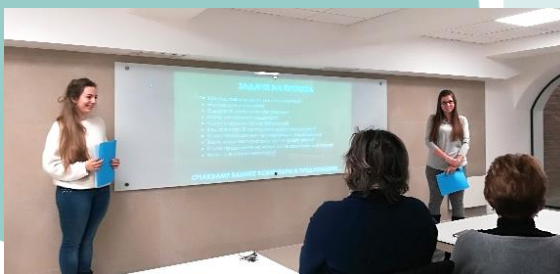
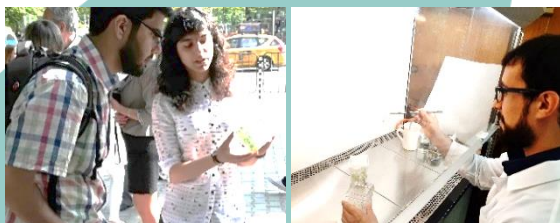


Compulsory Courses	Lectures	Practice	ECTS credits
Plant Biotechnologies	45	45	9
Industrial Producers in Biotechnology	45	45	9
Plant Metabolomics	30	30	4
Application of Plant Metabolites in Cosmetics and Perfumery	30	30	4
Industrial Biotechnologies	45	45	10
Phytopathology	45	45	8
Recombinant Plant DNA Technologies	45	30	8
Pre-Graduate Study and Practice	0	90	15

Elective Courses	Lectures	Practice	ECTS credits
Plant Hormonal Regulation	30	30	4
Transgenic Plants	30	30	4
Molecular Markers and Basis of Population Genetics	30	10+20	4
Management and Marketing in Biotechnology	45	15+0	4
Biotechnology of Microalgae	30	30	4
Phytoeffectors	30	30	4
Mechanisms of Programmed Cell Death in Plants	30	30	4



### Contacts:

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FACULTY OF BIOLOGY  
SOFIA UNIVERSITY

DEPARTMENT OF PLANT PHYSIOLOGY



## MASTER'S DEGREE PROGRAMME „PLANT BIOTECHNOLOGIES“ REGULAR FORM OF EDUCATION – IN ENGLISH



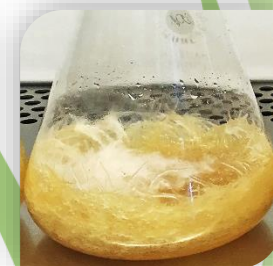
*Saponaria stranjensis* in situ



*Saponaria stranjensis* in vitro



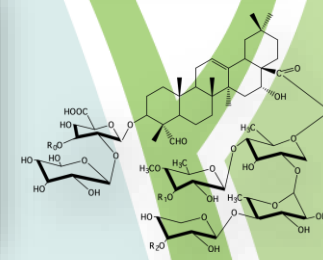
Organ cultures



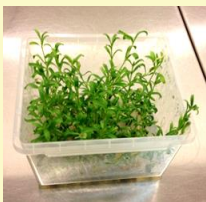
Root culture



Bioreactor



Triterpenoid saponins



Induction of adventive root culture



Cryopreservation of medicinal plants



Microalgae immobilization



**MDP "Plant Biotechnologies"** offers knowledge and practical skills in order to apply classical and modern technologies in the field of phytophysiology, gene engineering and phytochemistry, as well as to design and implement various scientific tasks and projects.

**Candidates** can be students holding Educational and Qualification Degree Bachelor of Science in the professional fields Biological Sciences, Biotechnology, Pedagogy of Teaching in ..., Agrarian Sciences.

**The competition ball is formed by:**

**For State-funded study:**

**a)** the mean grade from the Higher Education Diploma (mean grade from the semester exams and mean grade of the state exams) which is at least a Good 4.00;

**b)** the grade from the BSc courses Plant Physiology or Plant Cell and Tissue Culture.

**For paid study** – the grade from the Higher Education Diploma which is at least a Good 4.00.

**The students will acquire the following competencies:**

- work with the main types of *in vitro* cultures and their application;
- *in vitro* multiplication and cryopreservation of medicinal plants;
- isolation and characterization of biologically active substances (BAS) in tissue and cell cultures from valuable medicinal plants from the Balkan flora; production of BAS from the so-called "plant stem cells", as well as from algae;
- extraction of essential oils and other BAS from plant biomass, followed by formulation of cosmetic product by including the isolated BAS;
- cultivation and biotechnological application of microalgae;
- learning the principles of recombinant DNA technology in plants;
- regulation of plant growth and development;
- evaluation of plant metabolism changes as result of biotic and abiotic stress factors;
- plant pathology and the related biological, physiological and biochemical responses.

**The programme** is conducted in a regular form (State-funded and paid) for 3 semesters. **The thesis work** could be accomplished at the Department or jointly with other Bulgarian and foreign institutions (Erasmus+ programme, etc.). The graduate students have the opportunity to **present the achieved experimental results** at scientific forums and conferences.

The graduate students receive the **Professional Qualification: Biotechnologist - Master of Science in Plant Biotechnology**, and can continue their **professional realization** as experts, consultants, lecturers or specialists in:

- ✓ Companies and organizations with relation to the exploitation of plant resources, eco-physiology, etc.;
- ✓ Companies for clinical research and expertise;
- ✓ Biotechnological, pharmaceutical and cosmetics companies;
- ✓ Governmental institutions;
- ✓ Research institutes, higher education institutions;
- ✓ Education for awarding a PhD degree in Biological Sciences in the Faculty of Biology or in other academic structures in Bulgaria and abroad.



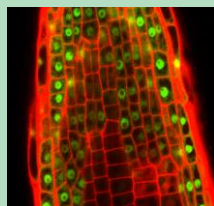
*Artemisia lerchiana*



*Achillea thracica*



*Plantago atrata*



Characterization of genes in transgenic plants