DOCUMENT

Study programme	BIOTa-MgD18 - Biotechnology
Study	Grade of study - II. - master, study form - full time, study type - Single degree study
Document type:	Description of the study programme
The name of the university	University of Ss. Cyril and Methodius in Trnava
The seat of the university	Nám. J. Herdu 2, 91701 Trnava
The name of the faculty	Faculty of Natural Sciences
The seat of the faculty	Nám. J. Herdu 2, 91701 Trnava

Institution body for approving the study programme:

The Board for Internal System of Quality Assurance at UCM

Date of the study programme approval or the study programme modification:

28.05.2018

Date of the latest change in the study programme description:

10.08.2022

1. - Basic information about the study programme

a) - Name of the study program and its number according to the register of study programmes.

Biotechnology 183413

b) - Degree of higher education and ISCED-F education degree code.

2 T 767

c) - Place(s) of delivery of the study programme.

Trnava

d) - Name and number of the field of study in which higher education is obtained by completing the study programme, or a combination of two fields of study in which higher education is obtained by completing the study programme, ISCED-F codes of the field/fields.

Biochemistry - 0512

e) - Type of the study programme: academically oriented, professionally oriented; translation, translation combination study programme (listing the specializations); teaching, teaching combination study programme (listing the specializations); artistic, engineering, doctoral, preparation for regulated profession, joint study programme, interdisciplinary studies.

academically oriented

f) - Awarded academic degree before the name

Mgr.

g) - Form of study.

full time

h) - In the case of joint study programmes, cooperating institutions and the range of study obligations the student fulfills at each of the given institutions (§ 54a of the Act on Higher Education Institutions).

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i) - Language or languages in which the study programme is delivered.

English

j) - Standard length of the study expressed in academic years.

2 years

k) - Capacity of the study programme (planned number of students), the actual number of applicants and students.

Planed number of students 30 Real number of students: 0

2. - Graduate profile and learning objectives

a) - The institution defines the learning objectives of the study programme such as student's abilities at the time of completion of the programme and the main learning outcomes.

At the time of graduation, students of the biotechnology study programme have the theoretical knowledge, practical skills and abilities in the basic natural science disciplines, especially biotechnology, biology and chemistry, as well as their border areas. Due to the fact that the program belongs to the study field of Biotechnology, these are mainly subjects emphasizing biotechnological aspects. An important part of the study, in addition to classical chemical and biological subjects, is emphasis

- biotechnological disciplines such as industrial biotechnology, pharmaceutical and medical biotechnology, nanobiotechnology, molecular biotechnology, but also modern biological disciplines, which are the basis for modern biotechnologies, such as molecular biology techniques, instrumental methods of analysis, basics of genomics and biofuels, renewables, novel and functional foods and others
- links to ecological and environmental disciplines and subjects involving sustainable development issues in close relation to regional specificities. Due to the broader applicability of the graduate in practice, the natural science and technical basis of the study is supplemented by selected legal, ethical and managerial disciplines. Studying at the second level also creates prerequisites for continuing at the third level.
- At the time of graduation, students of the Biotechnology study programme have theoretical knowledge, practical skills and abilities in the basics of chemistry (general, inorganic, organic, analytical, physical, biochemistry), biology (microbiology and molecular), genetics, biotechnology (microbial, agricultural, enzymatic and environmental), ecology, as well as mathematics, physics and statistical analysis.
- They acquire or improve their knowledge and practice in scientific English. They acquire habits for defining scientific hypotheses, preparation of projects (experimental) for their verification, experimental solution, definition of outputs and their characterization, presentation, advocacy and implementation (even in practice).
- Graduates of the master's study have theoretical knowledge about the structures of prokaryotic and eukaryotic biological systems and the nature of the processes (physico-chemical, biochemical and physiological) taking place in them, as well as the mechanisms of their regulation.
- They gain an overview of them and know how to apply them in practice.
- They know the basics of methods of interventions in the genome of prokaryotic and eukaryotic cells, the principles of genetic modification of organisms, basic methods of characterizing genetic changes and gain an overview of the use of genetically modified organisms in various areas of practice.
- They are able to prepare biological systems for their practical use and independently solve (manage) partial operations related to their targeted use in the agri-food, pharmaceutical-medical and chemical-environmental areas.
- They have sufficient theoretical knowledge and practical experience to perform laboratory control and evaluation of the obtained data and are able to communicate with an equivalent level of management.
- They have knowledge of economic, legal, ethical and environmental aspects of biotechnology, which enables them to apply at the intermediate level of functional activities in the scientific research, production and business spheres

b) - The institution indicates the professions for which the graduate is prepared at the time of completion and the potential of the study programme from the point of view of

graduate's employability.

The graduate of the study program is an expert who finds employment in various areas of social practice. He will gain knowledge of biotechnology and related areas (especially biological, chemical, genetic and their specializations) conditioning the development of biotechnology, especially in the areas of so-called white, green, and red biotechnologies. He can participate in research, development, and innovation, especially in industry, agriculture, health, environment, energy, as well as to apply his knowledge directly in production practice in these areas.
The graduates:
- can study biomolecules and biological systems as well as to use them in practice,
- can independently manage individual operations related to their targeted use in the agri-food, pharmaceutical-medical
and chemical-environmental areas, as well as in the field of industrial use of renewable raw materials,
- have sufficient theoretical knowledge and practical experience necessary to perform laboratory and production activities and evaluate the data obtained and can communicate with an equivalent level of management,
- they also have knowledge of the economic, legal, ethical, and environmental aspects of biotechnology, which enables them to apply at the intermediate level of functional activities in the scientific research as well as in the production and business sphere.
Graduates of the Biotechnology study program can seek employment in a wide range of workplaces with biological and chemical focus in research teams, as well as independent work with research and technical focus (SAS, universities, ministries of health, agriculture and forestry, food industry, environment, etc.). as well as directly in production practice. They are ready to meet the requirements of specialized institutions requiring field work, especially in workplaces dedicated to modern biotechnologies, as well as environmentally oriented workplaces, and they will also be used in state and local government institutions. Graduates also have a wide range of applications in private companies and industrial enterprises with an innovation-technological orientation in biotechnology, but also in related fields.
https://katedra-biotechnologii.webnode.sk/informacie-pre-uchadzacov/profil-absolventa/

Occupations from profesia.sk:

- researcher,
- laboratory diagnostician,
- product specialist,
- chemical production operator,
- raw material intake worker,
- yeast production distiller/distiller,
- production technician,
- quality controller,
- research and development specialist,
- technologist,
- agronomist,
- sanitation and hygiene specialist.

