
CET-3120 Advanced Construction Materials

Prerequisites: CET-2110 – Materials Testing
CET-2220 – Soil Mechanics

Credit: 3 Credit Hours

Instructor: N.V. Kissoff, P.E., Ph.D. 530-3165 FAX: 530-3068
Office: ETC 1106 E-mail: nkissof@utnet.utoledo.edu
Office Hours: M 2-4, W 2-3, TR 3:30-4:30
Door closed 15 minutes before any scheduled class.
Website: <http://cset.sp.utoledo.edu/~nkissoff/>

Class Times: MW 7:20-8:35 CC 2090

Textbooks: *From the Bookstore:*
Concrete Floors on Ground (PCA)

From the Internet:
Pavement Design & Rehabilitation Manual (ODOT) Sections 200,300 and 400. Located at:
<http://www.dot.state.oh.us/Divisions/Planning/Pavement/Pages/Publications.aspx>

Concrete Pipe Design Manual – (American Concrete Pipe Association) Selected Portions Located at:
http://www.concrete-pipe.org/designmanual.htm?cp_Session=f09a29a381d7797b942c70ca6a307845

Course Description:

This course will focus on the design and construction of ground based structures such as rigid pavements and floor slabs and flexible pavements, as well as buried pipe loading. Coverage of the construction of subgrade materials will also be supplied in order to provide a foundation for the structures mentioned above. The course will utilize numerous methods for solutions to practical based design and analysis problems.

Course Objectives: At the end of the course the student should have the following knowledge and skills:

1. An understanding of subgrade soils materials, how they are classified for pavement support and how they can be modified to provide additional support.
2. The ability to design flexible pavement sections dependent upon traffic and local environmental conditions.
3. An understanding of FHWA Superpave specifications for HMA materials.
4. The ability to design rigid pavement sections dependent upon traffic and local environmental conditions.
5. An understanding of the design process of joint placement and reinforcement design in rigid pavements.

6. The ability to design floor slabs for use in industrial and commercial environments dependent upon loading and traffic conditions.
7. The ability to determine pipe material specifications based upon live and dead loads (depth of cover) for rigid and flexible conduits.

Instructional Methods:

Due to the wide-ranging subject matter presented in this course, a single textbook covering all subjects was not available for assignment. Thus, lectures with board-notes, overheads and multiple handouts from standardized applications manuals will be employed in the class along with the three required texts.

The class will be mostly a problem solving class with attention paid to details of the subject at hand. The development of your ability to solve these problems will be fostered through your work on homework assignments, through your participation in class discussions and through your ability to keep up to date with the material being covered in each class.

Schedule:

In order to more adequately cover the material required for this course, a formal schedule will not be strictly adhered to. However, the following topics will be used as a guide to the progress of the class:

- 1) Subgrade Soils, Construction and Improvements (Classifications, Additives and Modifications, Subsurface Drainage, Compaction Methods)
- 2) Flexible Pavements (Thickness Design, Superpave Specifications)
- 3) Rigid Pavements (Thickness Design, Reinforcement Design, Joint Design, Construction Methods)
- 4) Industrial Floor Slab Design (Thickness Design for various loading conditions, Jointing, Construction Methods)
- 5) Loads on Buried Pipes (Concrete & Flexible Conduits, Construction Methods)

Grade Breakdown:	Quizzes (Announced & Surprise)	55%
	Design Project	15%
	Class Notebook	5%
	Final Exam	<u>25%</u>
	Total	100%

No one can pass the class without taking the Final Exam.

Grading Scale:	A	100 – 93
	A-	92 - 90
	B+	89 – 87
	B	86 – 83
	B-	82 - 80
	C+	79 – 77
	C	76 – 73
	C-	72 - 70

D+ 69 – 67
D 66 - 63
D- 62 – 60
F Below 60

Class Notebook: Each student is to keep a standard **three-ring notebook** in which course material is to be organized **with dividers** under the suggested following sections:

Class Information, Class Notes, Class Handouts, Homework, Quizzes & Exams.

Not only will this notebook be **reviewed during the final exam** by the instructor, it will be a valuable resource to which to refer later in your academic and professional career. The binder will be evaluated for correctness, completeness and neatness. No late submittal will be accepted.

