



The Hashemite University
Faculty of Engineering
Civil Engineering Program
Course Syllabus



Course Title: Pavement Materials & Design 3(3,0,0)

Course Number: 110 401466

Designation: Compulsory

Prerequisite(s): 110401368

Instructor: Dr. Hamza Alkuime

Instructor's e-mail: Alkuime@hu.edu.jo

Office Hour: [S, T, Th. (10:00 – 11:00 am)]

Course Description (catalog): Pavement types, Pavement materials; subgrade stabilization methods; Principles of mix design using SUPERPAVE; Analysis of stresses in flexible and rigid pavement, Design methods of highway flexible and rigid pavements; Design of airport flexible and rigid pavement; Overlay design, Computer applications.

Textbook(s) and/or Other Supplementary Materials:

- Traffic & Highway Engineering, 5th Edition. Nicholas Garber and Lester Hoel. Cengage Learning, 2015.
- Any traffic and highway engineering or pavement analysis and design can be a good reference.

Major Topics Covered:

Topics	No. of Weeks	Contact hours*
Highway Materials (bituminous Materials, Aggregates, and soil),	6	18
Pavement types,	1	3
Flexible pavement design (design of Hot Mix Asphalt mixture using Marsha method	2	6
Flexible pavement design (design of pavement thicknesses using the AASHTO method)	2	6
Earthwork operations,	1	3
Drainage and drainage structures, and Rehabilitation and Highway Maintenance	1	3
Drainage and drainage structures, and	1	3
Rehabilitation and Highway Maintenance	1	3
Total	15	45

*Contact hours include lectures, quizzes and exams

Specific Outcomes of Instruction (Course Learning Outcomes, CLO):

After completing the course, the student will be able to:

1. Distinguish the properties of materials used in highway pavements [1].
2. Discriminate between different pavement types [1].
3. Design of flexible pavement layers thickness using the AASHTO method [2].
4. Design of hot asphalt mixes using the Marshall method [2].
5. Develop a basic understanding of drainage facilities and highway construction procedures [1].

Student Outcomes (SO) Addressed by the Course:

ABET 1-7	Outcome Description	Contribution
General Engineering Student Outcomes		
1	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	H
2	an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	M
3	an ability to communicate effectively with a range of audiences	
4	an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	



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5	an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	
6	an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	
7	an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	
H=High, M= Medium, L=Low		

Grading Plan:

- 1st Exam 20 Points
- 2nd Exam 20 Points
- Others (Quizzes and/or homework's 10
- Final Exam 50 Points (Will be announced by the registrar)

General Notes:

- The maximum allowed number of absentees from the course is **six** classes.
- Exceeding these limits will lead to prevention from attending the final exam.
- **No MAKE-UP EXAMS.**
- Class attendance is considered part of your class participation.
- Beware of Plagiarism: copying and handing in for credit someone else's work. Any plagiarism case will result in an automatic 'F' for the course.

**Prepared by: Dr.
Hamza Alkuime**

Date: October 9, 2022