Specific application in companies:

- Enviral (Leopoldov) - bioethanol production
- Chateau Modra (Modra) - wine production
- Natures (Trnava) - production of food supplements
- Saneca Pharmaceutical (Hlohovec) - production of medicines
- Zentiva (Bratislava) - pharmaceutical production
- Evonik Fermas (Slovenská Ľubča) – industrial fermentation processes
- Biotika (Slovenská Ľubča) - production of drugs
- Bioscience Slovakia - production of antibodies
- AXON Neuroscience- medical diagnostics
- Cloetta Slovakia (Levice) - confectionery production
- Považský cukor (Považská Bystrica) - sugar factory
- GlaxoSmithKline Consumer Healthcare (Levice/Bratislava) - research, development and production of drugs
- Alphamedical (Banská Bystrica) - laboratory equipment

c) - Relevant external stakeholders who have provided the statement or a favorable opinion on the compliance of the acquired qualification with the sector-specific requirements for the profession.

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3. - Employability

a) - Evaluation of the study programme graduates employability.

The graduates of SP Biotechnology are employed throughout Slovakia, such as Alpha medical, Ltd. (Slovakia), AXON Neuroscience (Bratislava) - R&D Services SE, Bioscience Slovakia, Ltd. (Bratislava), Biotech, Ltd. (Slovakia) - sales of laboratory equipment, Biotika, Inc. (Slovenská Ľubča), Cloetta Slovania, Ltd. (Levice), Enviral, Inc. (Leopoldov), Evonik Fermas, Ltd. (Slovenská Ľubča), Heineken Slovensko, Inc. (Hurbanovo), Henkel Slovakia, Ltd. (Bratislava), Natures, Ltd. (Trnava), Novartis Slovakia, Ltd. (Bratislava), Považský cukor, Inc. (Považská Bystrica), Saneca Pharmaceutical, Inc.(Hlohovec), GSK Group (Levice / Bratislava), VWR International, Ltd. (Slovakia), Zentiva, Inc. (Bratislava), Zvolenská mliekareň, Ltd.(Zvolen), National Agricultural and Food Center (Bratislava, Piešťany, Modra, Nitra), Slovak Academy of Sciences, Slovak Hydrometeorological Institute, State Institute for Drug Control, Public Health Office and universities.

b) - If applicable, indicate the successful graduates of the study programme.

Assoc. Prof. RNDr. Miroslav Horník, PhD., Associate Professor in Analytical Chemistry
Prof. RNDr. Miroslav Ondrejovič, PhD., Associate Professor in Biotechnology
Prof. RNDr. Martin Pipíška, PhD., Associate Professor in the field of Environmental Engineering
http://fpv.ucm.sk/sk/o-nas/vyznamni-absolventi.html

c) - Evaluation of the study programme quality by employers (feedback).

Selected employers of graduates of the study programme have positively commented on the study programme.
BioTech s.r.o.
Celpo spol. s.r.o.
NPPC - Research Institute of Plant Production in Piešťany
Described in detail in the Stakeholder Evaluation Report of the SP.

4. - Structure and content of the study programme

a) - The institution describes the rules for the design of study plans within the study programme.

The process of creating, modifying, and approving study programs is governed exclusively by the standards for the SAAHE SR (Slovak Accreditation Agency for Higher Education) study program and the university guidelines created based on the standard for the internal quality assurance system.
https://www.ucm.sk/docs/legislativa/2023/2023-36-Smernica_o_vytvarani_a_uprave_studijnych_programov.pdf
The study plan fully considers the requirements set for the study field of biotechnology in the system of study fields (core of knowledge, abilities, and skills). The main topics of the knowledge core (2nd level) are fulfilled as follows:
- 1st year of study: Molecular Biology Techniques, Molecular Biotechnology, Laboratory Exercise in Advanced Molecular Biology Techniques, Theory and Methodology of Diploma Thesis, Industrial Biotechnology, Laboratory Exercise in Industrial Biotechnology, Pharmaceutical and Medical Biotechnology, Biofuels and Renewable Products, Laboratory Exercise for theDiploma Thesis I.
- 2nd year of study: Basics of Bioengineering, Nanobiotechnology, in vitro Plant Systems, Laboratory Exercise on in vitro Plant Systems, Novel and Functional Foods, Laboratory Exercise for Diploma Thesis II and III, Diploma Thesis Seminar.
The study plan also includes subjects providing theoretical knowledge of chemistry (Instrumental Methods for the Analysis of Substances, Advanced Biochemistry, Forensic Chemistry, Bioanalytical Chemistry), physical (Introduction to Biophysics, Imaging Techniques), biological disciplines (Fundamentals of Genomics, Clinical Microbiology, Selected Chapters from Virology, Exploitation and Conservation of Biological Resources, Proteomics, Molecular Biology and Human Genetics, Pharmaceutical Botany, Mycology) and environmental disciplines (Wastewater Treatment Technology, Radioecology, Environmental Quality Assessment Methods, Environmental Chemistry, Remediation Technology, Influences of Stress Factors on Biota, Metal Recycling Biotechnology).
At least 60% of the content of the study program in each year corresponds to the core topics of the core of knowledge, both in terms of the number of credits required and the number of teaching hours. All subjects falling into this category are defined as compulsory subjects. Other subjects of the study program are focused on the profiling of the graduate in frontier disciplines. Such subjects are marked as compulsory elective subjects, so that the student can, to the maximum extent possible, realize his own interest in a specific area or his own ideas about applying in practice.

b) - The institution compiles the recommended study plans for individual study paths.

