

COURSE SYLLABUS
The University of Texas at Arlington
College of Engineering
Department of Civil Engineering
CE/CM 5344 – Construction Methods: Field Operations
(3 Credit Hours)
Fall 2018

Instructor(s): Dr. Mohammad Najafi, P.E.

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Office Hours: Mondays and Wednesdays, 6:00 – 7:30 PM (Additional Office Hours by Appointment).

Teaching Assistant: Reza Malek, Mohammadreza.malekmohammadi@mavs.uta.edu

Office Telephone Number at CUIRE: 817-272-9177

Office Hours: Reza is available on Wednesday 4:30 PM – 7:30 PM

Section Information: CE 5344-001 (85519), CE 5344-101 (87897), CM 5344-001 (88635) and CM 5344-101 (88674)

Time and Place of Class Meetings: Monday and Wednesday, 8:30 – 9:50 PM. Nedderman Hall (NH), **Room 106.**

Description of Course Content: Introduction to the methods, equipment, and management techniques used in the construction industry. Topics include equipment operating characteristics, job site safety, and field management.

Student Learning Outcomes: Upon completion of the course, the student will have:

- **General Outcomes**
 - An ability to apply knowledge of mathematics, science, and engineering,
 - An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability,
 - An ability to identify, formulate, and solve engineering problems,
 - An understanding of professional and ethical responsibility, and
 - An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

- **Specific Outcomes**

- Understand different construction methods and application of equipment in construction,
- Be able to preplan construction activities involving different construction equipment,
- Estimate productivity and cost of construction equipment,
- Plan construction equipment,
- Understand major methods of heavy construction related to soil work, asphalt, and concrete,
- Understand equipment economics, and
- Acquire basic knowledge of equipment safety.

Recommended Textbook

Peurifoy, R., Schexnayder, C., Shapira, A. and Schmitt R. (2018). "Construction Planning, Equipment, and Methods," 9th Edition, McGraw-Hill.

This course will utilize Blackboard:

- To access the course, go to <http://elearn.uta.edu/> and login with your NetID and password. Click on the name of the course in the upper left module after logging in.
- If you have any problems logging in, contact the Help Desk (helpdesk@uta.edu).
- Review the Student Resources page (<http://www.uta.edu/blackboard/students/index.html>). This site contains valuable information that will acclimate you to your course and the Blackboard environment.

Descriptions of major assignments and examinations: There will be four exams (three during the semester and one final), and several homework assignments. See the Tentative Course Outline for specific dates. Term project requirement will be announced in class.

Attendance: At The University of Texas at Arlington, taking attendance is not required but attendance is a critical indicator in student success. Quizzes will be given at each class as each faculty member is free to develop his or her own methods of evaluating students' academic performance, which includes establishing course-specific policies on attendance as described in this syllabus. However, while UT Arlington does not require instructors to take attendance in their courses, the U.S. Department of Education requires that the University have a mechanism in place to mark when Federal Student Aid recipients "begin attendance in a course." UT Arlington instructors will report when students begin attendance in a course as part of the final grading process. Specifically, when assigning a student a grade of F, faculty report the last date a student attended their class based on evidence such as a test, participation in a class project or presentation, or an engagement online via Blackboard. This date is reported to the Department of Education for federal financial aid recipients.

Assignment Policy: Homework and/or class assignments exams and the project are important segments of this course. **Homework and/or class assignments must be submitted on paper for In-class students before the beginning of the class and through Blackboard for online students at the date and time specified on the assignment.** Points will be subtracted for late assignments. No credit after the solution is given or maximum 5 days late of any assignments.

- Students, who copy homework, will receive a grade of zero (0) for those assignments and will not make good grades on the tests.

- For full or partial credit, you need to show all calculations in an organized, logical, and orderly manner. Please write legibly, draw diagrams and underline your answers. Type the questions and the answers for essay questions. Specify problem statements (information given), what is required, and the solution for each problem. Draw the necessary diagram(s). Show all the units during your calculations and with your answers. No partial or full credit if you do not show all of your work.
- Use engineering or graph paper with no spiral edges.
- Write on only one side of the paper.
- Include your name, section, and page number (e.g., 1/3 means Page 1 of 3 Pages) on each sheet.
- Neatly box all answers, and include appropriate units for numerical answers.
- Show all work (e.g., no work means no credit).
- Write all your group names and IDs on all pages.

NOTE: If above guidelines are not followed, the TA will either reject the assignment outright, or deduct points for items that do not conform to the above guidelines.

Exam Policy

- Students who talk during the exam, look at each other's papers, or exchange materials, their exam will be marked and their file will be submitted to the Office of Dean of Engineering for appropriate action.
- During the exams, you need to be AT LEAST one seat apart.
- Online students must attend all tests on campus, otherwise they must make appropriate arrangements with the Instructor one week in advance of the test.

