

Recommended pass through the study plan

Name of the pass: Biomedical Laboratory Methods 24/25, 25/26

Faculty/Institute/Others:

Department:

Pass through the study plan: Biomedical Laboratory Methods

Branch of study guaranteed by the department: Welcome page

Guarantor of the study branch:

Program of study: Biomedical Laboratory Methods

Type of study: Follow-up master full-time

Note on the pass: Informaci o p edepsaném minimálním po tu PV p edm t pro konkrétní jednotlivé semestry najdete v odpovídajícím studijním plánu programu.

Coding of roles of courses and groups of courses:

P - compulsory courses of the program, PO - compulsory courses of the branch, Z - compulsory courses, S - compulsory elective courses, PV - compulsory elective courses, F - elective specialized courses, V - elective courses, T - physical training courses

Coding of ways of completion of courses (KZ/Z/ZK) and coding of semesters (Z/L):

KZ - graded assesment, Z - assesment, ZK - examination, L - summer semester, Z - winter semester

Number of semester: 1

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
17BOZP	Occupational Safety and Health, Fire Protection and First Aid <i>Petr Kudrna Petr Kudrna Petr Kudrna (Gar.)</i>	Z	0	1P	Z	z
F7PMLBCH	Biochemistry <i>Pavla Bojarová, Jaroslav Racek Jana Jarošová Pavla Bojarová (Gar.)</i>	Z,ZK	6	2P+2L	Z	z
F7PMLDP1	Diploma Project I <i>Daniela Obítková Daniela Obítková Daniela Obítková (Gar.)</i>	Z	4	0P+3L	Z	z
F7PMLIMB1	Instrumental Methods in Biomedicine I <i>Vladimíra Petráková, Marie Pospíšilová, Taána Jarošíková, Romana Šíroká, Jan Mikšovský, Petr Písaík Taána Jarošíková Vladimíra Petráková (Gar.)</i>	Z,ZK	5	2P+2L	Z	z
F7PMLMFLP	Mathematics and Physics for Laboratory Practice <i>Petr Písaík, Milan Šíor, David Vrba, Jana Urzová Petr Písaík David Vrba (Gar.)</i>	Z,ZK	6	2P+2C	Z	z
F7PMLMBG	Molecular Biology and Genetics <i>Taána Jarošíková Taána Jarošíková Taána Jarošíková (Gar.)</i>	Z,ZK	5	2P+2L	Z	z
F7PMLSVV	Statistics and Results Evaluation <i>Marek Piorecký, Jan Štrobl, Michaela Mrázková, Tomáš Nagy Michaela Mrázková Marek Piorecký (Gar.)</i>	Z,ZK	4	2P+2C	Z	z

Number of semester: 2

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
F7PMLAS	Applied Statistics <i>Anna Horáková Anna Horáková Anna Horáková (Gar.)</i>	Z,ZK	4	2P+2C	L	z
F7PMLBAS	Biomedical Applications of Light <i>Jan Mikšovský, Petr Písaík, Jan Remsa Petr Písaík Petr Písaík (Gar.)</i>	Z,ZK	4	2P+1L	L	z
F7PMLDP2	Diploma Project II <i>Pavla Bojarová, Daniela Obítková Daniela Obítková Pavla Bojarová (Gar.)</i>	Z	4	0P+4L	L	z
F7PMLILP1	Individual Laboratory Practice I <i>Jana Jarošová Jana Jarošová Jana Jarošová (Gar.)</i>	Z	4	80XH	L	z
F7PMLIMB2	Instrumental Methods in Biomedicine II <i>Alena Zavadilová, Martin Vlk Martin Vlk Alena Zavadilová (Gar.)</i>	ZK	5	3P+0C	L	z
F7PMLMMM	Molecular Medicine Methods <i>Milan Jakubek Milan Jakubek Pavel Martásek (Gar.)</i>	Z,ZK	5	2P+2L	L	z
F7PMLPIM	Practical Training in Instrumental Methods <i>Alena Zavadilová, Martin Vlk Martin Vlk Alena Zavadilová (Gar.)</i>	Z	2	0P+3L	L	z
F7PMLPFCE	Preparation for the FCE Exam <i>Eva Motyková Eva Motyková (Gar.)</i>	Z	2	0P+2C	L	z

