



University of Maribor

Faculty of Medicine

## POSTGRADUATE STUDY BIOMEDICAL TECHNOLOGY

### 1 Introduction

In the last decades medical science has experienced stunning advancement, visible in many fields medicine is being intertwined with. Unavoidable intertwinement of medicine and other natural and humanistic science branches has resulted in technological advancement, which could be mastered only by the professionals with interdisciplinary knowledge. Important part of the particularly fast advancement in the field of interdisciplinary knowledge linked with medicine is happening in the field of technical knowledge. Usage of new materials, up-to date information technology, development of electronics, robotics, opto-electronics – are all fields which are accompanying modern medicine. Biomedical technology in Slovenia is a new postgraduate program, which interdisciplinary connect natural-technical science with medicine. There was no this kind of postgraduate study program in Slovenia before. Program, presented in this brochure, tries to link interdisciplinary technical science with medical knowledge on postgraduate level.

Univeristy of Maribor formed and advertised postgraduate study program »Biomedical Technology« after positive references of the Council for High Education of the Republic of Slovenia (Decision No 4, Session on 15th April 2005) and all other necessary procedures. In the academic year 2005/2006, first students were enrolled.

Rapid development of biomedical and engineering sciences urged establishment of a new postgraduate study program that had not existed in Slovenia before. Biomedical technology combines knowledge about clinical medicine, biochemistry, chemistry and chemical engineering, physics, mathematics, computing and informatics, electrical engineering and other related sciences. Postgraduate study program Biomedical Technology at the University of Maribor is organized and carried out by the following departments:

- Faculty of Medicine
- Faculty of Electrical Engineering and Computer Science
- Faculty of Chemistry and Chemical Engineering
- Faculty of Mechanical Engineering
- Josef Stefan Institute (Ljubljana, Slovenia)

Parts of the program are carried out in collaborations with the re-searchers from the institutions with which we have signed agreements.

## **2 Basic goals of the postgraduate - doctoral study of Biomedical Technology**

Doctoral study goals:

- to educate professionals who will be able to use and develop research methodology independently in the chosen interdisciplinary field;
- to enable highly educated professionals to perform interdisciplinary research and development in the different modern medicine and technical fields;
- education of professionals who will be able to raise their pedagogical knowledge to the more advanced – university level.

Goal of Biomedical Technology doctoral study program is to deepen researching knowledge about new biomaterials, usage of the up-to-date information technologies, electronics, robotics, etc, as well as development of the modern technology accompanying fields. Apart from theoretical themes, lectures, seminars and laboratory work, syllabus also demands fundamental, applicative and developmental researching project tasks.

After accomplishing doctoral study, candidates will be competent to carry out independent research and acquire new scientific recognitions, to develop new diagnostic and treatment methods in depth, and will be qualified for faster application of diagnostic and treatment methods from abroad. Candidates will also be able to conduct research clinical work, as well as applicative and fundamental research work in depth.

Throughout Biomedical Technology program we will strive to:

- educate students in the field of biomedical technology
- to enable basic and applicative research and clinical study within wide range of biomedical technology, for example in health care, virtual medicine, telemedicine, public health and measurement procedures, analysis of bioelectrical signals, gerontotechnology, robotics, computing, modelling and analysis of the images, biomaterials in medicine, etc.

## **3 International comparability of the program and international cooperation of the Faculty of Medicine University of Maribor**

Postgraduate study program Biomedical Technology is comparable with postgraduate study programs at the following foreign faculties and universities:

1. Doctoral Study of Medical Sciences, Medical University, Leopold-Franzens-Universität Innsbruck, Austria;
2. Health Technology, Medical Faculty University of Oulu, Finland;
3. Biomedicine, Medical Faculty University of Copenhagen, Denmark;
4. Postgraduate Program Medical Faculty, Karolin Institute, Stockholm, Sweden;
5. Biological and Biomedical Sciences, Medical Faculty, Harvard University, USA.

Cooperation with other high and research institutions is being performed within the research task framework, and carriers of the postgraduate study subjects.