Recommended_study_plan_MSc._Biotechnology

c) - The study plan generally states:

Subject information sheets_MSc._Biotechnology
List of subjects
Compulsory subjects:
1. Biofuels and Renewable Products
2. Diploma Thesis Seminar
3. Fundamentals of Bioengineering
4. Fundamentals of Genomics
5. in vitro Plant Systems
6. Industrial Biotechnology
7. Instrumental Methods for the Analysis of Substances
8. Laboratory Exercise for Diploma Thesis I
9. Laboratory Exercise for Diploma Thesis II
10. Laboratory Exercise for Diploma Thesis III
11. Laboratory Exercise in Advanced Molecular Biology Techniques
12. Laboratory Exercise in Industrial Biotechnology
13. Laboratory Exercise on in vitro Plant Systems
14. Molecular Biology Techniques
15. Molecular Biotechnology
16. Nanobiotechnology
17. Novel and Functional Foods
18. Pharmaceutical and Medical Biotechnology
19. Theory and Methodology of Diploma Thesis
* The profile subjects are marked in bold

Compulsory optional subjects:
1. Advanced Biochemistry
2. Bioanalytical Chemistry
3. Clinical Microbiology
4. Environmental Chemistry
5. Environmental Quality Assessment Methods
6. Exploitation and Conservation of Biological Resources
7. Forensic Chemistry
8. Imaging Techniques
9. Influences of Stress Factors on Biota
10. Introduction to Biophysics
11. Metal Recycling Biotechnology
12. Molecular Biology and Human Genetics
13. Mycology
14. Pharmaceutical Botany
15. Proteomics
16. Radioecology
17. Remediation Technology
18. Selected Chapters in Virology
19. Wastewater Treatment Technology

Optional subjects:
20. Sports Activities I
21. Sports Activities II
22. Sports Activities III
23. Sports Activities IV

d) - The institution states the number of credits, the achievement of which is a condition for proper completion of studies and other requirements that the student must meet within the study programme and for its proper completion, including the requirements for state examinations, rules for re-study and rules for the extension, interruption of study.

For successful completion of the Master's degree, a minimum of 120 credits must be obtained. 104 credits without state examination courses as a condition for admission from the state examination. Successful completion of all required courses and passing the state examination is required. The composition of the State Examination Board is in accordance with the Higher Education Act, pursuant to Article 63, paragraph 3 of Act No. 131/2002 Coll. on Higher Education, and with the Study Regulations of the University of St. Cyril and Methodius, which was approved by the Academic Senate of UCM on 10 June 2013. The State Examination Board is composed of at least 4 members. The Commission shall have a quorum if the Chairperson of the Commission and at least two other members are present. The right to sit for the state examination in doctoral and master's degree programmes shall be granted to university teachers acting in the capacity of professor and associate professor and other experts approved by the relevant scientific council. At least two members of the committee shall be university teachers in the function of associate professor or professor. At least one member of the committee shall hold the rank of associate professor or professor. The chair of the State Examination Board shall be appointed by the dean from among professors and associate professors of higher education institutions. The chairman of the commission shall direct the course of the state examination and shall be responsible for the activities of the commission.

e) - For individual study plans, the institution states the requirements for completing the individual parts of the study programme and the student's progress within the study programme in the given structure:

90 credits for compulsory subjects required for the proper completion of studies / completion of part of the study,
18 credits for compulsory optional subjects required for the proper completion of studies / completion of part of studies,
0 credits for elective subjects required for proper completion of studies / completion of part of study,
12 credits for the final thesis and the defense of the final thesis required for the proper completion of the study.

f) - The institution describes the rules for verification of learning outcomes, students assessment and the possibilities of appealing against the assessment.

The rules for the verification of educational outcomes and the evaluation of students and the possibilities of corrective procedures against this evaluation are clearly described in the study regulations of the university, which the Faculty of Natural Sciences follows.
https://www.ucm.sk/docs/legislativa/2022/predpisy_-_en/2020-8_Studijny_poriadok_UCM_AJ.pdf

Study Regulations
Part Two: § 11, § 14 - § 20

g) - Conditions for recognition of studies or a part of studies.

The rules for the verification of educational outcomes and the evaluation of students and the possibilities of corrective procedures against this evaluation are clearly described in the study regulations of the university, which the Faculty of Natural Sciences follows.
https://www.ucm.sk/docs/legislativa/2022/predpisy_-_en/2020-8_Studijny_poriadok_UCM_AJ.pdf

h) - The institution states the topics of final theses of the study programme (or a link to the list).

http://fpv.ucm.sk/sk/studium/zaverecne-prace.html

i) - The institution describes or refers to:

The proposals for the final theses are published by the training institutes through the academic information system (hereinafter referred to as "AIS") during the winter semester, no later than 31 January of the relevant academic year. The listed topics for the biotechnology study program are published on the faculty's website
http://fpv.ucm.sk/sk/studium/zaverecne-prace.html
The final thesis must be prepared according to the Rector's Directive on the requisites of final theses, their bibliographic registration, control of originality, storage, and access to the University of Ss. Cyril and Methodius in Trnava (valid since 2021)
Smernica o náležitostiach záverečných prác, ich bibliografickej registrácii, uchovávaní a sprístupňovaní na UCM
https://www.ucm.sk/docs/legislativa/2022/predpisy_-_en/2021-31_Smernica_o_nalezitostiach_zaverecnych_prac,_ich_bibliografickej_registracii,_uchovavani_a_spristupnovani_na_UCM_AJ.pdf

