

**SYLLABUS : ROADS AND TRANSPORTATION SYSTEMS**

**MDP PROGRAM**

**NATURAL SCIENCE AND ENGINEERING**

**SYLLABUS**

**ROADS AND TRANSPORTATION SYSTEMS**

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## SYLLABUS : ROADS AND TRANSPORTATION SYSTEMS

### **Course objectives**

This course aims to instill knowledge and develop skills and expertise. It focuses on the development of the student's management capacity in the context of sustainably developed roads or transportation systems. Thus, the focus of the course will be on the social, economic and environmental (in relation to climate change) impact of such projects, especially in rural areas.

### **Pedagogical approach**

The pedagogical approach will be based on the following points:

- The course is based on the active participation of students. Readings will be given for each lecture and the presentations by the professor will be supplemented by student discussions.
- Students will demonstrate their accumulated knowledge at the end of the module by completing a small project.
- One month of business experience is recommended for the students for the road project. Otherwise, regular visits to the site are encouraged.

### **Teaching Materials**

A video projector will be needed for the professor's presentations and for illustrating concepts. Computer access will be necessary for all students.

### **Evaluation**

Concepts and techniques acquired during the course will be assessed by:

- Two individual exams [that](#) will take place in the middle and at the end of the course. These will each count for 30% of the final grade.
- A small project done in teams of two and supervised by the instructor will count for 40% of the final grade.

### **Prerequisites**

None. However, it is very useful to have basic computer skills for browsing the web and word processing.

### **Course Schedule**

*Chapter 1: General Information*

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- 1.1. History of road infrastructure
- 1.2. Economic functions of roads
- 1.3. The road as a planning tool
- 1.4. Contemporary problems with road networks

### Chapter 2: Organization of studies on road infrastructure

- 2.1. Features of road infrastructure projects
- 2.2. Project participants and collaboration
- 2.3. Stages of the project
- 2.4. Managing the project

### *Chapter 3: Technical skills and areas of investigation needed to develop a road project*

- 3.1. Different types of roads
- 3.2. Technical instructions
- 3.3. Themes of the road alignment study
- 3.4. Route studies

### *Chapter 4: Sustainable development and road infrastructure*

- 4.1. Concepts of sustainable development
- 4.2. Sustainable development and transportation infrastructure
- 4.3. Sustainable development and management of transportation infrastructure
- 4.4. Sustainable development and road construction technology

### *Chapter 5: Rural Roads*

- 5.1. Brief description of the areas
- 5.2. Potential environmental impacts
- 5.3. Program design – sector-specific tips
- 5.4. Questions of surveillance and monitoring on rural roads
- 5.5. Rural roads: economic road towards reducing poverty

### *Chapter 6: Transport systems*

- 6.1. Introduction to transport demand
- 6.2. Modeling transport demand
- 6.3. Planning, methods and instruments

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6.4. Rating capacity

6.5. Organization of traffic

6.6. Issues of transport and sustainable development