Laptop use in the classroom: In order to minimize distraction, the use of laptop and/or any electronic devices such as iPad, iPhone, and tablets in the classroom is NOT allowed.

Cell Phone Policy: All cell phones must be off in class and no texting is allowed. Violators of this rule will lose their participation points and will be asked to leave the class.

Grading: Grades will be determined according to the following scale (the grading scale may be lowered at the discretion of the instructor, but will not be raised):

Grade	% Required
A	90 -100
B	80-89
C	70-79
D	60-69
F	Less than 60

Students will be required to accumulate points from the following:

Type	Class Students	Online Students
Homework Assignments	15%	15%
Quizzes	10%	0%
Project & Presentation	25%	20%
Exams	25%	35%
Final Exam	25%	30%
Total	100%	100%

Make-up Exams: None -- All students must take the exams at their scheduled times.

Project Requirements: will be announced in class.

Grade Grievance: Refer to UTA Catalog.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://www.uta.edu/aao/fao/>).

Disability Accommodations: UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA)*, *The Americans with Disabilities Amendments Act (ADAAA)*, and *Section 504 of the Rehabilitation Act*. All instructors at UT Arlington are required by law to provide “reasonable accommodations” to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of a **letter certified** by the Office for Students with Disabilities (OSD). Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting: **The Office for Students with Disabilities, (OSD)** www.uta.edu/disability or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability.

Counseling and Psychological Services (CAPS): See www.uta.edu/caps/ or call 817-272-3671 to help increase your understanding of personal issues, address mental and behavioral health problems and make positive changes in your lives.

Non-Discrimination Policy: *The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic*

information, and/or veteran status in its educational programs or activities it operates. For more information, visit uta.edu/eos.

Title IX Policy: The University of Texas at Arlington (“University”) is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. For information regarding Title IX, visit www.uta.edu/titleIX or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or jmhood@uta.edu.

Academic Integrity: Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington’s tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code in their courses by having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents’ Rule* 50101, §2.2, suspected violations of university’s standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student’s suspension or expulsion from the University. Additional information is available at <https://www.uta.edu/conduct/>.

Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

Campus Carry: Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit <http://www.uta.edu/news/info/campus-carry/>

Student Feedback Survey: At the end of each term, students enrolled in face-to-face and online classes categorized as “lecture,” “seminar,” or “laboratory” are directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student’s feedback via the SFS database is aggregated with that of other students enrolled in the course. Students’ anonymity will be protected to the extent that the law allows. UT Arlington’s effort

to solicit, gather, tabulate, and publish student feedback is required by state law and aggregate results are posted online. Data from SFS is also used for faculty and program evaluations. For more information, visit <http://www.uta.edu/sfs>.

Final Review Week: for semester-long courses, a period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, [which is located \[description of the nearest exit/emergency exit will be provided in class\]](#). When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

Student Support Services: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include [tutoring](#), [major-based learning centers](#), developmental education, [advising and mentoring](#), personal counseling, and [federally funded programs](#). For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at <http://www.uta.edu/universitycollege/resources/index.php>.

The IDEAS Center (2nd Floor of Central Library) offers FREE tutoring to all students with a focus on transfer students, sophomores, veterans and others undergoing a transition to UT Arlington. Students can drop in, or check the schedule of available peer tutors at www.uta.edu/IDEAS, or call (817) 272-6593.

The English Writing Center (411LIBR): The Writing Center offers FREE tutoring in 15-, 30-, 45-, and 60-minute face-to-face and online sessions to all UTA students on any phase of their UTA coursework. Register and make appointments online at <https://uta.mywconline.com>. Classroom visits, workshops, and specialized services for graduate students and faculty are also available. Please see www.uta.edu/owl for detailed information on all our programs and services.

The Library's 2nd floor Academic Plaza offers students a central hub of support services, including IDEAS Center, University Advising Services, Transfer UTA and various college/school advising hours. Services are available during the library's hours of operation. Please see <http://library.uta.edu/academic-plaza>

Librarian to Contact: Martin Wallace (817) 272 3924, martin.wallace@uta.edu. Please see <http://www.uta.edu/library/help/subject-librarians.php> for more information.

