



Course Syllabus
According to JORDAN National Qualification
Framework (JNQF)

Course Name: Highways
Rehabilitation and Management

Course Number: 04035161

General Course Information:

Course title	Highways Rehabilitation and Management
Course number	04035161
Credit hours	3 hours (theory)
Education type	[Face-to-Face] 3 hours (theory)
Prerequisites/corequisites	Traffic Engineering (403345), Highway Design (403342)
Academic Program	Civil engineering
Program code	
Faculty	Isra University
Department	Engineering
Level of course	Civil engineering
Academic year /semester	4rd year level
Awarded qualification	Second Semester 2021/2022
Other department(s) involved in teaching the course	B.Sc
Language of instruction	English
Date of production/revision	

Course Coordinator:

Coordinator's name	Dr. Eng. Hussein Sarairoh
Office No	4308
Office Phone extension number	2502
Office Hours	9 hours/ Sunday, Tuesday, Thursday: 13:00-14:30 and Monday, Wednesday: 10.00-11.00
Email	huussein.sarairoh@iu.edu.jo

Other Instructors:

Instructor name	
Office No	
Office Phone extension number	
Office Hours	
Email	

Course Description (English/Arabic):

English	<p>Understand the Definitions, Function of Pavements, and Typical Roadway Cross Section for flexible and rigid pavement, pavement process, pavement networks definitions and classifications.</p> <p>Understand the Soil engineering for highway, Soil characteristics, Basic properties of soil, AASTHO Soil Classification System, Soil surveys for highway construction, Soil Compaction, CBR Test, Hveem Stabilometer Test, pavement distress survey and rating procedure, (deflection, roughness, skid resistance).</p> <p>Overview of maintenance and rehabilitation techniques, network level management, project level management.</p> <p>Design of Flexible Pavements, AASHTO Design Method, Design of Rigid Pavement, AASHTO Design Method, Pavement Maintenance & Rehabilitation, Pavement distress</p>
----------------	--

Textbook: *Author(s), Title, Publisher, Edition, Year, Book website.*

1. Nicholas J.Garber, Lester A. Hole, Traffic and Highway Engineering 4thEdt. & 5thEdt.- SI Edition 2010, 2014.

References: *Author(s), Title, Publisher, Edition, Year, Book website.*

Required book (s), assigned reading and audio-visuals:

1. AASHTO Guide for Design of Pavement structure, 2003.

Course Educational Objectives (CEOs):

1.	Understand the Definitions, Function of Pavements, and Typical Roadway Cross Section for flexible and rigid pavement, pavement process, pavement networks definitions and classifications.
2.	Understand the Soil engineering for highway, Soil characteristics, Basic properties of soil, AASTHO Soil Classification System, Soil surveys for highway construction, Soil Compaction, CBR Test, Hveem Stabilometer Test, pavement distress survey and rating procedure, (deflection, roughness, skid resistance).
3.	Overview of maintenance and rehabilitation techniques, network level management, project level management.
4.	Design of Flexible Pavements, AASHTO Design Method, Design of Rigid Pavement, AASHTO Design Method, Pavement Maintenance & Rehabilitation, Pavement distress
5.	

Intended Learning Outcomes (ILO's):

1.	Subject Intended learning outcomes (ILOs) describe what students are expected to know and be able to do at the end of the course. These outcomes are related to the knowledge, skill and competence that students acquire:	Relationship to CEOs	Contribution to PLOs	Bloom Taxonomy Levels*	Descriptors**
2. A	Knowledge and Understanding:				
3. A1	Understand the Definitions, Function of Pavements, and Typical Roadway Cross Section for flexible and rigid pavement, pavement process, pavement networks definitions and classifications.	1	1		K
4. A2	Understand the Soil engineering for highway, Soil characteristics, Basic properties of soil, AASTHO Soil Classification System, Soil surveys for highway construction, Soil Compaction,	2	3		K&S

	CBR Test, Hveem Stabilometer Test, pavement distress survey and rating procedure, (deflection, roughness, skid resistance).				
5. A3	Overview of maintenance and rehabilitation techniques, network level management, project level management.	3	7		S&C
6. A4	Design of Flexible Pavements, AASHTO Design Method, Design of Rigid Pavement, AASHTO Design Method, Pavement Maintenance & Rehabilitation, Pavement distress.	4	1,4		K&S
7. B	Intellectual skills:				
8. B1					
9. B2					
10. B3					
11. C	Subject specific skills:				
12. C1					
13. C2					
14. C3					
15. D	Transferable skills:				
16. D1					
17. D2					
18. D3					

