



UNIVERSITY "ISMAIL QEMALI" VLORË
FACULTY OF TECHNICAL AND NATURAL SCIENCES
DEPARTMENT OF BIOLOGY

SUBJECT PROGRAME BIO 160

Approved by:
Head of the Biology Department
Dr. Aurora Bakaj

SUBJECT:	General Botany
Head/ Lecturer of the subject:	Dr. Matilda Shehu
Charge:	3 hours lecture / 1 hour seminar / 1 hour laboratory
Subject typology:	Characterizing education of the program
Academic year/ semester:	2022-2023/Spring 2023
Subject type:	Mandatory
Study program:	Bachelor in Biology
Credits:	8 Credits
Subject code:	BIO 160
Email address of the lecturer:	matilda.zeqo@univlora.edu.al

SUMMARY AND LEARNING OUTCOMES:

Objectives of the subject:

The subject of General Botany provides a training in the field of study of Botany. The topics that will be treated are related to the plant, life, the chemical composition of the plant, eukaryotic and prokaryotic cells, plant cell organelles, plant tissues, their composition and function, plant reproduction, anatomy and morphology of reproductive organelles in plants..

BASIC CONCEPTS:

- 1 Plant tissues
- 2 Plant reproduction
- 3 Plant organography

SUBJECT TOPICS THAT WILL BE TREATED IN LESSONS:

- Topic 1** Introduction to Botany. The importance of plants in nature. Chemical composition of plants. Plant eucaryotic cell.
- Topic 2** Cytoplasm and nucleus. Cell organelles. Photosynthesis. Fungal cells. Prokaryotic cells, archae, viruses and prions. Construction and photosynthesis in prokaryotic cells
- Topic 3** Nucleus. Meiosis, mitosis and fertilization. Plastids. The function of chloroplasts - photosynthesis. Other plant plastids. Starch and other reserve substances.
- Topic 4** Vacuole - cell fluid. Cell wall and membrane. Primary cell wall and plasmodesmata. Meats and lacunae. Secondary cell wall.

- Topic 5** Introduction to Plant Histology. Meristematic, primary and secondary plant tissues. Adult tissues - Parenchyma. Covering tissue.
- Topic 6** Supporting tissues-Collenchyma and sclerenchyma. Conductive tissues-phloem and xylem and conducting bundles. Secretory tissues.
- Topic 7** Morphological organization of plants. Morphological evolution of plants. Growth and primary structure of root plants.Secondary structure of root plants. Stem morphology. Types of buds. Stem branching, plant differentiation. Root system in plants.
- Topic 8** Primary structure of root plants.Secondary structure of root plants. Stem morphology. Types of buds. Stem branching.
- Topic 9** Primary structure of stem in gymnosperms, dicots and monocots. Secondary structure of stem in trees. Systems of conductive bundles in trees. Secondary formations in the stem of monocots. Leaf morphology.
- Topic 10** Simple and compound leaves. Anatomy of the leaf and its differentiation. Anatomical construction of petiole and leaf blade in angiosperms. Adaptation of plants to water stress, herbivores and diseases, to temperature, lighting and space, to nutritional way.
- Topic 11** Sexual and asexual reproduction. Life cycles in plants and the exchange of generations. Sexual reproduction and the life cycle of flowering plants. Circle: cup and crown. Construction of the androecium and the pollen grain
- Topic 12** Construction of gynoecium and ovule. Microgametogenesis. Megagametogenesis. Pollination, fecondation or fertilization. Embryo and seed development.
- Topic 13** Development, distribution and classification of fruits. Seed germination, vegetative phase and totipotency. Reproductive phase. Aging and senescence.

SUBJECT TOPICS THAT WILL BE TREATED IN SEMINARS:

- Topic 1** Introduction to botany, plant chemistry and eucaryotic plant cells
- Topic 2** Construction of eucaryotic and procaryotic cells
- Topic 3** Nucleus and plastids.
- Topic 4** Vacuole, primary and secondary cell wall
- Topic 5** Meristematic plant tissue, parenchymatic and covering plant tissue.
- Topic 6** Supporting, conducting and secretory tissues.
- Topic 7** Morphological organization in plants. Knowledge of plant growth and differentiation. Root – form and function
- Topic 8** Root anatomy, primary and secondary anatomical structure. The morphology of the leaf.
- Topic 9** Primary and secondary anatomical structure in the stem. The second anatomical structure in trees. Leaf
- Topic 10** Morphology of simple and compound leaves. Anatomy of the leaf, its differentiation. Anatomical structure in petioles and angiosperms.
- Topic 11** Anatomy of the leaf in gymnosperms and its fall. Adaptation of plants to stressful factors. Plant reproduction and basic knowledge of the construction of reproductive organs.
- Topic 12** Construction of the androecium, gynoecium and ovule. Flowers, pollination, fecondation and fertilization
- Topic 13** Embryo and seed development. Development, distribution and classification of fruits. Plant life cycle and plant biotechnology

Topics that will be treated in other obligations related to the course: laboratory work, practices, course assignments, etc.:

- Topic 1** Construction of the microscope, its use and working tools during laboratory hours.
- Topic 2** Cutting and dying technique. Preparation of preparations and drawing.
- Topic 3** General structure of the cell in onion bulb (*Allium cepa*). Plasts, chloroplasts in ferns. (*Polypodium vulgare*). Chromoplasts in tomato fruit (*Lycopersicum esculentum*). Leucoplasts in the rhizome of iris (*Iris germanica*).
- Topic 4** Nucleus and chromosomes in onion root (*Allium cepa*) and pollen. Vacuole in the wheat plant (*Triticum vulgare*) and in the fig plant (*Ficus carica*).
- Topic 5** Aleurone grains in the seed of the castor plant (*Ricinus communis*). Inulin in dahlia tuber (*Dahlia variabilis*).

