

**Sediment Transport and Dredging**  
**ENCE 6334**  
**Syllabus**

v.1, 1/25/2021, subject to revision

**Meeting time:** Online, asynchronous

**Prerequisite:** ENCE 3318 or consent of the Department of Civil and Environmental Engineering.

**Instructor:** Dr. Robert Mahon,

Departments of Earth and Environmental Sciences, Civil and Environmental Engineering

**Phone:** (504) 208-1392 (EES Office)

**Email:** rcmahon@uno.edu

**Office Location:** EN822, GP1062)

**Office Hours:** Monday 5:00-7:45pm central (online using Zoom)

**Course Description:** Particle size analysis, fluid-particle systems, incipient motion; bedload, suspended load, and total load; bedforms; sediment measurement; physical and numerical modeling of sediment transport; river modeling, transport of liquid-solid mixtures in pipes; dredging equipment; hydraulic and mechanical dredging; geotechnical properties of dredged sediments; environmental impacts and beneficial use.

***Student Learning Objectives:***

At the completion of this course:

- Students should be able to apply basic principles of fluid mechanics to problems associated with sediment transport in open channel flows and conduits
- Students should be able to understand the methods of sediment characterization and transport rate measurement in rivers
- Students should be able to use models and indirect methods to evaluate transport of sediment in rivers.
- Students should be able to evaluate and compare different dredging and conveyance methods for a project
- Students should be able to evaluate site-specific soil conditions as dredging source material
- Students should be able to evaluate the environmental impacts of dredging for a project
- Students should be able to evaluate transport of dredged materials for coastal restoration projects

**Course Management**

Communication, delivery of lecture materials, and distribution of assignments will all be conducted through Moodle. Students should familiarize themselves with the course layout and resources in <https://moodle.uno.edu>. In addition, there is a Q&A forum in the Moodle site for students to communicate and ask/answer each other's questions. This forum will be monitored by the instructor and I will chime in with answers where needed.

**Course Weekly Timeline**

The typical timeline for course sections will be Thursday through the following Thursday. Lectures and quizzes/problem sets will be posted Thursday evenings generally. I will hold office hours/discussion session the next Monday during the scheduled class period. Assignments will then be due a week from their assigned date on Thursday by 11:59pm.

## Course Evaluation

**Grading:** Total class grade: 90% or above = A, 80-89.9% = B, 70-79.9% = C, and 60-69.9% = D.

Midterm Exam – 25%

Quizzes/Problem Sets – 50%

Final Exam – 25%

**Extra Credit:** No extra credit will be offered under any circumstances.

**Textbook and Notes:** No textbook will be assigned for this course. All course lectures and notes will be posted on the course Moodle site. Portions of text, as well as published literature including necessary equations and background material will be posted on the course Moodle site where necessary. In addition, I have included a reference section in Moodle with several papers that may be helpful for background or derivations.

**Problem Sets:** Problem sets will be assigned on approximately a weekly basis. A significant part of engineering professionalism is written communication. Therefore, all assignments should be neat, legible, and orderly. For each homework assignment, turn-in links will be provided in Moodle where you may either upload a scanned version of hand-written assignments, or pdf copies of digitally prepared work. Write the problem number, given data and what is required to compute. Show the computations clearly with the formula or equations that you use and also the substituted values. Assignments should be turned in as a single pdf file of answers, along with a file showing work if done in a computer program. For code, this can be done as a pdf using markdown or livescripts, or using an excel spreadsheet. Please make these as coherent/easy to navigate as possible so I can assign partial credit in the case of calculation errors.

**Quizzes:** Quizzes will be given in association with online lectures. They will be intended to demonstrate whether you grasped the material in lecture and may involve a short calculation. Quizzes will be timed, open note, and administered in Moodle.

**Exams:** One mid semester examination will be distributed *March 18 and due March 25th*. The Mid semester examination will cover topics up to one week before the day of the exam distribution and will likely involve a real dataset from the flume lab. The Final Exam will cover topics not covered by the midterm and will be given on *Monday May 17th, 2021 (5:30 PM – 7:30 PM)*, according to the University Schedule. Both exams will be open note, and will be administered in Moodle. They will involve calculations similar to those seen on problem sets throughout the course and well prepared spreadsheets or code will significantly improve your chances of success on these exams.