#### 4 Curriculum, carriers and program credit evaluation

Biomedical Technology lasts 6 semesters (3 years). Study obligations of the whole programme are entirely in conformity with the Law and Measures of the Council of the Republic of Slovenia for Higher Education (ZViS, 36. in 37. Article). Study program is evaluated by ECTS – European Credit Transfer System. Thus the program can be directly included in the international student exchange programme with the countries also applying ECTS.

##### 1st year:

*Obligatory subjects:*

Biomedical Informatics	10 ECTS credits
Seminar	5 ECTS credits
Individual research work – IRW	15 ECTS credits
	= 30 ECTS credits

*Six basic subjects*, of which students can choose three, and gain  
3 x 10 = 30 ECTS credits

##### 2nd year:

Candidate gains 15 ECTS credits (3 x 5) for three Optional subjects, with IRW that is 45 ECTS credits.

##### 3rd year:

Candidate gains 60 ECTS credits with IRW, required for doctoral dissertation.

#### **OBLIGATORY SUBJECTS**

	<b>Obligatory Subjects</b>	<b>Lecturer</b>	<b>ECTS</b>
1.	<b>Biomedical informatics</b>	Prof. Dejan DINEVSKI Assoc. prof. Miljenko KRIŽMARIČ	10
2.	<b>Seminar 1</b>		

#### **BASIC SUBJECTS**

	<b>Basic Subjects</b>	<b>Lecturer</b>	<b>ECTS</b>
1.	<b>Biophysics</b>	Full prof. Marko MARHL	10
2.	<b>Biochemistry</b>	Full prof. Uroš POTOČNIK	10
3.	<b>Molecular biology</b>	Full prof. Uroš POTOČNIK	10
4.	<b>Genetics</b>	Full prof. Nadja KOKALJ-VOKAČ Full prof. Maja RUPNIK Full prof. Peter DOVČ Full prof. Damjan GLAVAC	10
5.	<b>Pharmaceutical Biotechnology</b>	Assist. prof. Uroš MAVER Full prof. Uroš POTOČNIK	10
6.	<b>Research in clinical practice</b>	Full prof. Ivan KRAJNC	10

## OPTIONAL SUBJECTS

	Optional Subjects	Lecturer	ECTS
1.	Bio-ceramics	Full prof. Tomaž KOSMAČ Full prof. Miha DROFENIK	5
2.	Nanoparticles in biomedicine	Full prof. Miha DROFENIK Full prof. Darko MAKOVEC	5
3.	Nutraceuticals and new trends in nutrition	Full prof. Dušanka MIČETIĆ TURK	5
4.	Synthesis, structure and characteristics of polymers	Full prof. Peter KRAJNC Full prof. Simona STRNAD	5
5.	Bioactive oriented polymers	Full prof. Karin STANA-KLEINSCHKEK Full prof. Simona STRNAD	5
6.	Synthetic biopolymers	Full prof. Peter KRAJNC	5
7.	Membrane mass transport phenomena	Full prof. Željko KNEZ	5
8.	Polymeric membranes in medicine	Full prof. Peter KRAJNC	5
9.	Selected topics in Cell biology	Assoc. prof. Saša LIPOVŠEK	5
10.	Microbial pathogenesis	Full prof. Maja RUPNIK	5
11.	Microbiological typing methods	Full prof. Maja RUPNIK	5
12.	Cell physiology	Full prof. Marjan SLAK RUPNIK Assist. prof. Andraž STOŽER	5
13.	Methods in cell physiology	Full prof. Marjan SLAK RUPNIK Assist. prof. Andraž STOŽER	5
14.	Mathematical physiology	Full prof. Marjan SLAK RUPNIK Full prof. Milan BRUMEN Assist. prof. Andraž STOŽER	5
15.	Rheology of biological systems	Full prof. Volker RIBITSCH	5
16.	Clinical biochemistry and laboratory medicine	Full prof. Janja MARC	5
17.	Clinical pharmacology	Assoc. prof. Sebastjan BEVC	5
18.	Clinical pharmacokinetics	Full prof. Aleš MRHAR	5
19.	Chosen chapters from toxicology	Full prof. Marija SOLLNER DOLENC	5
20.	Pharmacoepidemiology and pharmacoconomics	Full prof. Aleš MRHAR	5
21.	System theory	Full prof. Rajko SVEČKO	5
22.	Telematics	Full prof. Žarko ČUČEJ	5
23.	Biomedical signal processing	Full prof. Damjan ZAZULA	5
24.	Simulations and virtual environments for medical training	Full prof. Damjan ZAZULA	5
25.	Artificial intelligence methods	Full prof. Nikola GUID	5
26.	NMR in biomedicine	Assoc. prof. Igor SERŠA	5
27.	Biomedical electronics and photonics	Full prof. Denis ĐONLAGIČ	5
28.	Research methods in pathology	Full prof. Rastko GOLOUH	5
29.	Endoscopy and ultrasound in gastroenterology	Assoc. prof. Marjan SKALICKY	5
30.	Neurosurgery	Full prof. Tadej STROJNIK	5