Number of semester: 3

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
F7PMLDP3	Diploma Project III	Z	4	0P+7L	Z	z
F7PMLFG	Forensic Genetics	Z,ZK	6	2P+2L	Z	z
F7PMLILP2	Individual Laboratory Practice II	Z	4	80XH	Z	z
F7PMLNTB	Nanotechnology in Biomedicine	Z,ZK	5	2P+1L	Z	z
F7PMLSDP	Diploma Thesis Seminar	Z	2	0P+1S	Z	z
F7PMLZBTI	Fundamentals of Cellular and Tissue Engineering	Z,ZK	5	1P+2L	Z	z
F7PMLGKB	Glycoconjugates in Biomedicine	ZK	4	2P+0C	Z	s
F7PMLPSMB	Advanced Spectroscopic Methods in Biomedicine	ZK	4	2P+0C	Z	s

Number of semester: 4

Code	Name of the course / Name of the group of courses (in case of groups of courses the list of codes of their members) <i>Tutors, authors and guarantors (gar.)</i>	Completion	Credits	Scope	Semester	Role
F7PMLDP4	Diploma Project IV	Z	10	0P+12L	L	z
F7PMLFSW	Fundamentals of Scientific Work	Z	4	0P+1S	L	z
F7PMLZDP	Diploma Thesis Preparation	Z	6	160XH	L	z
F7PMLBIOMA	Biomaterials and Biomaterial Characterization <i>Petr Písa ík</i>	Z,ZK	5	2P+1L	L	s
F7PMLBIOR	Biointerface	Z,ZK	5	2P+1L	L	s
F7PMLCPSP	Clean Rooms and Proper Practices for Modern Pharmaceutical Preparations	Z,ZK	5	2P+1L	L	s
F7PMLIMUNH	Imunohematologie	Z,ZK	5	1P+2L	L	s

List of groups of courses of this pass with the complete content of members of individual groups

List of courses of this pass:

Code	Name of the course	Completion	Credits
17BOZP	Occupational Safety and Health, Fire Protection and First Aid	Z	0
F7PMLAS	Applied Statistics	Z,ZK	4
F7PMLBAS	Biomedical Applications of Light	Z,ZK	4
F7PMLBCH	Biochemistry	Z,ZK	6
F7PMLBIOMA	Biomaterials and Biomaterial Characterization	Z,ZK	5
F7PMLBIOR	Biointerface	Z,ZK	5
F7PMLCPSP	Clean Rooms and Proper Practices for Modern Pharmaceutical Preparations	Z,ZK	5
Students will gain expert insight into the functioning of superclean spaces, isolators, and the basics of gas dynamics. Students will also become familiar with the requirements of clinical evaluations for medicinal products of modern therapy, with the design and division of superclean spaces for the production of these products; they will learn about the theoretical foundations and necessary components of quality assurance systems and, using the example of Good Manufacturing Practice (a system common in pharmacy), they will gain insight into the activity of production and control pharmaceutical operations of modern companies developing medicinal products for modern therapies. They will learn about the necessary legislation, requirements for validation and qualification of instruments, they will acquire the basics of metrology. In the theoretical part, students will be introduced to the latest technologies of cell and gene therapy, which are tested in clinical evaluations. In the practical part, students will try the production steps for cell preparations in super clean rooms.			
F7PMLDP1	Diploma Project I	Z	4
F7PMLDP2	Diploma Project II	Z	4
F7PMLDP3	Diploma Project III	Z	4
F7PMLDP4	Diploma Project IV	Z	10
F7PMLFG	Forensic Genetics	Z,ZK	6
F7PMLFSW	Fundamentals of Scientific Work	Z	4
F7PMLGKB	Glycoconjugates in Biomedicine	ZK	4
F7PMLILP1	Individual Laboratory Practice I	Z	4