template for the elaboration of the final thesis is given https://katedra-biotechnologii.webnode.sk/informacie-pre-studentov/zaverecne-prace/) in accordance with the Study Regulations of the University of Ss. Cyril and Methodius,

https://www.ucm.sk/docs/legislativa/2022/predpisy_-_en/2020-8_Studijny_poriadok_UCM_AJ.pdf
and by the Study Regulations of the University of Ss. Cyril and Methodius in Trnava, which was developed by § 15, para. 1, letter b of Act 131/2002 Coll. on Higher Education and approved by the Academic Senate of UCM on April 28, 2020. The final thesis is a bachelor's thesis, a diploma thesis and a dissertation. With the bachelor's thesis, the student demonstrates the ability to work creatively in the field of study in which he completed the study program. The bachelor's thesis will be prepared by the student under the guidance of the supervisor in accordance with the internal regulations of UCM and the relevant faculty. The bachelor thesis is assessed by the opponent. The supervisor and the opponent will prepare a written report for the bachelor's thesis. The student has the right to one copy of the supervisor's and the opponent's report no later than three days before the defense of the bachelor's thesis. The bachelor thesis together with the defense form one subject and belong to the state exams. The commission for state examinations negotiates the result of the defense of the bachelor's thesis by a closed vote. In the event of a tie, the chairman of the commission shall have two votes. The results of the bachelor thesis defense are evaluated with marks A - FX.
Smernica o plagiátorstve
https://www.ucm.sk/docs/legislativa/2022/predpisy_-_en/2019-9_Smernica_o_plagiatorstve_AJ.pdf
- *opportunities and procedures for participation in student mobility,*

The ANS students who are interested in a stay abroad can take advantage of the wide range of mobilities through the Erasmus + program or they can complete a stay abroad based on international bilateral agreements or take advantage of opportunities under other mobility and scholarship schemes and programs.
The ANS UCM students apply to their department coordinator in the form of a written application, which contains the contact details of the applicant and a brief justification of the study stay, prospective benefits. The system of allocating places within the ERASMUS + program takes place in the form of a selection procedure at the faculty. The application deadline, the date of the selection procedure and the selection criteria for outgoing students are published on the faculty's website.
http://fpv.ucm.sk/sk/studium/studijne-pobyty.html
http://fpv.ucm.sk/sk/o-nas/medzinarodne-vztahy.html
http://fpv.ucm.sk/en/study/erasmusen.html

All information about study stays, the Erasmus + project, student mobility, the pedagogical and non-pedagogical staff is also on a separate page: https://www.ucm.sk/sk/erasmus-01/
The faculty, based on a transparent selection procedure, according to proposals from the departments, nominates students for mobility under the valid between departmental bilateral agreements.
- *rules for adherence to academic ethics and rules for drawing consequences,*

The rules are determined by the UCM Code of Ethics in Trnava. The Code of Ethics is binding for all members of the academic community, pedagogical and non-pedagogical employees of UCM.
https://www.ucm.sk/docs/legislativa/2022/predpisy_-_en/ID_N._2018-2_Code_of_Ethics_of_the_University_of_Ss._Cyril_and_Methodius_in_Trnava.pdf
https://www.ucm.sk/docs/legislativa/2022/predpisy_-_en/2021

https://www.ucm.sk/docs/legislativa/2022/predpisy_-_en/2021-14_Smernica_o_vybavovani_staznosti_na_UCM_AJ.pdf
https://www.ucm.sk/docs/legislativa/2022/predpisy_-_en/ID_N._2015_Directive_on_the_Receipt_and_Handling_of_Complaints_about_antiSocial_Activities.pdf

- *procedures applicable to students with special needs,*

Work with students with special needs at UCM is managed by the Support Center for Students with Special Needs. Its mission is to help and support students of all faculties and institutes of the University of Ss. Cyril and Methodius in Trnava in the following areas psychological counselling, social counselling, support for students with special needs, with sensory, physical and multiple disabilities, with chronic illness, with a disability, with mental illness, with autism, with learning disabilities, with social disadvantage.
Responsible staff:
- for UCM JUDr. Jana Žitníková jana.zitnikova@ucm.sk
- for ANS RNDr. Vanda Adamcová, PhD. vanda.adamcova@ucm.sk

https://www.ucm.sk/sk/centrum-podpory-studentov-so-specifickymi-potrebami-01/
https://www.ucm.sk/docs/legislativa/2022/predpisy_-_en/2019-11_Smernica_na_zabezpecenie_vseobecne_pristupneho_akademickeho_prostredia_pre_studentov_so_specifickymi_potrebami_AJ.pdf

- *procedures for filing complaints and appeals by students.*

The submission of suggestions by students is carried out through
Black Box - for your opinions, comments and questions and follows the university guidelines
https://www.ucm.sk/docs/legislativa/2022/predpisy_-_en/2021-14_Smernica_o_vybavovani_staznosti_na_UCM_AJ.pdf
The link to enter the Black Box is on the UCM website https://www.ucm.sk/sk/black-box/

5. - Course information sheets of the study programme

In the structure according to Decree no. 614/2002 Coll.

Subject_Information_Sheets_MSc._Biotechnology

6. - Current academic year plan and current schedule

(or hyperlink).

http://fpv.ucm.sk/sk/studium.html
http://fpv.ucm.sk/images/studium/harmonogram_studia_2022_2023.pdf
http://fpv.ucm.sk/sk/rozvrh.html

7. - Persons responsible for the study programme

a) - A person responsible for the delivery, development, and quality of the study programme (indicating the position and contact details).

Prof. RNDr.Ján Kraic, PhD. (jan.kraic@ucm.sk)
http://fpv.ucm.sk/sk/pracovnici-bt.html

b) - List of persons responsible for the profile courses of the study programme with the assignment to the course and provided with a link to the central Register of university staff and with contact details (they may also be listed in the study plan).

