



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.: Sun, Tues & Thus 1-2pm Mon, Wed 12.30 – 2pm

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.

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. **a, d, e, h**
- 2- To enable the student to estimate the earthwork quantities (Volume of Cut & Fill). **a, e**
- 3- Introducing students to intersection design and to provide them with a considerable knowledge of intersection types. **h**
- 4- To be able to estimate the surface water runoff & to design the Highway drainage structure. **h**



**The Hashemite University
Faculty of Engineering
Civil Engineering Program
Course Syllabus**



Student Outcomes (SO) Addressed by the course:

ABET	Outcome description	Contribution
	General Engineering Student Outcomes	
(a)	An ability to apply knowledge of mathematics, science, and engineering	M (20)
(b)	An ability to design and conduct experiments, as well as to analyze and interpret data	
(c)	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	
(d)	An ability to function on multidisciplinary teams	M (20)
(e)	An ability to identify, formulate, and solve, engineering problems	H (40)
(f)	An understanding of professional and ethical responsibility	
(g)	An ability to communicate effectively	
(h)	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	M (20)
(i)	A recognition of the need for, and an ability to engage in life-long learning	
(j)	A knowledge of contemporary issues	
(k)	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	
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 (40 Points) Will be announced by the registrar

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.