



COURSE: "MATERIALS FOR ROADS, RAILWAYS AND AIRPORTS CONSTRUCTION" (9 ECTS)			
ACADEMIC YEAR: 2017-2018			
TYPE OF EDUCATIONAL ACTIVITY: Characterizing			
TEACHER: Prof. Michele AGOSTINACCHIO			
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Language: Italian			
ECTS: 9	n. of hours: 81 of which: <ul style="list-style-type: none">• n.48 hours for Lessons• n.33 hours for Tutorials/ Practice	Campus: Potenza School of Engineering Program: Master's degree in Civil Engineering	Semester: annual

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

Acquire the theories and techniques aimed at construction and testing of rail and road infrastructure through the study of traditional and innovative materials, subjected to the stresses induced by dynamic loads. Tackle the problems relating to stability and computational analysis, both static and dynamic, of the road structures and pavements.

The main **knowledge** provided are:

- The construction of the road structure;
- The bituminous binders and the rheology of bitumens;
- The mixtures used in road superstructures;
- The typologies of road pavements;
- Elements for the railways construction.

The main **skills** transferred are:

- The analytical and experimental study of the materials used on roads construction;
- Project and the experimental verification of the road structure;
- Design of road pavements;
- The use of calculation codes.

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 design, building, maintaining and test of road and railway embankments.
- **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

It's suggested to pass previously the exam of "Basics of Roads, Railways and Airports"



SYLLABUS

The construction of the road structure. Elements of road geotechnics. The stone aggregates. The bituminous binders. Rheology of bitumen and SHRP program. Mixtures used in pavements. The traditional asphalt concretes. The non-traditional asphalt concretes. The contract specifications for road work. The use of C&D in road construction. Approach to the design of road pavements and catalogs of superstructures. Design of flexible, semi-rigid and rigid pavements: empirical, semiempirical and rational calculations methods. Use of calculation codes for automatic design of roads, railways and airports. Overview of quality control. Elements for the railways construction: materials and techniques.

TEACHING METHODS

The didactic organization provides for 81 total hours of which 48 hours of lecture and 33 of practice. The course requests the completion of the technical project that began in the course of "*Basics of Roads, Railways and Airports*" about the project of a short road. This exercise will be developed in groups of three students. The course also requires the preparation of a series of numerical exercises about the topics developed during the lessons (materials, laboratory tests, design of road pavements, etc.).

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.
- Agostinacchio M., Ciampa D., Olita S. (2012), *Movimento terra e macchine per lavori stradali*, EPC Srl, Roma
- Ferrari P., Giannini F. (1997), *Ingegneria Stradale* Vol. 1 e 2, ISEDI.
- Tesoriere G., (1993), *Strade Ferrovie Aeroporti*, Vol. 1 e 2, UTET.
- Giannini F., La Camera F., Marchionna A. (1993), *Appunti di Costruzione di Strade Ferrovie ed Aeroporti*, Masson ed. ESA.
- La Camera F., (1992), *Il calcolo del progetto stradale la planimetria*, Masson ed. ESA.
- Appunti del corso forniti dal Docente.

INTERACTION WITH STUDENTS

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

Prof. Agostinacchio receives students in his office, at the 4th floor of the School of Engineering, on Wednesday (15.00-18.00). The Professor is always available through his e-mail and soon after each lesson.

EXAMINATION SESSIONS (FORECAST)¹

14/02/2018, 14/03/2018, 18/04/2018, 23/05/2018, 27/06/2018, 18/07/2018, 19/09/2018, 24/10/2018, 21/11/2018, 12/12/2018.

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.