Assoc. Prof. RNDr. Michaela Havrlentová, PhD. (michaela.havrlentova@ucm.sk)
prof. RNDr. Ján Kraic, PhD. (jan.kraic@ucm.sk)
Assoc. Prof. Mgr. Daniel Mihálik, PhD. (daniel.mihalik@ucm.sk)
Assoc. Prof. Ing. Jana Moravčíková, PhD. (jana.moravcikova@ucm.sk)
Prof. RNDr. Miroslav Ondrejovič, PhD. (miroslav.ondrejovic@ucm.sk)

c) - Reference to the research/art/teacher profiles of persons responsible for the profile courses of the study programme.

http://fpv.ucm.sk/sk/pracovnici-bt.html
Assoc. Prof. RNDr. Michaela Havrlentová, PhD.
prof. RNDr. Ján Kraic, PhD.
Assoc. Prof. Mgr. Daniel Mihálik, PhD.
Assoc. Prof. Ing. Jana Moravčíková, PhD.
Prof. RNDr. Miroslav Ondrejovič, PhD.

d) - List of teachers of the study programme with the assignment to the course and provided with a link to the central Register of university staff and with contact details (may be a part of the study plan).

1. RNDr. Vanda Adamcová, PhD.
- Wastewater Treatment Technology
2. Assoc. prof. Ing. Jozef Sokol, CSc.
- Forensic Chemistry
3. doc. Ing. Miroslav Glasa, PhD.
- Selected Chapters from Virology
4. assoc. Prof. RNDr. Michaela Havrlentová, PhD.
- in vitro Plant Systems
- Novel and Functional Foods
5. assoc. Prof. RNDr. Miroslav Hornik, PhD.
- Radioecology
- Environmental Chemistry
- Remediation Technologies
6. RNDr. Michal Konečný, PhD.
- Basics of Genomics
7. prof. RNDr. Jan Kraic, PhD.
- Molecular Biological Techniques
- Molecular Biotechnology
- Use and Conservation of Biological Resources
- in vitro Plant Systems
- Novel and Functional Foods
8. prof. RNDr. Juraj Krajčovič, PhD.
- Molecular Biology and Human Genetics
- Mycology
9. assoc. Prof. Ing. Tibor Maliar, PhD.
- Pharmaceutical and Medical Biotechnology
- Advanced Biochemistry
10. Ing. Mária Maliarová, PhD.
- Bioanalytical Chemistry
11. prof. Mgr. Alžbeta Marček Chorvátová, DrSc.
- Introduction to Biophysics
- Imaging Techniques
12. Prof. Mgr. Ildiko Matušíková, PhD.
- Environmental Quality Assessment Methods
- Influence of Stress Factors on Biota
13. assoc. Prof. Mgr. Daniel Mihalik, PhD.
- Laboratory Exercise in Advanced Techniques of Molecular Biology
14. assoc. Prof. Ing. Jana Moravčíková, PhD.
- Basics of Bioengineering
- Nanobiotechnology
- Laboratory Exercise from in vitro Plant Systems
15.Prof. RNDr. Miroslav Ondrejovič, PhD.
- Industrial Biotechnology
- Biofuels and Renewable Products
16. Assoc. prof. RNDr. Daniela Ondrejovič Chmelová, PhD.
- Laboratory Exercise in Industrial Biotechnology

- Diploma Thesis Seminar
17. assoc. Prof. Ing. Andrea Purdešová, PhD.
- Instrumental Methods of Substance Analysis
- Bioanalytical Chemistry
18. prof. RNDr. Jana Sedlaková, PhD.
- Wastewater Treatment Technology
- Metal Recycling Biotechnology
19. assoc. Prof. RNDr. Milan Seman, CSc.
- Clinical Microbiology
- Mycology
20. Mgr. Martin Valica, PhD.
- Environmental Chemistry
21. assoc. Prof. RNDr. Ľubica Uváčková, PhD.
- Proteomics
- Pharmaceutical Botany
22. Ing. Eva Ürgeová, PhD.
- Sports Activities I
- Sports Activities II
- Sports Activities III
- Sports Activities IV

e) - List of the supervisors of final theses with the assignment to topics (indicating the contact details).

The structure of the teachers of the academic workplace provides a sufficient guarantee of the adequacy of the number of university teachers for the number of final theses in a given level of university study. All final theses are supervised by teachers who have adequate teaching experience and an appropriate level of education.

Topics of final theses:

Antimicrobials of Norway spruce bark
Antioxidant activity of selected substances from the group of polyketides, terpenoids and alkaloids in vitro
Antioxidant active substances of spruce bark
Application of microalgae biomass in the binding of heavy metals from aqueous solutions
Characteristics of selected wheat varieties in terms of cadmium ion uptake and accumulation
Characterization of a plant gene responsible for the production of non-traditional storage triacylglycerols
Characterization of alpine plants from the point of view of metal hyperaccumulation
Fermentation of selected cereals by lactic acid bacteria
Phytopathogens of viral origin in selected plant species of the family and poppies
Glucanases and chitinases in parasitic maize (genus Cuscuta)
Evaluation of microelement uptake by freshwater plants using positron emitters
Evaluation of transport of substances and microelements in plants using positron emitters
Isolation and functional characterization of calcium ATPase (SERCA1 isoforms) from skeletal muscle of diabetic rats
Isolation and characterization of polyphenol oxidases isolated from different varieties of Solanum tuberosum
Isolation of the dehydrin gene from Querus robur L. and preparation of a plant transformation vector
Simple and efficient protocols for DNA isolation from high lipid plant samples
Simple and efficient protocols for DNA isolation from high polysaccharide plant seeds
The quality of non-traditionally colored wheat and their potential in Slovak agriculture and food industry
Quality of poppy seed oil
Wheat quality with an unconventional grain color
Wheat seed quality in terms of starch content
In vitro microfission as an effective way to assess plant resistance to viral infection
Cereal yeast as a source of probiotic cultures
Optimization of tomato mosaic virus determination at proteomic level
Optimization of extraction of antioxidants obtained from grape marc
The potential of white-rot fungi in dye removal

