

Course Syllabus CE 5345 Infrastructure Maintenance

Instructor: G. 'Gus' Khankarli, P.E., PMP

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Office Hours: Tuesday and Thursday 6:30 pm-6:50 pm, 8:30-8:50 pm or by appointment

Course Number, Section Number, and Course Title: CE 5345, Sec 001 & 002 -
INFRASTRUCTURE EVALUATION, MAINTENANCE, and RENEWAL

Time and Place of Class Meetings: TR 7:00-8:20 pm, Room 111 Nedderman Hall

Description of Course Content: This course is designed for engineers and managers involved in infrastructure development, sustainability, and replacement. Topics include asset management, inspection, evaluation, maintenance, and renewal alternatives for waste collection and water distribution systems, surface and subsurface drainage, pavements, bridges, culverts, buildings, and other structures. Credit not granted for both CE 5345 and CE 4300. Prerequisite: consent of instructor.

Student Learning Outcomes: The course objective is to prepare students to demonstrate sound engineering judgment for evaluating, maintaining, and rehabilitating infrastructure related components. In addition, this course will focus on the following student abilities and coeducational outcomes.

1. Fundamental Knowledge – Student will demonstrate ability to identify causes of failures in infrastructure types.
2. Independent Abilities – Student will discuss and elucidate the difference between maintenance, rehabilitation, and repair of most civil engineering type of infrastructure.
3. Critical Thinking – Student will demonstrate ability to assess, interpret and understand a research topic related to infrastructure maintenance, rehabilitation, and repair via a formal paper and presentation.
4. Advanced Knowledge – Student will analyze complex problems to determine identify potential methods to repair, rehabilitate and restore damaged infrastructure.
5. Effective Communication – Student will demonstrate via class discussion and presentation.
6. Professional Development – Student will explain how changing technology and need for retaining infrastructure impacts need for professional life long learning.

All outcomes are observed implicitly through class participation, exams, homework, reports and formal/informal communications with instructor.

Requirements: Consent of instructor

Required Textbooks and Other Course Materials: No required text. Handouts, notes, reading assignments, problem solutions and other information are located on the class WebCT site. Minor adjustments to the syllabus may be required.

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Descriptions of major assignments and examinations with due dates: Homework assignments, review of five peer reviewed articles assignment, a research paper and presentation, two exams and a comprehensive final exam.

All assignments must be turned in at the start of the class or, if submitted electronically, prior to the class period in which they are due. Failure to do so will constitute a grade of zero for the assignment in question.

One week of advanced notice will be provided in scheduling each exam. The final exam will be given according to the university's published final exams schedule. Note that failure to appear for an exam at the scheduled time will constitute a grade of zero in that exam.

Homework, articles review, and paper in this class are the minimum assignments considered adequate to achieve basic proficiency of course material. Homework will be discussed in class. When doing the homework, specify date, name, course, and problem number at top of each page. Each problem is to be started on a new page. Include at the beginning of the problem, the problem statement and any diagrams given as well as any additional diagram needed to solve the problem. Then show solution. If calculations are required, all calculations should show four (4) significant figures for intermediate values calculated. Final answer should be rounded to two (2) significant figures unless all data is greater than three (3) significant figures. Then use minimum number of significant figures dictated by problem (greater than 3). When establishing elevations or distances for design drawing, answers must be in hundreds of a foot or thousands of a meter.

The exams will generally relate to the material covered in the lectures or in assignments. The philosophy of the exam is not to merely test your total recall or memorization, but to extend your thinking from theory and example problems to engineering situations. Each exam may include both open and closed book portions.

See the "**Make-up Exam and Assignment Policy**" section for accommodations of incomplete or missed assignments.