Course Schedule

Day	Date	Topic	Learning Objectives	Text Ref.	Assignments Due
Week 1					
W	Aug 22	Course Introduction/ Machines Make it Possible	Introduction to the course and construction industry -- Use of heavy equipment in construction.	Chapter 1	
Week 2					
M	Aug 27	Equipment Economics	Evaluation of equipment costs using capital costs, and operation and maintenance costs by present value, annual value and future value concepts.	Chapter 2	
W	Aug 29	Earthwork Construction	Planning of earthwork using mass haul diagram, selection of equipment, haul directions.	Chapter 3	Assignment # 1
Week 3					
M	Sep 3	Holiday – Labor Day			
W	Sep 5	Soil and Rock	Overview of different types of soils and rocks, their quality, workability and densities.	Chapter 4	
Week 4					
M	Sep 10	Compaction and Stabilization Equipment	Importance of compaction and stabilization, equipment used for compaction, calculation of productivity of rollers and optimum number of rollers for compaction operations.	Chapter 5	Assignment # 2
W	Sep 12	Machine Power Requirements	Machine power required at different field conditions like slope, soil, etc.	Chapter 6	
Week 5					
M	Sep 17	Test 1			
W	Sep 19	Dozers	Overview of different types of dozers used in construction, calculation of productivity and cost of activity using dozers.	Chapter 7	Assignment # 3
Week 6					
M	Sep 24	Scrapers	Overview of different types of scrapers used in construction, calculation of productivity and cost of activity using scrapers.	Chapter 8	Scrapers
W	Sep 26	Excavators	Overview of different types of dozers used in excavators, calculation of productivity and cost of activity using excavators.	Chapter 9	
Week 7					
M	Oct 1	Trucks and Hauling Equipment [Part I]	Overview of different types of trucks used in construction.	Chapter 10	Assignment # 4
W	Oct	Trucks and	Calculation of productivity and cost of	Chapter	

Day	Date	Topic	Learning Objectives	Text Ref.	Assignments Due
	3	Hauling Equipment [Part II]	activity using trucks with other equipment, calculation of optimum number of equipment and trucks in a hauling crew.	10	
		Graders	Overview of different types of graders used in construction, calculation of productivity and cost of activity using graders.	Chapter 11	
Week 8					
M	Oct 8	Test 2			
W	Oct 10	Drilling	Overview of different applications and types of drilling, calculation of productivity of drilling operations.	Chapter 12	
Week 9					
M	Oct 15	Tunneling and Blasting Rock	Overview of different applications and types of tunneling, calculation of productivity of blasting operations.	Chapter 13	Assignment # 5
W	Oct 17	Aggregate Production	Overview of different components of aggregate production plants.	Chapter 14	
Week 10					
M	Oct 22	Asphalt Mix Production & Placement	Different types of asphalt mix production plants and equipment. Requirements for placing asphalt concrete in road construction.	Chapter 15	Assignment # 6
W	Oct 24	Concrete and Concrete Equipment	Different types of concrete mix designs and equipment for batching, mixing and placing concrete.	Chapter 16	
Week 11					
M	Oct 29	Test 3			
W	Oct 31	Mobile Cranes	Overview of different types of cranes used in construction, calculation of productivity and cost of activity using cranes	Chapter 17	Assignment # 7
Week 12					
M	Nov 5	Tower Cranes	Overview of different types of cranes used in construction, calculation of productivity and cost of activity using cranes	Chapter 17	
W	Nov 7	Air Compressors and Pumps	Overview of different types of air compressors used to operate different tools and pumps, calculation of power requirements and selection of air compressor and pumps.	Chapter 19	
Week 13					
M	Nov 12	Building Construction	Preplanning building construction, nuisance control, safety issues in building construction.	Chapter 20	Assignment # 8
W	Nov	Forming	Overview of different types of forming	Chapter	

Day	Date	Topic	Learning Objectives	Text Ref.	Assignments Due
	14	Systems	systems used in construction, calculation of formwork requirements, selection of forming system, formwork economics.	21	
Week 14					
M	Nov 19	Guest Lecturer			Assignment # 9
W	Nov 21	Review – Projects and Presentations			
Week 15					
M	Nov 26	Student Presentations			
W	Nov 28	Student Presentations			
Week 16					
M	Dec 3	Student Presentations			
Wednesday, Dec 12, 8:15 - 10:45 PM		Final Test			

As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course. – Mohammad Najafi

Emergency Phone Numbers: In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911. Non-emergency number 817-272-3381

RESOURCES FOR STUDENTS

LIBRARY library.uta.edu

Research or General Library Help

Academic Plaza Consultation Services library.uta.edu/academic-plaza

Ask us ask.uta.edu/

Library Tutorials library.uta.edu/how-to

Subject and Course Research Guides libguides.uta.edu

Librarians by Subject library.uta.edu/subject-librarians

Research Coaches <http://libguides.uta.edu/researchcoach>

Resources

A to Z List of Library Databases libguides.uta.edu/az.php

Course Reserves pulse.uta.edu/vwebv/enterCourseReserve.do

Fab Lab fablab.uta.edu/

Scholarly Communications (info about digital humanities, data management, data visualization, copyright, open educational resources, open access publishing, and more)

<http://library.uta.edu/scholcomm>

Special Collections library.uta.edu/special-collections

Study Room Reservations openroom.uta.edu/