**Late Assignment Policy:** Any assignment turned in after the specified due date will be considered late and will result in deducted points, except in the case of a valid university excused absence. Make-ups will only be given for verifiable written excuses specifically recognized by the University (illness of the student, or of an immediate family member, death of an immediate family member, participation on trips related to certain University functions, major religious holidays). Make-ups after one week has passed will be permitted only under extenuating circumstances.

**Attendance Policy:** Class attendance is in accordance with the published university policy. Regular attendance is required in this course. Attendance will be recorded and scored through the weekly lecture quizzes. You are responsible for material identified in the Reading/Lecture schedule listed in the syllabus and covered in class, even if absent from class for authorized activities.

**Academic Honesty:** Academic integrity is fundamental to the process of learning and evaluating academic performance. Academic dishonesty will not be tolerated. Academic dishonesty includes, but is not limited to, the following: cheating, plagiarism, tampering with academic records and examinations, falsifying identity, and being an accessory to acts of academic dishonesty. Refer to the Academic Dishonesty Policy (<http://www.uno.edu/student-affairs/documents/academic-dishonesty-policy-rev2014.pdf>) for further

information. The University policies and procedures regarding academic dishonesty are clearly defined in the University Code of Conduct: <http://www.uno.edu/student-affairs/documents/Student-Code-of-Conduct-rev-7-16.pdf>

**Students with disability:** It is University policy to provide, on a flexible and individual basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or to meet course requirement. Students with disabilities should contact the Office of Disability Services (LIB 120) as well as their instructors to discuss their individual needs for accommodations. See the UNO Policy for Students with Disabilities at <http://www.ods.uno.edu/>

### Spring 2021 ENCE 6334 Sediment Transport and Dredging Course Schedule

Lecture	Week of	Material Covered
1	2/4-2/11/2021	Intro and river mechanics review
2	2/11-2/18/2021	River morphology & upland transport (mon-tue Mardi Gras break)
3	2/18-2/25/2021	Bed forms
4	2/25-3/4/2021	Shear stress and stress partitioning
5	3/4-3/11/2021	Bedload
6	3/11-3/18/2021	Suspended load
	3/18-3/25/2021	mid-semester examination
7	3/25-4/1/2021	Field measurements
8	4/1-4/8/2021	Transport formulae
9	4/8-4/15/2021	Reservoir sedimentation modeling
10	4/15-4/22/2021	Methods of sediment conveyance
11	4/22-4/29/2021	Geotechnical properties of dredged sediment
12	4/29-5/6/2021	Dredge pumps and equipment
13	5/6/2021	Beneficial Use of Dredge Material
	5/17/2021 5:30-7:30pm	FINAL EXAM



Check [Registrar's website](#) for items not listed below.

**Spring Semester Important Dates\***

Last day to adjust schedule w/out fee.....	01/28
Semester Classes Begin .....	01/29
Last day to adjust schedule w/fee, or withdraw with 100% refund.....	02/08
Last day to apply for Spring Commencement.....	03/01
Mid-Term grades due.....	03/24
Final day to drop a course or resign .....	04/05
Last Day of Classes .....	05/11
Final examinations .....	05/12-05/18
Commencement.....	05/19-05/20

**Winter Intercession 2021 Important Dates\***

Last day to apply for Spring Commencement.....	03/01
Last day to adjust schedule w/out fee.....	01/03
Semester Classes Begin .....	01/04
Last day to adjust schedule w/fee, or withdraw with 100% refund.....	01/06
Final day to drop a course or resign .....	01/15
Martin Luther King, Jr.'s Birthday Holiday .....	01/18
Final examinations .....	01/22

