The Hashemite University
Faculty of Engineering
Civil Engineering Program
Course Syllabus

Course Title:	Highway Engineering & Design	**Course Number:**	110401368
Designation:	Compulsory	**Prerequisite(s):**	110401365 Surveying
Instructor:	Dr. Yahia Khalayleh	**Instructor's e-mail:**	yahia@hu.edu.jo
Office Hrs.	Mon, Wed 11.00 – 12.00		

Course description: Street and highway functional classifications and types of lanes. Highway cross-section elements. AASHTO geometric design standards. Passing & stopping sight distance & superelevation. Design of horizontal and vertical curves, earthwork operations and mass haul diagram. Intersection types and design, parking facilities and highway drainage design.

Textbook(s): Traffic & Highway Engineering by Nicholas Garber and Lester Hoel, Fourth Edition, Brooks/Cole.

Other references: Introduction to Transportation Engineering. by James H. Banks published by Mc Graw Hill. And highway engineering by Paul H. Wright. Traffic Engineering by Roger.P.Roess…..Transportation Engineering by C.Jotin Khisty

Major Topics Covered:

TOPICS	No. of Weeks	Contact Hours*
Introduction	1	3
Cross-Section Elements	1	3
Sight Distances	2	6
Horizontal Alignment	3	9
Vertical Alignment	3	9
Parking Facilities	1	3
Intersection Design	2	6
Highway Drainage	2	6
TOTAL	15	45

*Contact hours include lectures, quizzes and exams

Specific Outcomes of Instruction (Course Learning Outcomes): Upon the completion of this course, the students are expected to achieve the following**:**

1- Considerable knowledge of Highway classification & cross-section elements, and enable the students to design H&V alignment and to apply the AASHTO standards for highway geometric design. **1,2**
2- To enable the student to estimate the earthwork quantities (Volume of Cut & Fill). **2**
3- Introducing students to intersection design and to provide them with a considerable knowledge of intersection types. **2**
4- To be able to estimate the surface water runoff & to design the Highway drainage structure. **2**

Student Outcomes (SO) Addressed by the course:

ABET a-k	Outcome description General Engineering Student Outcomes	Contribution
1	An ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science & mathematics.	**M**
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.	**H**
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.	
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		

Class/laboratory schedule: 3 class sessions each week; 50 minutes each.

Grading Plan:

Project (30 Points)
Midterm Exam (30 Points)

Final Exam the registrar will announce (40 Points)

General Notes: A team design project is required. The project will involve geometric design of a road 2km long. This will include design of horizontal & vertical alignment, and finding the quantities of cut & fill for the project.