

COURSE: **Construction and planning of forest systems**

ACADEMIC YEAR: **2016-2017**

TYPE OF EDUCATIONAL ACTIVITY: **Characteristic**

TEACHER: **Prof. Pietro PICUNO**

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Language: **Italian**

ECTS: <b>n.4 ECTS lessons + n.2 ECTS training practice</b>	n. of hours: <b>n.32 hours lessons + n. 32 hours training practice</b>	Campus: <b>Potenza - SAFE School</b> Program: <b>Forestry and Environmental Science</b>	Semester: <b>1<sup>st</sup></b>
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#### EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

The course introduces to issues related to architectural and construction for the construction of forestry buildings, as well as plant types for the control of the microclimate environment, the principal component for microclimatic control, even with the use of electronic devices, confined environment. The training objective is to observe and critically analyze the forestry structures and on the implementation of application of survey, mapping and land use planning of forestry systems, also through the definition of the constructive aspects.

#### PRE-REQUIREMENTS

The student has to be passed the following courses as a pre-requisite:

- Mathematics (concept of derivate and integral and their use for calculation);
- Physics (concepts from statics, thermo-dynamics and optics);
- Survey, drawing and GIS (topographical survey, Computer Aided Design e fundamentals about GIS).

#### SYLLABUS

##### Chapter 1: Monitoring and climate control of an agricultural-forestry building (16 hours of lesson)

Heat transmission. Transmission by conduction, convection and radiation. Heating plants. Principles of psychrometry. The Mollier diagram. Ventilation and cooling systems. Gas and dust control.

##### Chapter 2: Design and implementation of a forestry building (16 hours of lesson)

Structural patterns: supporting wall and independent-frame structures. Structural building components: beams, columns, slabs. Foundations. Building materials: concrete, iron, wood, plastics. Construction techniques with reinforced concrete. Finishes of buildings: walls, fixtures, equipment, floors and walls. Project preparation: report, drawings, administrative processing.

##### Chapter 3: Principles of Cartography and Photogrammetry (16 hours of in Laboratory training practice)

Maps and representation scale. Perspective, cylindrical and conical projections. Mercator and Gauss Projections. Stereographic projection. IGMI (Italian Military Geographical Institute), cadastral and regional maps. Orthophotomaps. Photogrammetry, photo-interpretation, remote sensing. Stereoscopy. Terrestrial photogrammetry and aerial photogrammetry. Computer Aided Technical Design (CAD).

##### Chapter 4: Geographic Information Systems for planning forest systems (16 hours of in Laboratory training practice)

Principles and use of a Geographic Information System for planning the forest systems. Applications in planning and management of protected areas, energy systems, the agricultural-forest landscape, from agricultural production and *Smart Communities*.

#### TEACHING METHODS

The course includes n. 64 hours of teaching, divided into theoretical lessons (32 hours of lectures) and training practice (n.32 hours of guided exercises in the laboratory). More in detail, the course is organized in 16 hours of classes for each one of the first 2 chapters above reported, in addition to n. 16 hours of practical training and project in the laboratory of Survey, Drawing and GIS of the SAFE School, for each one of the following 2 chapters above reported.

#### EVALUATION METHODS

The final exam is aimed to ascertain the level of achievement of the knowledge and skills acquired by the student. It takes place in one session in the presence of the Board of Examiners. The examination is ordinarily conducted on the following phases:

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- a) Presentation by the student of the project personally prepared - individually or in groups - as his/her own annual project;
- b) at the discretion of the Commission, some questions are asked on the four sections comprising the course.
- c) a final general discussion about the use of advanced technologies for the analysis, planning and management of forest systems completes the examination.
- The final vote is the average of the votes cast by each member of the Commission, unit-rounded. If there is unanimous judgment by the members of the Commission, a "*cum Laude*" acknowledgement may be allowed.
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#### TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

##### Textbooks (in Italian):

- R. Chiumenti. "*Costruzioni Rurali*". Edagricole, Bologna.
  - A. Biasini, R. Galetto, P. Mussio, P. Rigamonti: "*La cartografia e i sistemi informativi per il governo del territorio*". Franco Angeli, Milano.
  - N. Dainelli, F. Bonechi, M. Spagnolo, A. Canessa "*Cartografia numerica - Manuale pratico per l'utilizzo dei GIS*". Dario Flaccovio Editore.
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#### INTERACTION WITH STUDENTS

At the beginning of the course, after describing the general objectives, program and methods of exam, the teacher informs the students about the recommended educational material and related retrieval mode. Simultaneously, it is collected a list of students who want to participate into the practical training exercises of the course, together with name, serial number and email.

Office hours: each Wednesday, from 9:30 to 11:30 am at the Professor's Office – SAFE School. In addition to this weekly reception, the teacher is available by appointment, to be fixed by direct contact with the student through e-mail or phone.

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#### EXAMINATION SESSIONS (FORECAST)<sup>1</sup>

14 July 2016, 21 September 2016, 12 October 2016, 16 November 2016, 14 December 2016, 1 February 2017, 1 March 2017, 18 April 2017, 10 May 2017, 7 June 2017, 12 July 2017, 12 September 2017

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#### EVALUATION BOARD

**Prof. Pietro PICUNO, dr. Alfonso TORTORA, Ing. Dina STATUTO**

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SEMINARS BY EXTERNAL EXPERTS    YES     NO

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#### FURTHER INFORMATION

**Course Code: FAM/0514**

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