Production of laccases by the white-rot fungus Pleurotus ostreatus by solid-state cultivation
Production of polyhydroxyalkanoates by the Cupriavidus necator bacteria
Regenerative ability of selected oilseed rape genotypes in vitro
Screening of tomato mosaic virus resistance genes in the tomato tomato population
Study of fluorescence properties of euglenes
The effect of quercetin and its derivatives on pancreatic beta cells under cytokine-induced endoplasamic reticulum stress
Binding of metals by biomass of microalgae of the genus Euglena from aqueous solutions
Influence of cultivation conditions on the production of polyhydroxyalkanoates by bacteria of the species Cupriavidus necator
Influence of nutritional conditions on cadmium intake in plants
Use of mitochondrial DNA genetic polymorphism (MtDNA) in animal selection
Utilization of myostatin gene polymorphism in selection for growth intensity of broiler rabbits
Utilization of progesterone receptor gene polymorphism in stabilization selection for broiler rabbit reproductive markers

Supervisors:
Assoc. Prof. Ing. Jana Moravčíková, PhD.
Assoc. Prof. Mgr. Daniel Mihálik, PhD.
Assoc. Prof. RNDr. Michaela Havrlentová, PhD.
Prof. RNDr. Miroslav Ondrejovič, PhD.
prof. RNDr. Ján Kraic, PhD.
Assoc. Prof. RNDr. Daniela Ondrejovič Chmelová, PhD.
Assoc. Prof. RNDr. Miroslav Horník, PhD.
Prof. Ing. Ildikó Matušíková, PhD.
Assoc. Prof. Ing. Miroslav Glasa, DrSc.
RNDr. Šarlota Kaňuková, PhD.

f) - Reference to the research/art/teacher profiles of the supervisors of final theses.

https://katedra-biotechnologii.webnode.sk/struktura-katedry-biotechnologii/vedecko-vyskumna-charakteristika-pedagogov-kbt/
http://fpv.ucm.sk/sk/pracovnici-bt.html

g) - Student representatives representing the interests of students of the study programme (name and contact details).

Mgr. Ľubomíra Jurečková (jureckova1@ucm.sk) – 1th year student in PhD Biotechnology

h) - Study advisor of the study programme (indicating contact details and information on the access to counseling and on the schedule of consultations).

Assoc. prof. RNDr. Daniela Ondrejovič Chmelová, PhD. e-mail: daniela.ondrejovic.chmelova@ucm.sk
The information on access to counselling is published on the department's website
https://katedra-biotechnologii.webnode.sk/struktura-katedry-biotechnologii/

i) - Other supporting staff of the study programme – assigned study officer, career counselor, administration, accommodation department, etc. (with contact details).

Study Department of the Faculty of Natural Sciences
Ing. Gabriela Jančovičová e-mail: gabriela.jancovicova@ucm.sk
Head of the UCM Student Home:
Mgr. Janka Gajdová e-mail: janka.gajdova@ucm.sk

8. - Spatial, material, and technical provision of the study programme and support

a) - List and characteristics of the study programme classrooms and their technical equipment with the assignment to learning outcomes and courses (laboratories, design and art studios, studios, workshops, interpreting booths, clinics, priest seminaries, science and technology parks, technology incubators, school enterprises, practice centers, training schools, classroom-training facilities, sports halls, swimming pools, sports grounds).

The pedagogical The pedagogical process of the bachelor's study program in biotechnology is carried out in classrooms in the UCM central buildings on J. Herda Square, on Hajdóczyho Street and in the UCM building in Špačince (4 km from the University Headquarters in Trnava), where suitable rooms for lectures and seminars are available. All classrooms are equipped with video projection technology. Laboratories used for teaching laboratory exercises (general, inorganic, organic chemistry, biochemistry), biology (basics of biology, advanced biology, microbiology, molecular biology), biotechnology (separation methods, enzymology) are equipped with basic tools (chemicals, laboratory scales). , smaller laboratory equipment) needed for each exercise. In addition, there are 5 special laboratories for work on bachelor's and master's theses.
http://fpv.ucm.sk/sk/o-nas/fakulta-v-obrazoch.html
The laboratories in which the research activity is carried out have the following equipment:
Equipment for all work in the field of fermentation technologies, protein biochemistry (isolation and characterization) and molecular biology (cloning, gene expression, mutagenesis, bioinformatics analysis). State-of-the-art instrumentation and computer technology is also available. Examples are BIOSTAT A plus Sartorius fermenter, comfort thermomixer, IKA MS3 BASIC, Bandelin Sonopuls UW 2200 sonicator, Astell autoclave, microscopes, Biotek El800 and MRX / (Dynex) microplate counters, HPLC (Waters, Pye Unicam, Young Lin and Philips with UV / Vis and DAD detectors, Shimadzu FTIR-8000 infrared spectrophotometer Shimadzu, CHNS / O Elemental Analyzer FLASH EA2000, UV-Vis spectrophotometers VARIAN CARY 50 and M350 Camspec, laboratory centrifuge UNIVERSAL 320 R, orbital shaker PSU-20 (Biosan), ES-20 environmental shaker, Buchi vacuum evaporators, HETTICH UNIVERSAL 32 centrifuge, HETTICH MIKRO 22 R refrigerated centrifuge, Eppendorf Minispin microcentrifuge, HOEFER SE 245 electrophoresis, MPLC preparative chromatography system (also gradient) laboratory Flow and PCR boxes centrifuges, thermostats, apparatus for agarose and polyacrylamide gels, shakers, DGGE) and has the extensive software needed for bioinformatics research.
Students have access to the Internet via Wifi in all buildings of the University. Lecture rooms, as well as laboratory rooms, are equipped with built-in data projectors, and there is a lecture room with an interactive whiteboard.
Standard software is installed on computers in computer labs (MS Windows 10, MS Office 365, ESET Endpoint Antivirus, Matlab, Java RE Standard Edition, Firefox, MS IE, ...).

b) - Characteristics of the study programme information management (access to study literature according to Course information sheets, access to information databases and other information sources, information technologies, etc.).

