

**COURSE SYLLABUS**  
**The University of Texas at Arlington**  
*College of Engineering*  
**Department of Civil Engineering**  
**CE 5379 – Construction Cost Estimating**  
**(3 Credit Hours)**

**Name of Instructor:** Dr. Mohammad Najafi, P.E.

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**Email Address:** [Najafi@uta.edu](mailto:Najafi@uta.edu)

**Office Hours:** Tuesday and Thursday: 3:00 – 5:00 PM – Additional Office Hours by Appointment.

**Teaching Assistant:** Agustin Villafana; [agustin.villafana@mavs.uta.edu](mailto:agustin.villafana@mavs.uta.edu); Office Hours Friday, 2:00 – 5:00 PM

**Course Number, Section Number, and Course Title:**

CE 5379 – Construction Cost Estimating, Section 001 (Lecture 82214).

**Time and Place of Class Meetings:**

Tuesday and Thursday, 5:30 – 6:50 PM, CELB 143 (lab sessions to be announced in class).

**Description of Course Content:** Types of estimates, development of unit costs, quantity take-off, cost estimation using manual methods and computer software's, budgets and costs. Prerequisite: Concurrent enrollment in CE 5386.

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

- 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
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

**Requirements:** Graduate Standing and concurrent enrollment in CE 5386.

**Course Text:** Fundamentals of Construction Estimating, 3<sup>rd</sup> Ed. by David Pratt

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**Reference Books:**

- Holm, L., Schaufelberger, J.E., Griffin, D., and Cole T. (2005). "Construction Cost Estimating Process and Practices," Prentice Hall
- Timberline and Heavy Bid Software.
- Blackboard (course management)
- Means' Construction Cost Data and other Means' Publications.
- Mehta, M., Scarborough, W., and Armpriest, D. (2010). Building Construction: Principles, Materials, and Systems, Pearson Prentice Hall, Upper Saddle River, New Jersey.
- Spence, W. P. and Kultermann, E. (2011). "Construction Materials, Methods, and Techniques," Third Edition, Delmar Publishing.
- Simmons, H.L. (2001). "Construction Principles, Materials, and Methods," Seventh Edition, John Wiley and Sons, New York.

- Adrian, J. (1993). "Construction Estimating," Stipes.
- Ostwald, P.F., and McLaren, T.S. (2004). "Cost Analysis and Estimating for Engineering and Management, Prentice Hall.
- Peurifoy, R.L. and Oberlander, G.D. (2002). Estimating Construction Costs," McGraw-Hill.
- Pratt D. (2004). "Fundamentals of Construction Estimating," 2<sup>nd</sup> Edition, Thomson.
- Caterpillar Performance Handbook
- Clough R.H. and Sears, G.A. (1994). "Construction Contracting," Sixth Edition, Wiley.
- Oglesby, C.H., Parker, H.W., and Howell, G.A. (1989). "Productivity Improvement in Construction," McGraw-Hill, New York, NY.
- Fisk, E.R. (2007). "Construction Project Administration," Seventh Edition, Prentice Hall.
- Halpin, D.W. (2006). "Construction Management," Third Edition, Wiley.

**Descriptions of major assignments and examinations with due dates:** There will be two exams (one close to midterm and one final non-comprehensive), several lab and homework assignments and one project. See Course Outline for specific dates.

**Grading Policy:** 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:

Homework & Presentations	15%
Class Attendance & Participation	10%
Midterm Exam	20%
Lab Assignments	15%
Project & Presentation	20%
Final Exam (Comprehensive)	20%
Total	100%

**Make-up Exam Policy:** All students must take the exams. Only extenuating circumstances will be accepted as excuse for missing the exam. Health related excuses require medical reports and the signature of a physician that provided treatment.

**Grade Grievance Policy:** Refer to UTA Catalog.

**Final Review Week:** 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.

**Attendance Policy:** Students are expected to attend all classes. For total professional development, class participation and oral discussions will be encouraged. Everyone is asked to arrive and be seated promptly for duration of class to minimize the disruption to others.

**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/>).

**Americans with Disabilities Act:** The University of Texas at 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)*. 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 that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at [www.uta.edu/disability](http://www.uta.edu/disability) or by calling the Office for Students with Disabilities at (817) 272-3364.

**Academic Integrity:** Students enrolled in this course 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 as they see fit in their courses, including (but not limited to) 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.

**Student Support Services Available:** 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](mailto:resources@uta.edu), or view the information at [www.uta.edu/resources](http://www.uta.edu/resources).

