines.

Communication Intention (C-I) course: This course may be a C-I course for LSU's CxC program pending approval.

Instructor's note: It is my goal to be courteous, respectful, on-time, organized, and well-prepared for lectures; to be available and helpful during office hours; to respond in a reasonable amount of time to email inquiries; to grade consistently and fairly; and to communicate clearly and effectively. I welcome feedback: If there's something about that class that you feel could be improved or if you feel I am not maintaining the standards listed in this syllabus, please let me know. I hope the class is enjoyable and informative and provides an open forum for students to learn, discuss their ideas, and interact with their peers.

Other concerns

Some useful resources on campus:

- **Communication across the Curriculum (CxC)** provides writing, speaking, visual, and technological communication skill training and support. See their website at <http://www.lsu.edu/academicaffairs/cxc/index.php>
- **Center for Academic Success:** Free tutoring, Academic coaching, Virtual learning center, online workshops. See their website at: <https://www.lsu.edu/students/cas/index.php>
- **International Culture Center:** Interact with students and cultures from around the world. <https://www.lsu.edu/intlpro/icc/index.php>
- **Olinde Career Center:** Find a job! Meet with career coaches, resume review, interview prep. Mock interviews, career advice, and job search support. Go to the website at: <https://www.lsu.edu/students/careercenter/index.php>

Students with disabilities: Louisiana State University is committed to providing reasonable accommodations for all persons with disabilities. The syllabus is available in alternate formats upon request. If you are seeking classroom accommodations under the Americans with Disabilities Act, you are required to register with Disability Services in 115 Johnston Hall. Their phone number is 225-578-5919 and website is www.lsu.edu/disability. To receive academic accommodations for this class, please obtain the proper Disability Services forms and meet with me at the beginning of the semester and we'll work something out. If you need any special accommodations, please just come talk with me after class, stop by my office, or send me an email.

The course instructor will honor all accommodations specified by the Office of Disability Services. If you need more time for exams, and it's been approved by the Office of Disability Services, please let me know a week in advance. If your accommodation includes extra time for exams, you will be able to take the exam at the Office of Disability Services.

Academic Integrity & Dishonesty: Louisiana State University adopted the Commitment to Community in 1995 to set forth guidelines for student behavior both inside and outside of the classroom. The Commitment to Community charges students to maintain high standards of academic and personal integrity. All students are expected to read and be familiar with the LSU Code of Student Conduct and Commitment to Community, found online at www.lsu.edu/saa. ***It is your responsibility as a student at LSU to know and understand the academic standards for our community.***

Academic dishonesty of any kind will not be tolerated. This includes, but is not necessarily limited to: plagiarism, cheating, improper handling of course materials, theft or damage of (intellectual) property, false information and representation, fabrication, alteration of university documents, and disturbances in the classroom.

Students who are suspected of violating the Code of Conduct will be referred to the office of Student Advocacy & Accountability. For undergraduate students, a first academic violation could result in a zero grade on the assignment or failing the class and disciplinary probation until graduation. For a second academic violation, the result could be suspension from LSU. For graduate students, suspension is the appropriate outcome for the first offense.