Every student of the faculty has secure internet access. ANS UCM students have the opportunity to work in computer laboratories outside the program-organized training according to their own interests and the needs of solving tasks from seminars and exercises. They have computer classrooms with computers connected to the Internet and an internet room with free access with adequate software in the main UCM buildings. Another terminal classroom is in the premises of ANS UCM in Špačince.
Computer classrooms are periodically supplemented with more powerful computers and new computer and chemical software (Dragon 6, IBM SPSS Statistics 19, Analysis, QC Expert 3.1, Statistica 10.2 Base and Statistica 10.2 DataMiner). All teachers as well as internal doctoral students have an assigned computer connected to the Internet. The faculty uses the Academic Information System (AIS2).
In the university library, students have the possibility of access to basic study literature (books, professional journals, company materials). Through the NAVIGA system, access to electronic resources is provided. NISPEZ system provides access to electronic information resources: Knovel Library, ProQuest Central, ScienceDirect, SpringerLink, Wiley Online Library, Wok-Current Contents, Wok-Web of Science, Web of Knowledge, Scopus, Reaxys.

c) - Characteristics and extent of distance education applied in the study programme with the assignment to courses. Access, manuals of e-learning portals. Procedures for the transition from contact teaching to distance learning.

Study in accredited study programs in full-time and part-time study is carried out at UCM using the full-time method. The method of distance education is used in times of unfavourable epidemiological situation, or in other situations that seriously limit the implementation of full-time teaching, according to § 108e par. 2 of the University Act, in times of crisis, educational activities carried out by the full-time method can be carried out by the distance method. This form of education is governed by the directive:
https://www.ucm.sk/docs/legislativa/2021/8_21_distancna_vyucba.pdf

d) - Institution partners in providing educational activities for the study programme and the characteristics of their participation.

- Slovak Academy of Sciences - cooperating workplace, performance of experimental activities of part of dissertations focused on plant and pharmaceutical biotechnologies
- National Agricultural and Food Centre, Research Institute of Plant Production, Piešťany - cooperating workplace, performance of experimental activities of part of dissertations focused on plant biotechnologies
- National Agricultural and Food Centre, Research Institute of Animal Production, Nitra - cooperating workplace, performance of experimental activities of part of dissertations focused on animal biotechnologies
- Research Institute of Brewing and Malting, Prague, Czech Republic - cooperation within foreign projects, cooperation within dissertations
- International Laser Centre, Bratislava - cooperating workplace, performance of experimental activities of part of dissertations
- ICARST, n.o., Bratislava - joint laboratory in the building in Špačince, ANS, UCM

e) - Characteristics of the possibilities for social, sports, cultural, spiritual and social activities.

In the master study program of biotechnology, the offer of selected subjects Sports Activities I to Sports Activities VI is intended for students. University of Ss. Cyril and Methodius in Trnava supports the extracurricular activities of its students in the form of financial contributions to ensure sports and cultural events. Every year, in addition to the earmarked contribution from the Ministry of Education, Research and Sports, a part of the funds is allocated within the university budget.
The procedure for submitting and approving applications for contributions to students' sports and cultural events is regulated by the university's internal regulations. Application for a financial contribution (https://www.ucm.sk/sk/sportove-a-kulturne-aktivity-studentov/).
Students can participate in activities:
Folklore ensemble Trnafčan
UniTTy University Choir
THE.ART.RE University Theater
Hit UCM Trnava - University Women's Premier League Women's Volleyball Team
Student magazine FF - Parazol
Student magazine Atteliér
Student Radio Aetter
FMK TV
FMK student project gaudeo.sk

f) - Possibilities and conditions for participation of the study programme students in mobilities and internships (indicating contact details), application instructions, rules for recognition of this education.

Opportunities and conditions for student participation in mobility are published on the faculty's website.
http://fpv.ucm.sk/sk/studium/studijne-pobyty.html

The system of allocating places under the ERASMUS+ programme is carried out by means of a selection procedure at the faculty.

The rules of recognition of this education are governed by the UCM Study Regulations and the document: https://www.ucm.sk/docs/legislativa/2022/predpisy_-_en/2021-17_Smernica_o_uznavani_absolvovanych_predmetov_AJ.pdf

9. - Required abilities and admission requirements for the study programme applicants

a) - Required abilities and necessary admission requirements.

Requirements for applicants and the method of their selection are specified in §56 to 58 of Act no. 131/2002 Coll. on Higher Education Institutions, they are regulated in more detail by the UCM Study Regulations in Trnava and the UCM Admission Procedure Regulations in Trnava.
https://www.ucm.sk/docs/legislativa/2022/predpisy_-_en/2021-29_Poriadok_prijimacieho_konania_UCM_AJ.pdf
https://www.ucm.sk/docs/legislativa/2022/predpisy_-_en/2020-8_Studijny_poriadok_UCM_AJ.pdf
The basic condition for admission to a master's study programme or to a study programme under Section 53(3) of the Act is the acquisition of a bachelor's degree in the same or a related study programme. A candidate for a master's degree must be able to demonstrate knowledge and skills at the level of a bachelor's degree. Admission to the Master's programme is without an entrance examination.

b) - Admission procedures.

https://www.ucm.sk/docs/legislativa/2022/predpisy_-_en/2021-29_Poriadok_prijimacieho_konania_UCM_AJ.pdf

The admission procedure at FNS UCM is carried out in accordance with Act no. 131/2002 Coll. on Higher Education Institutions and on Amendments to Certain Acts, Sections 56 to 58. The admission process will enable an applicant who proves the fulfillment of the specified conditions for admission to study to become a student of the chosen study program. An applicant who does not prove the fulfilment of the basic conditions for admission to the study at the time of verification of the fulfilment of the conditions for admission may be admitted to the study conditionally provided that he/she is obliged to prove the fulfilment of the basic conditions of admission to the study no later than on the day determined for enrolment.

