



COURSE: **BASICS OF ROADS, RAILWAYS AND AIRPORTS**

ACADEMIC YEAR: **2018-2019**

TYPE OF EDUCATIONAL ACTIVITY: **Characterizing**

TEACHER: **Prof. Maurizio DIOMEDI (6 ECTS – head teacher), Prof. Donato CIAMPA (3 ECTS)**

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Language: **Italian**

ECTS: **9**

n. of hours: **90**

Campus: **Potenza**
Dept./School: **Engineering**
Program: **Beachelor's Degree in
Civil and Environmental
Engineering**

Semester: **I**

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

Acquisition of the theories and techniques addressed in the planning, design, and adjustment, of road, rail and airport infrastructures, into a functional relationship to the human factor and road safety.

The main **knowledge** provided are:

- Physical interaction between the way and the single land vehicle
- Current regulations for road design, railway and airport
- The visibility distances;
- Relations between the road geometry and traffic safety;
- The functioning of road intersections;
- The geometrical and technological characteristics of the railway infrastructures;
- Elements for the airports design.

The main **skills** transferred are:

- The geometric design of road infrastructures;
- The design of road intersections;
- The geometric design of railway infrastructures;
- The geometric design of airport runways.

In the specific, teaching contributes to the following learning outcomes:

- **Knowledge and ability of comprehension:** the student must demonstrate of knowing and being able to understand the problems relative to the geometric design of Road Infrastructures.
- **Ability to apply knowledge and comprehension:** the student must demonstrate that he is able to use the theoretical tools acquired to solve engineering problems with particular reference to the Road Infrastructures.
- **Autonomy of judgment:** the student must be able to deepen in an independent way what he has learned. It must develop an appropriate synthesis capacity and must be able to solve specific problems in the fields of road and railway infrastructures.
- **Communication ability:** the student must be able to communicate and explain clearly the acquired knowledge, even to people who are not experts. It must also be able to use the technical-scientific language properly. The correct, clear and concise expression, therefore, constitutes an element of primary judgment.
- **Learning Ability:** The student must progressively become independent from the teacher. It must be able to update itself by consulting texts and publications in order to acquire the ability to attend deepening courses, specialized seminars and Masters.

PRE-REQUIREMENTS

None.



SYLLABUS

The road transport. The road network and the traffic categories. The vehicle and the road. The motion resistances of road vehicles. Visibility distances. Planimetrical development of the road axis: straights, circular curves, clothoid. Profile of the road axis: vertical dip and bump. Speeds diagram and plano-altimetric coordination. Roads cross sections. Mountain roads. Road intersections. Overview of road circulation in condition of continuous flow. Road section design. Overview on the road waiting phenomena and applications to the road design. Drafting of the road project. The motion resistances of railway vehicles. The gauge of the track. The curve motion dynamic and the superelevation of the outer rail. The parabolic curves. Plants for the railway movement. The high speed rail. The bases for airports design.

TEACHING METHODS

The didactic organization provides for 90 total hours. The course includes an exercitation about geometrical project of a short road and a numerical exercise on dimensioning of some geometrical elements of railway infrastructures. These exercises will be developed into groups of three students.

EVALUATION METHODS

Oral examination during which to ensure the knowledge and skills of the candidate. The questions are designed to check the clear understanding, by the candidate, of the phenomena and of the quantitative tools available to conduct the necessary analysis. The positive evaluation of guided exercises developed during the course represents a prerequisite to access to the oral examination. The overall evaluation will take into account the level of maturity reached in the exercises.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

- Agostinacchio M., Ciampa D., Olita S. (2010), *Strade Ferrovie Aeroporti* III edizione, EPC Srl, Roma.
- Agostinacchio M., Ciampa D., Olita S. (2011), *La Progettazione delle Strade* II edizione, EPC Srl, Roma.
- Ferrari P., Giannini F. (1997), *Ingegneria Stradale* Vol. 1 e 2, ISEDI.
- Tesoriere G., (1993), *Strade Ferrovie Aeroporti*, Vol. 1, UTET.

INTERACTION WITH STUDENTS

At the beginning of the course, after describing the objectives, program and methods of verification, the teachers provide students the educational material and simultaneously collect the list of students who intend to enroll in the course, together with name, surname, matriculation number and email address.

Prof. Diomedì receives students in his office, at the 4th floor of the School of Engineering, on Wednesday (10:30-11:30). Prof. Ciampa receives students in his office, at the 4th floor of the School of Engineering, on Tuesday (10.30-11.30). The Professor is always available through his e-mail and soon after each lesson.

EXAMINATION SESSIONS (FORECAST)¹

13/02/2019, 13/03/2019, 10/04/2019, 15/05/2019, 12/06/2019, 17/07/2019, 18/09/2019, 16/10/2019, 13/11/2019, 11/12/2019.

SEMINARS BY EXTERNAL EXPERTS YES NO

FURTHER INFORMATION

The attendance of didactic activities is automatically satisfied at the end of the semester in which they are located.

¹ Subject to possible changes: check the web site of the Teacher or the Department/School for updates.