**Session "B" Important Dates\***

Last day to apply for Spring Commencement.....	03/01
Last day to adjust schedule w/out fee.....	03/22
Semester Classes Begin .....	03/23
Last day to adjust schedule w/fee, or withdraw with 100% refund.....	03/26
Mid-Term grades due.....	03/08
Final day to drop a course or resign .....	04/13
Last Day of Classes .....	05/11
Final examinations .....	05/12-05/18
Commencement.....	05/19-05/20

**Spring Semester Holidays**

Mardi Gras Holiday.....	02/15-02/16
Good Friday Holiday .....	04/02-04/03

**Use of Mask or Face Covering**

[The UNO Student Code of Conduct states](#), "Students will prioritize health and safety of the campus community. As a result of the COVID-19 pandemic (or other declared communicable disease outbreak or pandemics), when in shared, public spaces or where a minimum distance of six (6) feet (or a distance as recommended by latest safety guidelines) cannot be safely maintained, students are required to wear personal protective equipment in the form of a mask or face covering that covers their nose and mouth."

**Withdrawal Policy – Undergraduate only**

Students are responsible for initiating action to resign from the University (withdraw from all courses) or from a course on or before dates indicated in the current Important Dates calendar. Students who fail to resign by the published final date for such action will be retained on the class rolls even though they may be absent for the remainder of the semester and be graded as if they were in attendance. Failure to attend classes does not constitute a resignation. Check the dates and charges associated on the [Registrar's website](#).

**Incomplete Policy – Undergraduate only**

A grade of I is assigned when, due to extenuating circumstances beyond their control, students engaged in passing course work are unable to complete class assignments within the time frame of the course's session. Before agreeing to the use of an incomplete grade in any course, an Incomplete Grade Agreement Form must be completed. Details regarding deadlines for completing the I grade, when the incomplete converts to a grade of F, and a link to the form are on the [Academic Affairs](#) website.

**Repeat Policy**

When a student is permitted to repeat a course for credit, the last grade earned shall be the one which determines course acceptability for degree credit. A student who has earned a C or better in a course may not repeat that course unless, (1) the catalog description indicates that the course may be repeated for credit, or (2) the student's Dean gives prior approval for documented extenuating circumstances.

**Graduate Policies**

Graduate policies often vary from undergraduate policies. To view the applicable policies for graduate students, see the [Graduate Student Handbook](#).

**Academic Dishonesty Policy**

Policies for academic conduct [are here](#).

**Safety Awareness Facts and Education**

Title IX makes it clear that violence and harassment based on sex and gender is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. If you or someone you know has been harassed or assaulted, you can find [the appropriate resources here](#).

**UNO Counseling Services and UNO Cares**

UNO offers care and support for students in any type of distress. [Counseling Services](#) assist students in addressing mental health concerns through assessment, short-term counseling, and career testing and counseling. First-year students often have unique concerns, and UNO Cares is designed to address those students' needs. Contact [UNO Cares](#).

**Emergency Procedures**

Sign up for emergency notifications via text and/or email at [E2Campus Notification](#). All emergency and safety procedures are explained at the [Emergency Health and Safety Office](#).

**Diversity at UNO**

As the most diverse public university in the state, UNO maintains a Diversity Affairs division to support the university's efforts towards creating an environment of healthy respect, tolerance, and appreciation for all people, and the expression of intellectual point of view and personal lifestyle. The [Office of Diversity Affairs](#) promotes these values through a wide range of programming and activities.

**Learning and Support Services**

Help is within reach in the form of learning support services, including tutoring in writing and math and other supplemental instruction. Visit the [Learning Resource Center](#) in LIB 126.



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## Syllabus Attachment Spring 2021

### **Affirmative Action and Equal Opportunity**

UNO is an equal opportunity employer. The Human Resource Management department has more information on UNO's compliance with federal and state regulations regarding EEOC in its [Policies and Resources website](#).

### **COVID-19 Health-Related Absences**

Students should evaluate their health status regularly, refrain from coming to campus if they are ill, and seek appropriate medical attention for treatment of illness. Students should notify (email) their instructors about their absence as soon as possible, so that accommodations can be made. In the event of COVID-19 illness, students should also complete the [Campus Reporting Form](#). Please note that medical excuse may be required at the discretion of the department chair and/or college dean.