Course Number: CE 6316, Sediment Transport

Catalog Description: Sourcing the sediment influx, the settling velocity, Shields critical shear stress, design with critical shear, bedload transport equations, suspended load transport, total transport equation, regime theory as index of stability.

Pre-requisites: CE 4358 (open conduit system) or CE 5346 (open channel flow), and CE 5347 (Advanced Hydrology)

Instructor: Ranjan S. Muttiah, Ph.D., P.E., CFM
E-mail: muttiah@uta.edu (I will respond to emails within 24-hours).
Cell #: 817-995-7783; Work #: 817-392-7919; Fax: 817-392-2433.
Emergency email: muttiah2@swbell.net

Office Hours:
Course assistance and Q&As will be handled electronically, and/or before/after class.

Meeting Place & Time: Class will meet in room NH 112 from 7-8:20 pm.

Textbook: Sediment Transport, Theory and Practice, Chih Ted Yang, 1996. Krieger Publishing Company, Malabar, Florida. ISBN: 1-57524-226-5.

Exams: There will be a mid-term and final exam. For exams, you can bring a calculator, a card (or cards) with equations only, and a ruler. Other than for bringing items mentioned, exams will be closed book and notes. If you are taking this course off-campus, you must make prior arrangements with a testing service to take the exams off campus. Please contact me if you will be taking the exams off-campus.

Course Objectives: To give you a basic and fundamental understanding of the forces involved in particle transport in fluids, determination of sediment transport rates, design criteria for controlling sediment loss, and best management practices (BMPs) involved in controlling stream erosion at storm drain outfalls.

Grading Policy:

A: 90 – 100%	Weightings:	Home works: 35%
B: 80 – 89 %		Mid-Term: 30%
C: 70 – 79%		Final Exam: 35%
D: 60 – 69%		Optional project: 5% (Bonus %).
F: < 60%		

I reserve the right to use or not use a grading curve for your final grade. Home work solutions must be turned in by assigned dates. Your work should be neat, clearly understandable, and look professional.

Work assignments should consist of problem statement, method/approach, solution, discussion, and relevant references.

Teaching Philosophy & Course Policies: I prepare, organize, and use engagement methods to connect concepts. I strive to make my lectures interesting, informative, and student centered. For best results, you must read assigned materials, take good notes during lectures, discuss with others, and ask questions. Much depends on you since a significant portion of learning takes place outside class lecture time.

Exam Policy: Exams must be attended at the agreed times. Off campus students are expected to make arrangements with a testing service. Please inform the instructor if you will need to use a testing service. If you are within reasonable travel distance of campus, you are expected to take the exams on campus. For exams, you may bring cards with formulas only, calculator, and ruler. You are not allowed bring notes, derivations, explanations etc. on the cards.

American with Disabilities Act: If you require accommodation based on disability, it is your responsibility to let me know by the 1st week of classes. To qualify for assistance under this act, you will need a letter from the UTA office of Counseling and Career Development.

Student Support Services: UTA supports a variety of student success programs to help you connect with the University and achieve academic success. These programs include learning assistance, development education, advising and mentoring, admission and transition, and federally funded programs. Students requiring assistance academically, personally, or socially should contact the Office of Student Success Programs at 817-272-6107 for more information and appropriate referrals.

Academic Dishonesty: All students are expected to pursue their academic careers with honesty and integrity. Academic dishonesty includes, but is not limited to, cheating on a test or other coursework, plagiarism (offering the work of others as one's own) and unauthorized collaboration with another person. Students found responsible for dishonesty in their academic pursuits are subject to penalties that may range from disciplinary probation, suspension or expulsion from the University.

In accordance with the Rules and Regulations of the Board of Regents of the University of Texas System (Rule 50101), institutional procedures regarding allegations of academic dishonesty are outlined in Part Two, Chapter 2, of the UTA Handbook of Operating Procedures. This information may be obtained by accessing the Dean of Students web site: www.uta.edu/studentaffairs/docs or the Student Judicial Affairs web site: www.uta.edu/studentaffairs/judicialaffairs. Copies of each regulation can be obtained in the Dean of Students Office in the lower level of the University Center.

Communication Policy: Email will be the primary means of communication. Please make sure I'm aware of any change to your email address. You are welcome to call me if you believe I haven't responded to your emails.

Ftp (Mavspace) Site: Handouts, problem solutions, etc. will be emailed and placed on mavspace.

Homework: Expect homework assignments about every week. Answers to homeworks will be discussed in class. Scanned answers will be sent out in emails.

SCHEDULE

Please note that the following schedule is subject to change due to a variety of reasons. These reasons range from extreme weather events, to conflict with an emergency for the instructor, to how easily students are understanding the material. If on any scheduled day, classes are not taught due to absence of instructor, all attempts will be made to reschedule instruction at another time. Classes meet on the following days:

January	**February**	**March**	**April**	**May**
18 23 25 30	1 6 8 13 15	5 7 **12 14** (bk)	2 4 9 11	2
	20 22 27 29	19 21 26 28	16 18 23 25 30	

Mid-term exam is scheduled for the week before spring break.
Final exam will be held on May 9th from 8:15 – 10:45 pm. Please check the registra's website for official drop/add dates and university calendar.

Weeks	**Topics**	**Milestones**
1	Physics of particles motion	Lift and drag forces
2	Physics of particle motion, water & sediment properties	boundary layer, law of the wall
3	Fall velocity	Drag coefficient, Rubey's Formula
4	Incipient motion	Critical shear stress, Shield diagram
5	Incipient motion	Channel slope design
6	Bed forms	Friction loss due to bed form
7	bed load transport	Equations for bed load
8	bed load transport	Equations for bed load, Mid-Term
9	**SPRING BREAK**	
10	Suspended load transport	Equations for suspended load
11	Suspended load transport	Equations for suspended load
12	Bed-load transport, Total load transport	Equations for total load
13	Total load transport	Equations for total load
14	Reservoir sedimentation	Reservoir capacity loss methods
15	Reservoir sedimentation, erosion in HEC-RAS (bridge modeling)	Sediment transport in HEC-RAS
16	Erosion control practices	Energy dissipation and outfall control