Grading Policy: Grades are based on three exams, five articles review (AR), assignments, group research paper, and attendance/presentation. Grades will be determined by averaging the exams and assignments as follows. All exams will be equally weighted at 20% each. Review and summary of peer-reviewed articles will be equally weighted at 4% each. Class assignment(s), class participation, and attendance will be weighted at 5% and presentation will be weighted at 5%. The research paper will be weighted at 10%. The presentation will cover the research topic. Proper spelling, use of clear and concise sentences on essay questions will also be considered in the grading process. Grade standards are as follows: $100 \geq A \geq 90$, Less than $90 > B \geq 80$, Less than $80 > C \geq 70$, Less than $70 > D \geq 60$, and Less than $60 > F \geq 0$.

Attendance Policy: Students registered for **Section 001 (Class Number: 80937)** are expected to attend all classes. Class participation and discussions are essential for full professional development. **Section 002 (Class Number TBD) – Distance Learning students** can participate in class discussions through weekly email communication with the instructor for proper participation credit.

Drop Policy: Please see university drop policy and deadlines in the Graduate Catalog for official methods and policies. An overall summary drop/withdraw policies of concern are listed below.

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Graduate students who wish to change a schedule by dropping a course must first consult with their Graduate Advisor. Regulations pertaining to adding or dropping courses are described below. The last day to drop a course taught in regular semesters is at the end of the 12th week of class. The last day to drop a course in the other, non-traditional semesters corresponds to 75 percent of the duration of the course. The last day to drop a course is listed in the Academic Calendar available.

1. A student dropping a graduate course after the Census Date but on or before the end of the 12th week of class may with the agreement of the instructor, receive a grade of W but only if passing the course with a C or better average. A grade of W will not be given if the student does not have at least a C average. In such instances, the student will receive a grade of F if he or she withdraws from the class.
2. A student desiring to drop all courses in which he or she is enrolled is reminded that such action constitutes withdrawal (resignation) from the University. The student must indicate intention to withdraw and drop all courses by filing a resignation form in the Office of the Registrar or by Web at www.uta.edu/registrar.
3. In most cases, a student may not drop a graduate course or withdraw (resign) from the University after the 12th week of class. Under extreme circumstances, the Dean of Graduate Studies may consider a petition to withdraw (resign) from the University after the 12th week of class, but in no case may a graduate student selectively drop a course after the 12th week and remain enrolled in any other course. Students should use the special Petition to Withdraw for this purpose. See the section titled Withdrawal (Resignation) From the University section of the Graduate Catalog, <http://grad.uta.edu/leftMenuPages/gradcalendar.asp>, for additional information concerning withdrawal.

Students wanting to drop all courses for which they are enrolled must withdraw from the University.

A student who wishes to withdraw (resign) voluntarily from the University before the 12th week of class deadline must file a resignation form in the Office of the Registrar or file online at www.uta.edu/registrar. After the 12th week of class, a graduate student or undergraduate student enrolled in a graduate course is not permitted to withdraw or to selectively drop courses. In exceptional cases, however, a graduate student may request to withdraw after the 12th week of class by obtaining a Petition to Withdraw form and submitting it to the Dean of Graduate Studies. (Students should use the special Petition to Withdraw for this purpose and not the Petition form used for other types of requests.) If the petition is not approved, the student remains responsible for all coursework requirements. Therefore, students should not discontinue class attendance or course assignments unless they have been notified in writing that the Dean of Graduate Studies has approved the petition to withdraw. A Petition to Withdraw form is available online through the Virtual Graduate School Advisor or in the Graduate School office.

Americans With Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 92-112 - The Rehabilitation Act of 1973 as amended. With the passage of federal legislation entitled *Americans with Disabilities Act (ADA)*, pursuant to section 504 of the Rehabilitation Act, there is renewed focus on providing this population with the same opportunities enjoyed by all citizens.

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As a faculty member, I am required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with informing faculty of their need for accommodation and in providing authorized documentation through designated administrative channels. Information regarding specific diagnostic criteria and policies for obtaining academic accommodations can be found at www.uta.edu/disability. Also, you may visit the Office for Students with Disabilities in room 102 of University Hall or call them at (817) 272-3364.

Academic Integrity: 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 course work, plagiarism (offering the work of another 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 to suspension to expulsion from the University.