Homework: Problems pertaining to the material discussed will be assigned via board problems and special handouts prepared by the instructor. **Homework will not be turned in for credit.** It is a benefit to your own edification of the subject matter that you perform these problems on your own time and come prepared to discuss them in class. Problems of equivalent nature will be found on the quizzes and your preparation with regard to the subject matter will be your responsibility. **DO THE HOMEWORK ASSIGNMENTS!!!!**

Projects: An involved design problem will be required to be worked and submitted during the semester. The entire design process should be shown in a step by step manner in order to show your knowledge of the subject matter. Grading of the submittal will include not only an evaluation of the correctness of your design, but also of your presentation of the solution with regard to neatness, coherency and legibility.

Standard engineering calculation paper should be used for manual design work. Working in teams of two will be required and a prescribed quality assurance checking system will be utilized.

A 20% deduction in grade will be assessed for each class period that a project is late. Projects that are more than one week late will not be accepted for credit.

Quizzes: Quizzes will be short unannounced questions and problems given during class periods on a random basis throughout the semester. Quizzes are a test of your grasp of the techniques and methods learned in class, and as such, instructor hints are not to be solicited due to your lack of preparation. Eight to ten quizzes will be given over the duration of the class. They may be open or closed book dependent upon the subject of the question. Quizzes may also take the form of homework assignments to be turned in without advanced warning. However, **it is imperative that you bring a calculator and your course materials to every class.** There will be no sharing of materials allowed during a quiz. The

lowest two grades will be dropped from your final quiz tabulation total. Absolutely, no make-up quizzes will be given for those missed due to absence from the class. A missed quiz will count as one of the two to be dropped. Don't ask if there is going to be a quiz in class that day. There is always one waiting in the folder to give. I will not answer if asked. Prepare like there one is scheduled!

Exams: There will be no make-up tests given. It is the student's responsibility to contact the instructor **prior to the scheduled exam** if an absence cannot be avoided in order to make alternate arrangements. **No Exceptions.**

Class Etiquette: While cell phones are sometimes necessary for contact in emergency situations, please put your phone on silent/page or turn it off for class. Constant interruptions are disturbing to the class and if not pre-approved by the instructor will be cause for a reduction in your grade.

Students are expected to conduct themselves in a manner which is conducive to learning for themselves and others. Disruptive behavior is not acceptable and may affect a student's final grade, or in severe cases result in a student being removed from class.

It's a big room with poor acoustics. Be quiet & sit close.

File Duplication & Academic Dishonesty:

Any attempt to duplicate or otherwise pass off another current or former classmate's work as your own through means such as (but not limited to) unauthorized copying of CADD files, replotting of another's work with your name attached or copying of hard copy files or looking at a neighboring student's quiz, **will result 1) on a first offense as a zero on the assignment, 2) on successive offenses in the failure of the class.** Either offense will result in a letter of academic dishonesty being placed in your student file. Keep your password and your account secure. Protect your work in order to keep copying from occurring without your knowledge. The penalty for allowing your work to be copied is the same as if you did the copying. Please do your own work in order to learn the subject matter.

Academic

Accommodations: "Consistent with the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, if a student feels that he/she has a disability and requires special accommodations of any nature. The instructor will work with the student and The University of Toledo Office of Accessibility (Rocket Hall Room 1820, 530-4981) to provide reasonable accommodations to ensure a fair opportunity to perform in this class. Please advise the instructor of such disability and the desired accommodations within the first week of class."

- Escort Service:** If any student desires an escort to their vehicle after class, they are directed to call 530-3024 for this service.
- No Classes:** Monday, January 19, 2009 – MLK Day
Monday, March 9 through Friday, March 13, 2009 – Spring Break
- Other Important**
- Dates:** January 26, 2009 – Last day to Add/Drop
March 27, 2009 – Last day to Withdraw
The University no longer allows instructors to grant Instructor Withdrawals (IW). If you don't drop on your own by March 27, you will be graded in the class. If the instructor reports to the registrar that you have stopped attending the class, you will not be allowed to return to the class for a grade and thus you must drop the class. Don't just disappear from class! It is your responsibility to inform the instructor of your class status.
- Final Exam:** Wednesday, May 6, 2009, 7:30-9:30pm
- A Final Word:** It is the student's responsibility to attend every lecture. I will attempt to help everyone who may have problems with the material covered in the class. However, I can't be expected to:
Help you catch up after not coming to class for 3 weeks.
Re-explain items you missed because you skipped a class.
Copy my notes for the classes that you missed.