Topic 6 Hesperdin in orange peel (*Citrus aurantium*). Tannins in the lower side of the leaf of common fern (*Polypodium vulgare*). The cube-shaped crystals in the onion core (*Allium cepa*).

Topic 7 Crystalline inclusions on the petiole of the begonia (*Begonia rex*). Raphides in the pulp of the aloe leaf (*Aloe arborescens*). Styloids in tradescantia leaf pulp. Cystoliths in the epidermis of the fig leaf (*Ficus elastica*).

Topic 8 Pores e thjeshta në qelizat e paretit të kërcellit të kulprës (*Clematis vitalba*). Pores tek pisha (*Pinus sp.*).

Topic 9 Meristematic and protective tissues. Primary meristem in the root of maize (*Zea mays*). Epidermis and stomata in iris (*Iris germanica*). Epidermis and stomata in the fern flower (*Polypodium vulgare*). Hairs on linden (*Tilia sp.*), trefoil (*Trifolium pratense*) and olive (*Olea europea*).

Topic 10 Supporting, parenchymal and secretory tissues. Collenchyma and sclerenchyma in pumpkin (*Cucurbita pepo*) and sclereids in pear (*Pyrus communis*). Tissues in the pumpkin plant (*Cucurbita pepo*). Lysogenic pockets in orange (*Citrus aurantium*). Secretory canals in the petiole of nettle (*Hedera helix*). Milk vessels on the stem of euphorbia (*Euphorbia sp.*).

Topic 11 Primary growth of stem of nettle (*Lamium maculatum*) and corn (*Zea mays*). Secondary growth of stem of linden (*Tilia cordata*) and pine (*Pinus silvestris*).

Topic 12 Primary growth the root of the iris (*Iris germanica*). Secondary growth of the rhizocarp in the carrot (*Daucus carota*) and turnip (*Raphanus sativus*) plants. Leaf and leaf blade morphology. Leaf anatomy in ligustrum (*Ligustrum lucidum*) and iris (*Iris germanica*).

Topic 13 Anatomical structure of pollen and ovary in lily flower (*Lilium candidum*). Flower analysis. Flower diagram and formula. Flower morphology. Structure and morphology of the fruit. Seed and plant construction in the bean plant (*Phaseolus vulgaris*), the castor plant (*Ricinus communis*), the wheat plant (*Triticum vulgare*) and the orange plant (*Citrus aurantium*).

FORM OF KNOWLEDGE CONTROL

Control	Percentage rating
Control I	20%
Annual assessment: Seminars, laboratories and expeditions	20% (10% /5% /5%)
Final Exam	60%

Grading is based on the conversion of the total grade to %, grade 5-10 progressively 41-100%.

Grading	4	5	6	7	8	9	10
ASSESSMENT	-40	41-50	51-60	61-70	71-80	81-90	91-100

ATTENDANCE:

Grading is based on the conversion of the total grade to %, grade 5-10 progressively 41-100%. The final exam will be written or oral according to the relevant articles of the regulation of the "Ismail Qemali" University of Vlora. The student, who results with less than 75% attendance will not be included in the final exam, will be graded with M. If the student has attended the course, but does not appear in the final exam, it will be graded NP (Did Not Appear).

COURSE FORMAT:

The subject will be evaluated on the basis of two partial exams, assignments and the final exam. Points earned will be cumulative. The exams will not be repeated, for any reason. If you miss an exam without any major reason, then you will lose points for that exam that you did not appear for.

COMMUNICATION:

Homework exercises, course assignments and any other announcements will be given in class or at the official address of the "Ismail Qemali" University of Vlora on the Internet: www.univlora.edu.al or at the e-mail address of the lecturer matilda.zeqo@univlora.edu.al

E-mail: Every student has the duty to check e-mail regularly. There will be tasks and notifications will be given only via e-mail.

HONESTY CODE:

Students are encouraged to work in groups for the exercises and tasks that are given to them. Copying from one another in exams, course assignments, homework, etc. is not allowed. Violation of this rule will be accompanied by punitive measures up to the expulsion of the student from the university.

LITERATURE

a) Mandatory basic literature:

Botanikë e përgjithshme: A. Miho; L. Topuzi; J. Marka 2008 Ribotim: 2011. Praktikum i botanikës

b) Recommended literature:

Raven H.P., Evert F.R., Eichhorn E.S., (2008) Biologjia e Bimëve. Përkthyer nga origjinali i vitit 1999 nga Kullaj E., Universiteti UFO. Tiranë 1-780

FINAL REMARKS FROM THE SUBJECT LECTURER

Homework exercises, coursework and any other notices will be given in class.

Students are also encouraged to work in groups for the homework exercises. Copying from one another in exams, coursework, homework, etc. is not allowed. Violation of this rule will be accompanied by punitive measures up to expulsion from the university.

The use of mobile phones and smoking in the auditorium is not allowed.

LECTURER

Dr. Matilda Shehu