In accordance with the Rules and Regulations of the Board of Regents of The University of Texas System (Part One, Chapter VI), institutional procedures regarding allegations of academic dishonesty are outlined in Part Two, Chapter 2, of the UT Arlington Handbook of Operating Procedures. This information may be obtained by accessing the Student Judicial Affairs Web site at www2.uta.edu/discipline/ or by obtaining a hard copy of Mav Dates & Data in the Office of Student Development.

Student Support Services Available: The University of Texas at Arlington supports a variety of student success programs to help you connect with the University and achieve academic success. These programs include learning assistance, developmental 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.

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 syllabi. 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. Classes are held as scheduled during this week and lectures and presentations may be given.

Librarian to Contact: Barbra Howser, Science and Technology Library, NH.

E-Culture Policy: The University of Texas at Arlington has adopted the University email address as an official means of communication with students. Through the use of email, UT-Arlington is able to provide students with relevant and timely information, designed to facilitate student success. In particular, important information concerning registration, financial aid, payment of bills, and graduation may be sent to students through email.

All students are assigned an email account and information about activating and using it is available at www.uta.edu/email. New students (first semester at UTA) are able to activate their

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email account 24 hours after registering for courses. There is no additional charge to students for using this account, and it remains active as long as a student is enrolled at UT-Arlington. Students are responsible for checking their email regularly.

E-mail is the prime means for communication. Therefore, the University has the right to send communications to students via e-mail and the right to expect that those communications will be received and read in a timely fashion. The Office of Information Technology (OIT) will assign all students an official University e-mail address. It is to this official address that the University will send e-mail communications. Students are expected to check their official e-mail account on a frequent and consistent basis to stay current with University communications. The University recommends checking e-mail daily; in recognition that certain communications may be time-critical.

A student must give current and correct local and permanent addresses and telephone numbers to the Office of the Registrar and must notify this office immediately of any changes. Official correspondence may be mailed, versus e-mailed, to the appropriate address depending upon the nature of the correspondence and the academic calendar; if the student has moved and failed to correct this address, he or she will not be relieved of responsibility on the grounds that the correspondence was not delivered.

Make-up Exam and Assignments Policy: No make-up exams and assignments are given or accepted except for medical or other similar hardships where advanced arrangements are made with the instructor; or in case of non-selective medical emergencies with appropriate physician's note or documentation. Other than circumstances describe above, failure to take the exam or turn in assignments at the scheduled time will constitute a grade of zero in the exam and assignment. It is the student's obligation to contact the instructor, generally before the examination so that appropriate arrangement (if any) may be made.

Grade Grievance Policy: It is the obligation of the student, in attempting to resolve any student grievance regarding grades, first to make a serious effort to resolve the matter with the instructor with whom the grievance originated. Individual instructors retain primary responsibility for assigning grades. The instructor's judgment is final unless compelling evidence shows discrimination, preferential treatment or procedural irregularities. If students wish to appeal, their requests must be submitted in writing on an Academic Grievance Form available in departmental or program offices to the department chair or program director. Before considering a grievance, the department chair or program director will refer the issue to a departmental or program committee of graduate faculty. If the committee cannot reach a decision acceptable to the parties involved, the department chair or program director will issue a decision on the grievance. If students are dissatisfied with the chair or director's decision, they may appeal the case to the academic dean. If they are dissatisfied with the academic dean's decision, they may appeal it to the Dean of Graduate Studies. Students have one year from the day grades are posted to initiate a grievance concerning a grade.

For issues involving scholastic dishonesty, see the Academic Dishonesty entry in the UTA undergraduate catalog.

