

DIAGNOSTICS FOR CULTURAL HERITAGE (LM61)

(Università degli Studi)

Teaching BOTANY AND BIODEGRADATION

GenCod A005455

Owner professor Gian Pietro DI SANSEBASTIANO

Teaching in italian BOTANY AND BIODEGRADATION

Teaching BOTANY AND BIODEGRADATION

SSD code BIO/01

Reference course DIAGNOSTICS FOR CULTURAL HERITAGE

Course type Laurea Magistrale

Credits 6.0

Teaching hours Ore-Attività-frontale: 42.0

For enrolled in 2018/2019

Taught in 2018/2019

Course year 1

Language INGLESE

Curriculum PERCORSO COMUNE

Location

Semester Primo-Semestre

Exam type Orale

Assessment Voto-Finale

Course timetable

<https://easyroom.unisalento.it/Orario>

BRIEF COURSE DESCRIPTION

The course cover biology, biodiversity and ecology of plants, algae and fungi providing basic knowledge on general topics and comprehension of related aspects such as:

- *plant derived materials (paper, fibers, wood);*
- *biodeteriorating organisms;*
- *plants as elements of landscape and cultural heritage.*

Topics are divided into 4 parts:

1. *Biodeterioration mechanism and biomaterials;*
2. *plant biology and biodiversity, cyanobacteria, algae, fungi and eukaryotic cell;*
3. *vascular plants tissues and anatomy;*
4. *the study of flora and the environment.*

Special attention will be paid to microscopical analysis of organisms and plant anatomy (with laboratory based practical)

REQUIREMENTS

Students approaching the course should already have basic notions of biology and chemistry, as provided by most of secondary schools in Italy.

COURSE AIMS

Understanding of biological processes involved in cultural heritage preservation, of organisms' development and population dynamics. Comprehension of molecular characteristics of plant derived materials. Comprehension of physical and chemical damages caused by organisms on organic and inorganic materials.

Awareness of the peculiarities of biodeterioration and of the information available with the study of flora and biofilms.

TEACHING METHODOLOGY

- *classroom teaching 6 CFU*
- *laboratory based practical 1 CFU*

Classroom teaching consists of 2 hours' sessions while laboratory is provided in sessions of about 4 hours.

ASSESSMENT TYPE The final test is an oral exam that will verify awareness of the student and his/her ability to use the acquired knowledge to solve basic problems about cultural heritage. Marks will be expressed in thirtieths (/30).
The student is evaluated on the basis of his/her knowledge and ability to use such knowledge applied to practical problems. The ability to use the microscope and recognize samples will also be evaluated.

OTHER USEFUL INFORMATION *Students can require by email to meet the teacher every day from 15.00. The appointment will be fixed within 2 days. Exam request will be done through the "sistema VOL" online*

FULL SYLLABUS *Introduction: Biodeterioration general mechanisms and planning of cultural heritage preservation.
Organisms studied by the general botany: cyanobacteria, micro-algae and algae. The case of study of biofilms. Biology of fungi and lichens. Land tallophyte, the mosses. Elements of population dynamics.
The eukaryotic plant cell: development and differentiation, plastids, photosynthesis, the endomembrane system, secretion and vacuolar traffic, the cell wall deposition and composition.
The vascular plant anatomy: meristems and tissues, primary structure of root, primary structure of stem, leaf, flower, formation of secondary meristems, secondary structure of stems, wood.
The study of flora and the environment: concepts and elements of plants ecology, phytosociology elements, case of studies.*

Laboratories: Observation of flora at the botanical garden, microscopical observation of slides with fresh and fixed samples showing small organisms and anatomical structures of vascular plants.

REFERENCE TEXT BOOKS *PDF files will be made available at:*

- www.disteba.unisalento.it/scheda_personale/-/people/gp.disansebastiano/

Without a dedicated text-book, it is important to assist to the classes but valid support is provided by the following books:

- *Elementi di biologia vegetale, Botanica Generale - Arrigoni, Ed. Ambrosiana*
- *Biologia e diversità dei vegetali. Gerola, UTET.*
- *Ecologia Vegetale. Pignatti, UTET.*
- *Aerobiologia e beni culturali. Mandrioli e Caneva, Nardini Editore.*

Il controllo del degrado biologico. Caneva, Nugari, Pinna e Salvatori, Nardini Editore.
