



## Course Syllabus

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
CEE-371	Road and Highway Engineering	5
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
CEE-152	Engineering	Fall/Spring
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Required	Civil & Environmental Engineering	English
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
1 <sup>st</sup> Cycle	Dr Gialama Tatiana-loanna	3 <sup>rd</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face-to-face	N/A	None

### Course Objectives:

The main objectives of the course are to:

- Develop an understanding of highway engineering principles and practice, as it refers to geometric design, structural design, construction and maintenance.
- Introduce basic concepts and characteristics of highways and city roads, including layout, traffic requirements, safety and control, drainage, sub-grade structure and surface pavements.
- Study the procedures and techniques needed for the planning, design and construction of a highway installation.
- Understand the development planning process and how highway engineers interact with this.
- Provide students with the necessary skills to be solve problems on geometric design, traffic volume, channelization, and hydrology.
- Understand the basic concepts of traffic analysis and management.

### Learning Outcomes:

After completion of the course students are expected to be able to:

- Demonstrate knowledge and understanding of highway Engineering, relating particularly to procedures and standards for geometric design, structural design and pavement maintenance.
- Demonstrate knowledge and understanding of the principles and practice of route

location and geometric design of highways.

- Perform road pavement design and analysis, in relation to safety and driver comfort, focusing on horizontal and vertical alignment.
- Design the geometric curves of a road pavement.
- Evaluate and select the appropriate materials for use in different road layers for flexible, rigid and composite road pavements.
- Draw an appropriate road monitoring and maintenance plan.

### **Course Content:**

- The Transportation Planning Process
- Forecasting Future Traffic Flows.
- Scheme Appraisal for Highway Projects.
- Basic elements of highway traffic analysis.
- Determining the capacity of a highway.
- The Design of Highway Intersections.
- Geometric Alignment and Design.
- Highway Pavement Materials and Design.
- Structural Design of Pavement Thickness.
- Pavement Maintenance.
- The highway engineer and the development process.

### **Learning Activities and Teaching Methods:**

Lectures, in-class examples and exercises, homework assignments.

### **Assessment Methods:**

Mid-term exam(s), Project assignment, Final exam (comprehensive).

**Required Textbooks / Readings:**

<b>Title</b>	<b>Author(s)</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
Highway Engineering, 3 <sup>rd</sup> Edition	M. Rogers, B. Enright	Wiley-Blackwell	2016	978-1-118-37815-1

**Recommended Textbooks / Readings:**

<b>Title</b>	<b>Author(s)</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
Highway Engineering	P. H. Wright, K. Dixon	Wiley	2003	978-0-471-26461-3
Highway Engineering: Pavements, Materials and Control of Quality	A. Nikolaidis	CRC Press	2017	9781138893764