**Engineering Librarian:**

Sylvia George-Williams, Engineering Librarian

UT Arlington Science & Engineering Library

Mailing address: B03D Nedderman Hall, Arlington, TX 76019. Phone: (817) 272 7519, Email: [sylvia@uta.edu](mailto:sylvia@uta.edu)

**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>.

**Laptop use in the classroom:** In order to minimize distraction, the use of laptop and/or any other digital device (except standard scientific calculators) in the classroom is NOT allowed.

**Student Feedback Survey:** At the end of each term, students enrolled in classes categorized as “lecture,” “seminar,” or “laboratory” shall be 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 enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs>.

**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 [insert a description of the nearest exit/emergency exit]. 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 handicapped individuals.

### **CE 5379 – Construction Cost Estimating** **TENTATIVE COURSE OUTLINE**

Day	Date	Topic	Description	Assignments Due
Week 1				
Thur	Aug 22	Introduction to the Course & Construction Cost Estimating Process	Discussion on the course content, and introduction to cost estimating	
Week 2				
Tues	Aug 27	Types of Cost Estimates and Timberline	Programming, schematic, and design development cost estimates. Definition, requirements, and processes of budget estimate	
Thur	Aug 29	Estimates For Preconstruction Services Building Construction Principles Timberline	Introduction to building construction materials and principles. Timberline is a cost estimating software widely used in the industry	Assignment 1
Week 3				
Tues	Sept 3	Lab Assignment – 1		
Thur	Sept 5	Pre-Estimate Activities Estimating Process	Definition, requirements, and processes of preconstruction estimate	Assignment 2
Week 4				
Tues	Sept 10	Measuring Quantities	Introduction to pre-estimating activities, bid process, bid documents, and work breakdown structure	
Thur	Sept 12	Lab Assignment – 2		
Week 5				
Tues	Sept 17	Measuring Site Work	Basic procedures, quantity take-off for different structure elements, completion, and final checking	
Thur	Sept 19	Measuring Concrete Work	Recapitulation sheet, materials quantity take-off, labor quantity take-off, and summary recap	Assignment 4
Week 6				
Tues	Sept 24	Measuring Masonry Work	Subcontractor work, and estimate for subcontractor work	
Thur	Sept 26	Lab Assignment – 3		
Week 7				
Tues	Oct 1	Midterm Exam		
Thur	Oct 3	Measuring Carpentry	Introduction, alternative techniques, and elements of general conditions estimate	Assignment 6

Day	Date	Topic	Description	Assignments Due
Week 8				
Tues	Oct 8	Lab Assignment – 4 (Heavy Bid)		
Thur	Oct 10	Completing the Estimate Pricing Generally	Final document review, final bid summary, first-run estimate, final markups, and validation	Assignment 7
Week 9				
Tues	Oct 15	Lab Assignment – 5		
Thur	Oct 17	Lab Assignment – 6		
Week 10				
Tues	Oct 22	Pricing Equipment	Direct cost estimation, markup determination, and bid finalization	
Thur	Oct 24	Pre-Bid Day Activities Pricing Excavation and Backfill	Setting of bid room, bid teams, and bid evaluation forms	Assignment 9
Week 11				
Tues	Oct 29	Bid Day Activities Pricing Concrete Work Bid Day Activities	Receiving bids, evaluation of received bids, and additional bid issues	
Thur	Oct 31	Pricing Masonry Post-Bid Day Activities	Bid opening, post-bid analysis, post-bid ethics, and post-bid negotiations	Assignment 10
Week 12				
Tues	Nov 5	Pricing Subs Guaranteed Maximum Price Estimates	Contract procurement process, strategies, estimating process, and contingencies	
Thur	Nov 7	Pricing General Expenses Fee Determination for Negotiated Contracts	Reimbursable & non-reimbursable costs, home-office overhead, and fee structure,	Assignment 11
Week 13				
Tues	Nov 12	Closing the Bid Cost Proposal for Negotiated Contracts	Strategies to respond to RFPs, documents to be included with written proposal, interview, and selection process	
Thur	Nov 14	Budget Estimate Automated Estimating Techniques, Other Types of Estimates, Project Management Issues	Automated estimate techniques, estimate completion, project management automation tools, different types of estimates, change order estimate, as-built estimate, buyout process, cash flow curves, and cost control	
Week 14				
Tues	Nov 19	Value Engineering and Life Cycle Costs	Value analysis process and time value of money	
Thur	Nov 21	Project Presentations		Project Due
Week 15				
Tues	Nov 26	Project Presentations		
Thur	Nov 28	Thanksgiving Holidays		
Week 16				
Tues	Dec 3	Review and Course Evaluations		
Tuesday, December 10, 5:30 – 8:00 PM			Final Exam	