

1. Course Name:					
Transportation Engineering-II					
2. Course Code:					
CIV42104					
3. Semester / Year:					
Second semester/ Fourth					
4. Description Preparation Date:					
8/12/2025					
5. Available Attendance Forms:					
Class & Lab					
6. Number of Credit Hours (Total) / Number of Units (Total)					
3 units					
7. Course administrator's name (mention all, if more than one name)					
Dr. Adil N. Abed adil.abed@muc.edu.iq					
8. Course Objectives					
Course Objectives	1. Understand the fundamental principles and factors influencing the behavior and performance of flexible pavements, including traffic loads, material properties, climate, and subgrade conditions. 2. Analyze and apply design standards and guidelines, such as the AASHTO Guide for Design of Pavement Structures, in the development of flexible pavement designs. 3. Evaluate and compare different materials and construction techniques for flexible pavements, considering factors such as cost, availability, durability, and environmental impact. 4. Develop skills in generating design drawings and documentation for flexible pavements, including pavement cross-sections, layer thicknesses, and reinforcement details. 5. Understand and apply principles of pavement materials, including aggregate selection, asphalt binder properties, and mix design for hot mix asphalt (HMA) pavements. 6. Assess the impacts of traffic loads and environmental factors on pavement performance and longevity. 7. Evaluate the interaction between different pavement layers and their contribution to structural integrity and load distribution. 8. Collaborate effectively with other students in the development of pavement engineering projects, including teamwork, communication, and sharing of responsibilities. 9. Critically evaluate and discuss case studies and real-world examples of flexible pavement design and maintenance projects, identifying successes, challenges, and lessons learned. 10. Demonstrate the ability to present and communicate flexible pavement design concepts and solutions effectively through written reports, presentations, and design drawings.				
9. Teaching and Learning Strategies					
Strategy	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.				
1. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	Theoretic al- 3hrs Lab-1hrs	Introduction	Pavement design		Several Ways (Exams + Assignments)

2	Theoretic al- 3hrs Lab-1hrs	Bituminous Materials	Highway materials	Lectures& Lab.	Several Ways (Exams + Assignments)
3	Theoretic al- 3hrs Lab-1hrs	Pavement Roadbed	Pavement layers And subgrade soil	Lectures& Lab.	Several Ways (Exams + Assignments)
4	Theoretic al- 3hrs Lab-1hrs	Aggregate	Sub base materials	Lectures& Lab.	Several Ways (Exams + Assignments)
5	Theoretic al- 3hrs Lab-1hrs	Density-voids Analysis of Paving Mixtures	Asphaltic properti and design	Lectures& Lab.	Several Ways (Exams + Assignments)
6	Theoretic al- 3hrs Lab-1hrs	Design of Asphalt Mixture	Hot mix asphalt design	Lectures& Lab.	Several Ways (Exams + Assignments)
7	Theoretic al- 3hrs Lab-1hrs	Design of Asphalt Mixture	Hot mix asphalt design	Lectures& Lab.	Several Ways (Exams + Assignments)
8		Mid Term Exam 1			Several Ways (Exams + Assignments)
9	Theoretic al- 3hrs Lab-1hrs	Mechanical Models for Simulating Bitumen and Asphalt Behavior	Flexible pavement design	Lectures& Lab.	Several Ways (Exams + Assignments)
10	Theoretic al- 3hrs Lab-1hrs	Flexible Pavement Structural Design	Flexible pavement design	Lectures& Lab.	Several Ways (Exams + Assignments)
11		Mid Term Exam 2			
12	Theoretic al- 3hrs Lab-1hrs	Distresses in Flexible Pavement	Pavement Maintenance	Lectures& Lab.	Several Ways (Exams + Assignments)
13	Theoretic al- 3hrs Lab-1hrs	Distresses in Flexible Pavement	Pavement Maintenance	Lectures& Lab.	Several Ways (Exams + Assignments)
14	Theoretic al- 3hrs Lab-1hrs	Introduction to Superpave system	Super pave design	Lectures& Lab.	Several Ways (Exams + Assignments)
15	Theoretic al- 3hrs Lab-1hrs	Rigid pavement design	Pavement design	Lectures& Lab.	Several Ways (Exams + Assignments)

2. Course Evaluation

Quizzes 10

Assignments 10

Projects / Lab. 10

Report 10

Midterm Exam 10

Final Exam 50%

3. Learning and Teaching Resources

Required textbooks (curricular books any)

AASHTO Guide for Design of Pavement Structures (1993)
(FHWA) Pavement Design and Management Manuals

Main references (sources)	Garber, Nicholas, J. and Lester A. Hoel. Traffic and Highway Engineering. Brooks/Cole Publishing, NewYork, Third Edition, 2010.
Recommended books and references (scientific journals, reports...)	P. S. Kandhal & S. D. Brown Asphalt Pavements – A Practical Guide to Design, Production & Maintenance
Electronic References, Websites	