***Bloom Taxonomy Levels**

Level #	1	2	3	4	5	6
Level Name	Knowledge	Comprehension	Application	Analysis	Evaluation	Synthesis

**** Descriptor (National Qualification Framework Descriptors): K : Knowledge, S: Skill, C: Competency.**

Program Learning Outcome (PLOs):

Program Learning Outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills, and behaviours that students acquire as they progress through the program. A graduate of the () program will demonstrate:	Descriptors**		
	K	S	C

1.	Knowledge of the basics of mathematics, science and engineering with deep knowledge of civil engineering.	K		
2.	Achieve and identify engineering problems, social knowledge, health, safety, legal, management, sustainability and cultural issues and the consequent responsibility towards civil engineering.	K		
3.	Ability to apply knowledge in mathematics, science and engineering.		S	
4.	Ability to design, conduct experiments, analyze and interpret data.		S	C
5.	The ability to design a system, component or process to meet the needs required within the constraints of real economic, environmental, social, political and moral in addition to the requirements of health, safety, construction and sustainability.		S	C
6.	Ability to identify, formulate and solve engineering problems.			C
7.	Extensive education necessary to explain the impact of engineering solutions in a comprehensive economic, environmental and social context.	K	S	
8.	Ability to use the techniques, skills and modern engineering tools for engineering practices.			C
9.	Ability to work with multidisciplinary teams.		S	C
10.				
11.				

**** Descriptors according to the national qualifications framework (K: knowledge, S: skill, C: Competency)**

Weekly Schedule *(please choose the type of teaching)*

☐ **Face to Face**

☐ **Hybrid** *(2 Lectures Face – To - Face +1 Lecture Asynchronous)*

☐ **Hybrid** *(1 Lectures Face – To - Face +1 Lecture Asynchronous)*

☐ **Online** *(2 Lectures Synchronous +1 lecture Asynchronous)*

Week	First Lecture (.....)	Second Lecture (.....)	Third Lecture (.....)	Ach. ILOs	Ach. PLOs	Descriptors**
1	Introduction	19.				
2	Function of Pavements, and Typical Roadway Cross Section for flexible and rigid pavement, pavement process, pavement networks definitions and classifications.	20.				
3	Bituminous materials	21.				
4	Soil engineering for highway, Soil characteristics, Basic properties of soil, AASTHO Soil Classification System, Soil	22.				

	surveys for highway construction, Soil Compaction, CBR Test, Hveem Stabilometer Test, pavement distress survey and rating procedure, (deflection, roughness, skid resistance).					
5	Overview of maintenance and rehabilitation techniques, network level management, project level management.	23.				
6	Design of Flexible Pavements, AASHTO Design Method, Design of Rigid Pavement, AASHTO Design Method, Pavement Maintenance & Rehabilitation, Pavement distress.	24.				
7		25.				
8		26.				
9		27.				
10		28.				
11		29.				
12		30.				
13		31.				
14		32.				
15		33.				

* K: Knowledge, S: Skills, C: Competency

Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

- Interactive videos
- Practice Labs
- Discussion Forums
- Quizzes
- Other Interactive online activities
- Reports

Course Policies:

A- Attendance policies:

The maximum allowed absences is 15% of the lectures.

B- Absences from exams and handing in assignments on time:

Midterm exam can be retaken based on approval of excuse by the instructor's discretion.

Not handing assignment on time will incur penalties.

C- Academic Health and safety procedures

D- Honesty policy regarding cheating, plagiarism, and misbehaviour:

Cheating, plagiarism, misbehaviour will result in zero grade and further disciplinary actions may be taken.

E- Grading policy:

- All homework is to be posted online through the e-learning system.
- Exams will be marked within 72 hours and the marked exam papers will be handed to the students.
- Online Activities (Course Videos, Practice labs, Discussion Forums, Quizzes) **20%**
- Midterm **30%**
- Final Exam **50%**

F- Available university services that support achievement in the course: **E-Learning Platform, Labs, Library.**

Required equipment:

- **PC / Laptop with webcam and mic**
- **Internet Connection**
- **Access to the IU E-Learning Platform at: <https://elearn.iu.edu.jo/>**
- **E-learning plan**
- Satisfaction questionnaires for online and face-to-face learning
- Software for e-learning
- Training

Assessment Tools implemented in the course:

- Final Exam
- Midterm Exam
- Quizzes
- Homework
- Practice Labs
- Discussion Forums
- Periodic reports for learning assessment
- Improvement plans for online or face-to-face teaching
- Others:.....

Responsible Persons and their Signatures:

Course Coordinator		Completed Date	/ /
		Signature	
Received by (Department Head)		Received Date	/ /
		Signature	