

STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK



MASTER SYLLABUS

CIVL 312 –Pavement Design and Analysis

CIP Code: 15.0201

*For assistance determining CIP Code, please refer to this webpage
<https://nces.ed.gov/ipeds/cipcode/browse.aspx?v=55>
or reach out to Sarah Todd at todds@canton.edu*

Created by: Aksel Seitllari, PhD, PE

Updated by: Aksel Seitllari, PhD, PE

**CANINO SCHOOL OF ENGINEERING TECHNOLOGY
DEPARTMENT OF CIVIL AND CONSTRUCTION TECHNOLOGY
SPRING 2023**

- A. TITLE: Pavement Design and Analysis
- B. COURSE NUMBER: CIVL 312
- C. CREDIT HOURS (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity):
- # Credit Hours: 3**
Lecture Hours 2 per Week
Lab Hours 2 per Week
Other ___ per Week
- Course Length (# of Weeks): 15**
- D. WRITING INTENSIVE COURSE: No
- E. GER CATEGORY:
Does course satisfy more than one GER category? If so, which one? None
- F. SEMESTER(S) OFFERED: (*Fall, Spring, or Fall and Spring*) Spring
- G. COURSE DESCRIPTION: This course covers the structural design of flexible and rigid pavements. Considerations include traffic and environmental conditions, performance measures and failure mechanisms, surface characteristics, joints, and drainage.
- H. PRE-REQUISITES: CONS 280 Civil Engineering Materials, or permission of the instructor.
CO-REQUISITES: None

I. STUDENT LEARNING OUTCOMES:

<u>Course Student Learning Outcome [SLO]</u>	<u>PSLO</u>	<u>GER</u>	<u>ISLO</u>
a. Differentiate between flexible, rigid, and composite pavements based on engineering properties and pavement response	ABET SO 1		5
b. Differentiate between surface distresses for different pavement types	ABET SO 1		5
c. Compute traffic for the purpose of designing pavements	ABET SO 1, 2		5
d. Assess the impact of environmental factors on the sustainability of pavement performance	ABET SO 1		PS
e. Analyze the input parameters for the design of pavements	ABET SO 1, 2		5
f. Compute the life cycle costs for the various design alternatives	ABET SO 1, 2		5
g. Explain the impact of public policy and applicable federal, state, and local ordinances on your final design	ABET SO 1, 6		5
h. Explain the importance and implications of professional licensure and continuing education in the practice of pavement engineering	ABET SO 1, 6		4
i. Function successfully as part of a 3-4 project design member team	ABET SO 5		4

KEY	<u>Institutional Student Learning Outcomes</u> <u>[ISLO 1 – 5]</u>
ISLO #	ISLO & Subsets
1	Communication Skills Oral [O], Written [W]
2	Critical Thinking <i>Critical Analysis [CA], Inquiry & Analysis [IA], Problem Solving [PS]</i>
3	Foundational Skills <i>Information Management [IM], Quantitative Lit./Reasoning [QTR]</i>
4	Social Responsibility <i>Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]</i>
5	Industry, Professional, Discipline Specific Knowledge and Skills

J. APPLIED LEARNING COMPONENT: Yes X No _____

If Yes, select one or more of the following categories:

Classroom/Lab X

Internship _____

Clinical Practicum _____

Practicum _____

Service Learning _____

Community Service _____

Civic Engagement _____

Creative Works/Senior Project _____

Research _____

Entrepreneurship _____

(program, class, project)

K. TEXTS: Pavement Analysis and Design, 2nd ed. by Yang H. Huang. ISBN-13: 9780131424739

L. REFERENCES: - AASHTO Guide for Design of Pavement Structures, 1993.
- Pavement Design and Materials, Author(s): A. T. Papagiannakis, E. A. Masad, ISBN:9780471214618

M. EQUIPMENT: None

N. GRADING METHOD: A-F

O. SUGGESTED MEASUREMENT CRITERIA/METHODS: Homework, Design Project, Quizzes, Exams

P. DETAILED COURSE OUTLINE:

1. Introduction
2. Traffic loading
3. Flexible pavement distresses
4. Relating pavement design to pavement response and performance
5. Subgrade and base materials
6. Asphalt materials
7. AASHTO'93 flexible pavement design procedure
8. Asphalt Institute flexible pavement design method
9. Overview of Pavement-ME design procedure for flexible pavements (NCHRP1-37A)
10. Rigid pavement distress
11. Rigid pavement response to load and relationship to design
12. Rigid pavement design approaches
13. AASHTO'93 rigid pavement design procedure
14. PCA rigid pavement design procedure
15. Overview of Pavement-ME design procedure for rigid pavements (NCHRP1-37A)
16. Joint design considerations

Q. LABORATORY OUTLINE: None