DIPARTIMENTO DI SCIENZE

COURSE: BOTANY	
ACADEMIC YEAR: **2019-2020**	
TYPE OF EDUCATIONAL ACTIVITY: characterizing	
TEACHER: Prof. Carmine COLACINO	
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phone: 0971-206-234	mobile (optional):
Language: ITALIAN (English on request)	

ECTS: (4 of lessons and 2 of tutorials/practice)	n. of hours: (32 hrs. of lessons and 24 hrs. of tutorials/practice)	Campus: **Potenza** Dept./School: **Dipartimento di Scienze**	Semester: 2nd (dates): March 2nd, to May 31st, or June 20th, 2019

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

The course of botany aims to provide a basic knowledge of plant biology for the study and understanding of the applied subjects to be addressed in subsequent years. From a cultural point of view, the course of botany aims to allow a conscious approach to some of the major environmental problems, and on the sustainable use of biodiversity and biotechnology. The central theme of this course is evolution, which has allowed a unified interpretation of the enormous diversity of living organisms, their interactions with each other, their distribution, etc.

Tutorials: Anatomy of Spermatophytes (slides). Use of keys for the identification at the species level of ferns and angiosperms of the local flora of Basilicata.

PRE-REQUIREMENTS

A basic knowledge of GENERAL BIOLOGY, GENERAL CHEMISTRY and INORGANIC CHEMISTRY, ORGANIC CHEMISTRY (but is not required to pass these courses before that of BOTANY)

SYLLABUS

A basic knowledge of cytology and genetics is considered already acquired from the course of general biology.

Photosynthesis, photorespiration, carbon concentration methods (CCM): CAM and C_4. Structure and function: Meristems and tissues; Stem and root: primary and secondary Structure; Leaves. Physiology of long distance transport (xylematic and phloematic transport). Absorption of water and nutrients, soil and nutrition. Flower and sexual reproduction (meiosis and alternation of generations), seeds and fruits. Asexual reproduction. Plant biotechnology and genetic engineering. Reactions to internal and external signals (plant hormones, phytochromes, biological clock, phototropism, defense).

A Darwinian conception of life. Development of the theory of evolution; microevolution: genetic changes within populations; speciation; macroevolution. The phylogeny and the tree of life. Classification of plants (binomial system). Evolutionary data and their reconstruction. The earliest forms of plant life. The colonization of the Land. The first forests. Bryophyta. Pteridophytes. Spermatophytes. Origin of Angiosperms. The last 66 million years. Mass extinctions and persistent populations. Evolutionary theories and plant fossils.

TEACHING METHODS

Classroom lectures, lab exercises

EVALUATION METHODS

Two tests are administered during the course (these are optional, and reserved to students actively following and participating in classroom lectures and lab exercises). Final oral examination (for everyone) with a practical part aimed at assessing the student skill in using the microscope and in analyzing prepared plant anatomical slides.
Evaluation of a personal herbarium of 10 species prepared by the student (to be presented one week before the date of examination.)

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

* Reece, Urry, Cain, Wasserman, Minorsky, Jackson. 2015. Campbell - *La forma e la funzione delle piante (10a edizione).* Pearson (use English edition instead)

* Reece, Urry, Cain, Wasserman, Minorsky, Jackson. 2015. Campbell - *Meccanismi dell'evoluzione e origine della diversità (10a edizione).* Pearson (Cap. 1-5; 8-10) (use English edition instead)

For lab exercises: SPERANZA, CALZONI (1996). *Struttura delle piante in immagini*. Zanichelli (available in the Library) and *Guida alla preparazione dell'erbario* (downloadable from the teacher's web site, it gives guidelines for the preparation of the personal Herbarium to be presented at the examination, in Italian.) The guides (Flora of Italy -by Pignatti- first and second edition) for the identification of plant species will be made available during the lab classes. These are in Italian. Alternatively, Floras in English language can be used (e.g. Flora Europaea).

Other texts:

* Willis & McElwain. 2014. *The Evolution of Plants. 2nd edn*. Oxford.

* **NOTE:** to assess the importance of plants to the history of earth you should read: David Berling (2008). The Emerald Planet. Oxford University Press; On evolution and its social implications you should read: S.J. Gould (1981). The Mismeasure of Men (any edition)

Other material is available on the teacher's website (external links, downloadable tutorials)

INTERACTION WITH STUDENTS

Mainly before and after class hours, by e-mail and during Office hours. By rendez-vous.

EXAMINATION SESSIONS (FORECAST)[1]
1st Session: Jan. 21 § & Feb. 25 § – 2nd Session: June 30 & July 10 – 3rd Session: Sept. 25, Oct. 23 & Dec. 11, 2020.
§ these dates are reserved to student of the 2nd or following years.

SEMINARS BY EXTERNAL EXPERTS YES x

FURTHER INFORMATION

Registration is required on the University's website: 'Esse3 Online service' and must be completed within one week before the date of the exam. To be admitted to the exam you must present your Herbarium of 10 plant species (prepared according to the instructions in the 'Guide') within one week before the date of the exam. For updates and changes refer to the teacher's web page.

http://oldwww.unibas.it/utenti/colacino/

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