



Jordan University of Science and Technology
Faculty of Engineering
Civil Engineering Department

CE443 Highways Geometric - JNQF Level: 7

First Semester 2024-2025

Course Catalog

3 Credit Hours. 3 Credit hours (3 h lectures). Principles of route location. Horizontal alignment; design and setting out (circular curve element, setting out of circular and transition curves, superelevation. Sight distance; stopping and passing sight distance. Vertical alignment; design and setting out (properties of vertical curves). Coordination of horizontal and vertical curves. Capacity of two-lane highways. Geometric design of intersection

Teaching Method: On Campus

Text Book

Title	Route Surveying and Design
Author(s)	Carle F. Meyer and David W. Gibson
Edition	14th Edition
Short Name	1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref #2	A Policy on Geometric Design of Highways and streets.	American Association of State Highway and Transportation Officials (AASHTO)	4th Edition	
#2	A Policy on Geometric Design of Highways and streets	American Association of State Highway and Transportation Officials (AASHTO)	4th Edition	

Instructor

Name	Prof. Mohammed Obaidat
Office Location	C2 L2

Office Hours	Mon : 10:00 - 11:30 Tue : 14:30 - 16:00 Wed : 10:00 - 11:30 Thu : 14:30 - 16:00
Email	mobaidat@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Mon, Wed : 11:30 - 13:00 Room: C2006

Prerequisites		
Line Number	Course Name	Prerequisite Type
233411	CE341 Surveying	Prerequisite / Study
233450	CE345 Transportation Engineering	Prerequisite / Study
233010	CE301 Dynamics For Civil Engineers	Prerequisite / Pass

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Principles of route location.	
Weeks 2, 3	Simple circular curves types; degree of curve, measurements on curves, length of curve, computation of curve parts, location of intersection points, setting out.	
Week 4	Compound circular curves.	
Week 5	Reverse circular curves.	
Week 5	Highway design elements. 1	
Week 6	Sight distance (passing and stopping) along circular curves.	
Weeks 7, 8	Composite and Transition curves; radial force and design speed, superelevation; uses; length; types; transition shift; setting out; design of composite curves; and wholly transition curves.	
Weeks 8, 9	Methods of attaining superelevations.	
Weeks 9, 10, 11	Vertical curves; gradients, purposes, types, vertical curve equation, sight distances, K-values, length, setting out, highest and lowest points, and vertical curves with unequal tangent lengths.	
Week 12	Coordination of vertical and horizontal alignment.	
Week 13	Effect of curvature on calculation of cross-sectional areas and volumes. Widening computation and attaining.	
Week 14	Setting out; aims and important considerations, methods of vertical and horizontal control	

Weeks 15, 16	Design of intersections and interchanges.	
-----------------	---	--

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Design and layout horizontal and vertical alignments. [1PI-2c] [1L7S3]	25%	Final exam, midterm, quizzes
Design intersections and propose solutions for special problems [1PI-4b] [1L7S2]	25%	Final exam, midterm, quizzes
Practice geometrical problems, setting out and layout [1PI-6b] [1L7C3]	25%	Final exam, quizzes
Illustrate the basic principles of highway design geometry and route survey. [1PI-1a] [1L7K1]	25%	

Relationship to Program Student Outcomes (Out of 100%)											
PI-1a	PI-2a	PI-2b	PI-2c	PI-2d	PI-3a	PI-4a	PI-4b	PI-5a	PI-6a	PI-6b	PI-7a
25			25				25			25	

Relationship to NQF Outcomes (Out of 100%)			
L7K1	L7S2	L7S3	L7C3
25	25	25	25

Evaluation	
Assessment Tool	Weight
Final exam	40%
midterm	40%
quizzes	20%

Policy	
Absence	Regulations will be applied
cheating	Cheating is a crime and restrict regulations will be applied.

Date Printed: 2024-10-27