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Class	Date		Topic	Description	Homework/Articles Review (AR) Due
	<i>Aug 24</i>			<i>First Day of Classes</i>	
1	25	T		Introduction	
2	27	TH		Asset Management	
3	<i>Sept 1</i>	T		Program Management	
4	3	TH		Program Management/records Management	
	7	<i>M</i>	<i>Labor Day</i>		
5	8	T		Causes of Failures in Concrete/Other Materials	
	9	<i>W</i>	<i>Census Day</i>		
6	10	TH		Causes of Failures in Concrete/Other Materials	AR-1
7	15	T		Concrete Repair Materials	
8	17	TH		Concrete Repair Materials	
9	22	T	<i>Research Topic due</i>	Buildings/Parking Garages	
10	24	TH		Buildings/Parking Garages	
11	29	T		Buildings/Parking Garages	
12	Oct 1	TH		Pavements	
13	6	T		Pavements	
14	8	TH		Pavements	AR-2
15	13	T	<i>EXAM I</i>		
16	15	TH		Bridges	
17	20	T		Bridges	
18	22	TH		Bridges	AR-3
19	27	T		Bridges/Parking	
20	29	TH		Parking/Tunnels	
	30	<i>F</i>	<i>Last Day to Drop</i>		
21	<i>Nov 3</i>	<i>T</i>		Tunnels/Airports	
22	5	TH		Airports/Ports	
23	10	T	<i>EXAM II</i>		AR-4
24	12	TH		Ports/Drainage	
25	17	T		Drainage/Water/WasteWater	
26	19	TH		Drainage/Water/WasteWater	
27	24	T		Refineries/Power Stations/Desalination Plants	
			<i>Thanksgiving 26-29</i>		
	<i>Dec 1-4</i>		<i>Review Week</i>		
28	Dec 1	T	<i>Group Paper Due</i>	Presentation/Misc.	AR-5
29	3	TH		Safety, Health, Equipment Maintenance & Other Issues	
	4		<i>Last Day of Classes</i>		
	<i>7-11</i>		<i>Final Exam Week</i>		

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30	10	<i>TH</i>	<i>Final / EXAM III</i>	8:15 pm – 10:45 pm	
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General Information:

WebCT Site: Handouts, notes, articles, and other information are located on WebCT

Distance learning students will use WebCT to submit class material such as reports, homework, etc to the instructor or as instructed. This will allow large files to be submitted without any problems. Please insure you keep email receipt as a proof for submission of assignments.

Articles Review: Articles will be posted on WebCT and are due by the dates shown on the class schedule. The articles shall be two to three pages long double spaced with font 12 Arial and shall cover at a minimum:

- Introduction
- A summary discussion of the main points that the author(s) addressed in the paper.
- Conclusion

Proper spelling, use of clear and concise sentences and structure will be considered in the grading process.

Provide a cover sheet that includes your name, title of the reviewed paper, and the date. Your last name must appear in the upper right corner and the page numbers must be centered in the bottom of each page. The paper shall follow closely the style guidelines as shown in the ASCE, Chicago Manual or APA Style guides.

Exam for Engineering Distance Education: Distance education students should make every effort to take scheduled exams on-campus during the regularly scheduled time if the student's work schedule permits.

If this is not possible, exams may be given by a proctor within a 24 hour period of the regularly scheduled exam in accordance with the current "**Exam policy for Engineering Distance Education.**" Early arrangement with the Engineering Distance Education office coordinator is encouraged.

Research Paper: Students/assigned groups will submit a research topic in infrastructure maintenance, rehabilitation, or policy for approval by **September 22**. The research paper will be completed and turned in on **December 1, 2009**.

The research paper will be between 10 to 12 pages long double spaced with font 12 Arial and shall cover at a minimum:

- Introduction
- Discussion of the topic to cover all three areas of infrastructure evaluation, maintenance and renewal that are covered in the class or as approved.
- Conclusion
- References (minimum 10) and proper citations

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Proper spelling, use of clear and concise sentences and structure will be considered in the grading process.

Provide a cover sheet that includes your name, title of the paper, and the date. Your last name must appear in the upper right corner and the page numbers must be centered in the bottom of each page. The research paper shall follow closely the style guidelines as shown in the ASCE, Chicago Manual or APA Style guides.

Laptop or Email use in the classroom: In order to minimize distraction, the use of laptop and Email in the classroom will not be allowed.

Cellular Phone use in the classroom: In order to minimize distraction, turn off the cell phone or change the setting to 'vibrate.' If it is necessary to use it due to an emergency, please leave the classroom quietly and return when done.