F7PMLILP2	Individual Laboratory Practice II	Z	4
F7PMLIMB1	Instrumental Methods in Biomedicine I	Z,ZK	5
F7PMLIMB2	Instrumental Methods in Biomedicine II	ZK	5
F7PMLIMUNH	Imunohematologie	Z,ZK	5
F7PMLMBG	Molecular Biology and Genetics	Z,ZK	5
F7PMLMLFP	Mathematics and Physics for Laboratory Practice	Z,ZK	6
F7PMLMMM	Molecular Medicine Methods	Z,ZK	5
Hlavním cílem předmětu je prohloubit znalosti studentů o nové technologické postupy ve zpracování a analýze nukleových kyselin. Vysvětlení pojmů personalizovaná i molekulární medicína otevírá studentům zcela nové obzory ve zpracování a interpretaci genetických dat v běžné biomedicínské praxi.			
F7PMLNTB	Nanotechnology in Biomedicine	Z,ZK	5
F7PMLPFCE	Preparation for the FCE Exam	Z	2
The aim of the course is to prepare students for the FCE exam (B2 First) as the most widespread of the Cambridge English exams. Passing this exam proves the ability to speak and write at the B2 level. Within the subject, students focus on all parts of the exam: writing, Use of English, reading, listening. The same emphasis is placed on the development of spoken English, with the help of conversational exercises and other activities that improve the fluency of speech and therefore increase self-confidence when communicating in the English language. The subject further focuses on a comprehensive overview of important grammatical phenomena and their use in written and spoken speech. There is a development of reading comprehension and at the same time a creative expansion of vocabulary and idioms. The acquired vocabulary is used in the simulation of real life situations. The course introduces students to important techniques and strategies for the exam during practical practice of exam tasks.			
F7PMLPIM	Practical Training in Instrumental Methods	Z	2
F7PMLPSMB	Advanced Spectroscopic Methods in Biomedicine	ZK	4
F7PMLSDP	Diploma Thesis Seminar	Z	2
F7PMLSVV	Statistics and Results Evaluation	Z,ZK	4
The aim of the course is to get acquainted with the basic concepts of probability theory and mathematical statistics. The student is introduced to the probability model, the basic definitions of Kolmogorov's theory of probability and inductive statistics. They can apply these definitions to practical problems that arise in other areas of professional work and can explain them sufficiently (for example, doctors), they are familiar with the basic methods of inductive statistics and they can choose a suitable method for standard statistical problems.			
F7PMLZBTI	Fundamentals of Cellular and Tissue Engineering	Z,ZK	5
The aim of the subject is to acquaint students with the basics and methods of working with cell culture and their use both as a model replacement for in-vivo experiments and also as a means of preparing artificial tissue and organ replacements using tissue engineering methods. From the point of view of basic procedures, the issue of obtaining cell cultures of various phenotypes, suitable cultivation conditions, cultivation media, and instrumentation will be addressed. Substrates, biomaterials and decellularized carriers suitable for cell growth, the use of culture systems and bioreactors in terms of simulating physiological conditions and their contribution to supporting cell proliferation and differentiation for the needs of developing artificial tissue and organ replacements and 3D bioprinting technology will be addressed for application. The subject will also address the issue of legislation and regulatory conditions in connection with the use of tissue engineering for the preparation of artificial substitutes and modern therapy preparations. As part of practical laboratory exercises, topics related to the basics of working with cell culture, working in sterile conditions will be implemented; preparation of culture media; imaging of cell morphology using fluorescence microscopy and histological staining; cell culture isolation; preparation of two- and three-dimensional carriers based on nanofibers and hydrogels and their deployment in cultivation bioreactors; 3D bioprinting.			
F7PMLZDP	Diploma Thesis Preparation	Z	6

For updated information see <http://bilakniha.cvut.cz/en/FF.html>

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