The method of admission is governed by the general conditions approved by the academic senate of the faculty for the relevant academic year, and these conditions must be published together with the offer of study programs and the planned number of admitted applicants no later than two months before the last application deadline. General conditions of admission to study in accordance with Act no. 131/2002 Coll. about universities and university duties are published on the website of the faculty and university. Applications for university studies are accepted by the deadline, which is usually published, usually by the end of April of the respective academic year.

The admission procedure for master's degree programs takes place without an entrance examination. The basic condition for admission to the study program of the second degree is the completion of the study program of the first degree (Section 56 (2) of Act No. 131/2002 Coll. On Higher Education Institutions and on Amendments to Certain Acts). When admitting to the chosen study program, the fact whether the applicant has completed the study program at FNS UCM in Trnava or at another university with a related specialization is taken into account. Upon admission to the master's study program, the result of the bachelor's study is evaluated. In the case of applicants from other faculties and the completion of bachelor's studies in related fields, the composition of completed courses in the first stage of study is also evaluated. In the case of completing a bachelor's degree in related fields, the FNS Admissions Committee may require that entrance examinations be taken.

c) - Results of the admission process over the last period.

Academic year /Study program/ Number of applications/ Admissions Enrolment/Registration

- without students

10. - Feedback on the quality of provided education

a) - Procedures for monitoring and evaluating students' opinions on the study programme quality.

Quality assurance of pedagogical staff and control and monitoring of the pedagogical process in the form of observations are defined by the directive
https://www.ucm.sk/docs/legislativa/2022/predpisy_-_en/2021-52_Smernica_o_hodnoteni_tvorivej_cinnosti_na_UCM_AJ.pdf

The faculty ensures that the university teacher is the bearer of knowledge and experience for the transfer of knowledge in the subject he / she teaches. As part of the selection process, the faculty ensures compliance with the requirements of the minimum criteria related to education and the field, while the faculty defines additional criteria by which the teacher checks the carrier of professional knowledge and experience with regard to the subject he teaches. Emphasis is placed on the fact that university teachers use effective methods, methods and procedures for transferring knowledge in the subjects they teach. The function of monitoring the pedagogical process is to monitor and regularly evaluate the quality of the pedagogical process. The faculty declares its support for the professional growth of teachers.
The faculty thus strives to eliminate the risk of low quality and content focus of the study program in order to concentrate and process information from implemented questionnaire events and observations or other evaluations, review the pedagogical documentation of the study program and compare it with the concept of analogous study programs at renowned foreign universities.
The function of the survey of opinions of relevant target groups is to find out their opinions on various aspects of educational activities in order to obtain information that will lead to its improvement and to the adoption of effective measures to promote quality in all areas of faculty activities. The relevant target groups are the internal target groups of the respondents (students, teachers and other staff) and the external target groups of the respondents (especially graduates, employers and practitioners).
https://www.ucm.sk/docs/legislativa/2022/predpisy_-_en/2021-18_Ziskavanie_relevantnej_spatnej_vazby_od_zainteresovanych_stran_AJ.pdf

Student feedback:
http://fpv.ucm.sk/sk/o-nas/system-kvality-fakulty/2-uncategorised/158-hodnotenie-kvality-fakulty.html
A report containing suggestions as well as solutions is compiled from student feedback.
Monitoring and quality assessment in the field of international relations and cooperation:
UCM offers students and lecturers the opportunity to undertake a foreign study placement through the ERASMUS programme at one of the partner universities. In addition, it supports students and lecturers to undertake mobility abroad through other academic cooperation and exchange programmes.
A report is prepared once a year on the summary results of the regular monitoring and quality assessment in the field of international relations and cooperation.
http://fpv.ucm.sk/sk/studium/studijne-pobyty.html

b) - Results of student feedback and related measures to improve the study programme quality.

Monitoring and evaluation of quality in the field of information and promotion is a key area for eliminating information inequality and increasing the visibility of the faculty and its study programmes among students, applicants, teachers, employers and other public representatives. Evaluation is carried out through a comprehensive report or through a quality measurement and evaluation information system.

- The results for 2022/2023 are here:

http://fpv.ucm.sk/sk/o-nas/system-kvality-fakulty/2-uncategorised/368-dotazniky-2023.html

c) - Results of graduate feedback and related measures to improve the study programme quality.

The results of the feedback are published in the FPV Quality Report. The report includes an evaluation of the questionnaire investigations as well as proposed actions to address shortcomings.
http://fpv.ucm.sk/sk/o-nas/system-kvality-fakulty.html?id=301
The self-evaluation of the Biotechnology degree programme by current students and alumni is presented here:
http://fpv.ucm.sk/sk/o-nas/system-kvality-fakulty/2-uncategorised/368-dotazniky-2023.html
Suggested actions are summarised in the student feedback report.

11. - References to other relevant internal regulations and information concerning the study or the study programme student

(e.g study guide, accommodation regulations, fee directive, guidelines for student loans, etc.).

Schedule of FPV studies for the academic year 2022/2023
http://fpv.ucm.sk/images/studium/harmonogram_studia_2022_2023.pdf
Accommodation Regulations of the UCM Student House
https://www.ucm.sk/docs/legislativa/2022/predpisy_-_en/2021-27_Ubytovaci_poriadok_studentskeho_domova_UCM_AJ.pdf
Directive on Tuition Fees and Fees Associated with the Study at UCM
https://www.ucm.sk/docs/dokumenty/2022/2021-20_Smernica_o_skolnom_a_poplatkoch_spojenych_so_studiom_UCM_AJ.pdf