CE 5361: Design and Construction of Asphalt Concrete
Spring 2018

Instructor: Dr. Stefan Romanoschi. P.E.

Office Number: 408 Nedderman Hall

Office Telephone Numbers: 817-272-0340 / - 9167(lab)

Email Address: romanoschi at uta.edu

Faculty Profile: https://mentis.uta.edu/explore/profile/stefan-romanoschi

Office Hours: Monday and Wednesday, 1:00 to 3:00PM in 408NH; or by appointment

Section Information: Sections 001 and 101

Time and Place of Class Meetings: M & W 4:00 to 5:20 PM; 203 Nedderman Hall

Course Website: https://mavspace.uta.edu/sroman/CE5341/ (must type capitals for CE)

Description of Course Content: An in-depth study of the properties of constituent materials for asphalt concrete mixtures. Design methods for Hot-Mixes Asphalt (HMA) and Stone Matrix Asphalt (SMA). Theory and practice of asphalt concrete mix for pavements, including specifications and construction methods for hot-mix asphalt and surface treatments. Maintenance and rehabilitation of flexible pavements. Relationships of material engineering properties to pavement design and performance.

Student Learning Outcomes: At the end of this course, students will be able to:

Student Outcomes Addressed:	**Extent of Coverage***
(a) An ability to apply knowledge of mathematics, science, and engineering	T_I
(i) A recognition of the need for, and an ability to engage in life-long learning	C_I
(j) A knowledge of contemporary issues	C_I
(k) An ability to use the techniques, skills and modern engineering tools necessary for engineering practice	C_I

Covered Implicitly (C_I**): The outcome is implicitly covered*

*Tested Implicitly (**T_I**): The outcome is covered and implicitly assessed for by one or more means (assignments, test questions, essay questions, presentation evaluations, lab reports, etc.)*

Specific Outcomes of Instruction Students will demonstrate an understanding of engineering properties of asphalt materials, mix design methods used in the United States, material performance evaluation, production, placement and compaction.

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Required Textbooks:

Textbook:

Hot Mix Asphalt Materials, Mixture Design and Construction, by Roberts F. and al. Third Edition. (2016) Published by National Center for Asphalt Technology.
(**ISBN-10:** 0914313010 **ISBN-13:** 978-0914313014)

Additional Useful Material:

The Aggregate Handbook, Richard D. Barksdale, Editor, by the National Stone Association, Washington, D.C., 1991

Hot Mix Asphalt Paving Handbook by NAPA

Major assignments and examinations: Term-Paper (deadline: April 30, 2018), Presentation (deadline: May 2, 2018), Mid-Term Exam, and Final Exams. All exams are closed book and closed notes, unless otherwise directed by instructor.

Attendance Policy: At the University of Texas at Arlington, taking attendance is not required but attendance is a critical indicator in student success. 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 the instructor of this section, I expect all students to attend all classes and to be punctual. Anyone missing class for whatever reason **is responsible for any class notes, assignments or announcements** missed in that class. 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.

Other requirements: *Prerequisite*: CE 3261 or equivalent.

Grading: The final grade for this course will be determined on the following basis:

Mid-Term Exam….....….30%	A : 90% - 100%
Final Exam ….....….35%	B : 80% - 90%
Term -Paper …..….....30%	C : 70% - 80%
Oral presentation …..….....5%	D : 60% - 70%
	F : < 60%

Make-up Exams: No make-up exams are given 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 described above, failure to take the exam at the scheduled time will constitute a grade of zero in the exam.

Expectations for Out-of-Class Study: Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional **9 (nine)** hours per week of their own time in course-related activities, including reading required materials, completing assignments, preparing for exams, etc.

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Grade Grievances: Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current University 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://wweb.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) www.uta.edu/caps/ or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their 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.

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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 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

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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 the entrance into the Nederman Hall. 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.

University Tutorial & Supplemental Instruction (Ransom Hall 205): UTSI offers a variety of academic support services for undergraduate students, including: 60 minute one-on-one tutoring sessions, Start Strong Freshman tutoring program, and Supplemental Instruction. Office hours are Monday-Friday 8:00am-5:00pm. For more information visit www.uta.edu/utsi or call 817-272-2617.

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. http://library.uta.edu/academic-plaza

Librarians to Contact: Sylvia George-Williams and Joshua Been, Science and Engineering Library.

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Course Schedule: ***January 12, 2018***

Dates	Topic
1/17; 1/22; 1/24; 1/29; 1/31; 2/5; 2/7; 2/12; 2/14; 2/19; 2/21; 2/26	Lectures 01 to 10 Lab Experiments
3/5	**Mid-Term Exam**
3/7	**No Class**
2/28; 3/19; 3/21; 3/26; 3/28; 4/2; 4/4; 4/9; 4/11; 4/16; 4/18; 4/23; 4/25;	Lectures 11 to 20 Lab Experiments Field visit(s)
4/30; 5/2	Term Paper presentations
Friday, May 11 @ 2:00-4:30PM	**Comprehensive Final Exam**

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. –Stefan A. Romanoschi

Topics Coverered

Asphalt Binders: History. Uses. Refining process.
Asphalt Binders: Physical Testing.
Asphalt Binders: Grading systems. SUPERPAVE Binder Tests and Specifications.
Mineral Aggregates: Production and Sampling.
Mineral Aggregates: Physical tests. Material Selection
Asphalt Concrete Mixes: Marshall Design Method. SUPERPAVE Design Method.
Asphalt Concrete Mixes: Testing and Evaluation
Asphalt Mixes: Production. Placement. Compaction.
Quality Control/ Quality Assurance
Asphalt Pavement Recycling.
Maintenance, Rehabilitation and Reconstruction of Asphalt Pavements
Pavement Smoothness and Skid resistance

Laboratory Demonstrations:

- Aggregates: Specific Gravity. Gradation. Particle Shape. Toughness. Clay Content.
- Asphalt binders: Rotational Viscosity and Dynamic Shear Rheometer.
- Superpave mixture design: gyratory compaction
- Asphalt concrete mixture tests: bulk specific gravity; maximum theoretical specific gravity
- Superpave mixture design: selection of the optimum binder content
- Field visit(s)

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

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