31.	<b>Biomechanics, osteology, osteosynthesis</b>	Assoc. prof. Andrej ČRETNIK	5
32.	<b>Therapeutic methods in anaesthesiology</b>	Full prof. Mirt KAMENIK	5
33.	<b>Gynecologic oncology</b>	Full prof. Iztok TAKAČ	5
34.	<b>Three-dimensional ultrasonography in neurology</b>	Assoc. prof. Erih TETIČKOVIČ	5
35.	<b>Nephrology</b>	Full prof. Radovan HOJS Full prof. Breda PEČOVNIK BALON	5
36.	<b>Tissue oxygenation, metabolism and microcirculation</b>	Assoc. prof. Matej PODBREGAR	5
37.	<b>Cardiology</b>	Assoc. prof. Gorazd VOGA, Full prof. Andreja SINKOVIČ, Full prof. Matej PODBREGAR	5
38.	<b>Clinical immunology</b>	Full prof. Ivan KRAJNC	5
39.	<b>Infectious diseases</b>	Assist. prof. Nina GORIŠEK MIKSIČ	5
40.	<b>Chosen chapters on paediatry</b>	Assoc. prof. Nataša MARČUN VARDA	5
41.	<b>Chosen chapters from ophthalmology</b>	Full prof. Dušica PAHOR	5
42.	<b>Selected topics from psychiatry</b>	Full prof. Blanka KORES PLESNIČAR	5
43.	<b>Care of elderly people in a field of gerontology technology</b>	Full prof. Zmago TURK	5
44.	<b>Biomechanics load of low back</b>	Full prof. Zmago TURK	5
45.	<b>Molecular and cellular endocrinology</b>	Full prof. Marjan SLAK RUPNIK Assist. prof. Andraž STOŽER	5
46.	<b>Ethics of bio-medical research</b>	Full prof. Matjaž ZWITTER	5
47.	<b>Carcinogenesis and tumor biology</b>	Full prof. Matjaž ZWITTER	5
48.	<b>Molecular biophysics</b>	Full prof. Janez ŠTRANCAR	5
49.	<b>Materials for controlled drug delivery</b>	Full prof. Peter KRAJNC	5
50.	<b>Pharmacogenomics</b>	Full prof. Uroš POTOČNIK	5
51.	<b>Vascular implants</b>	Assoc. prof. Kazimir MIKSIČ	5
52.	<b>Assessment of cardiac and circulatory function</b>	Assoc. prof. Gorazd VOGA	5
53.	<b>New technologies in family medicine</b>	Assoc. prof. Zalika KLEMENC KETIŠ	5
54.	<b>Nutraceuticals and technology</b>	Full prof. Mojca ŠKERGET	5
55.	<b>Functional cell models</b>	Full prof. Uroš POTOČNIK	5
56.	<b>Breast oncology</b>	Full prof. Iztok TAKAČ	5
57.	<b>Urogynecology and reconstructive surgery</b>	Full prof. Igor BUT	5
58.	<b>Maxillofacial surgery introduction to stomatology</b>	Assist. prof. Bogdan ČIZMAREVIČ	5
59.	<b>Tuboperitoneal infertility</b>	Assoc. prof. Milan RELJIČ	5
60.	<b>Mechanisms and biomechanics of injury in trauma</b>	Assoc. prof. Andrej ČRETNIK	5
61.	<b>Clinical pathophysiology of emergencies</b>	Assoc. prof. Dušan MEKIŠ	5

62.	<b>Intelligent data analysis in Medicine</b>	Full prof. Milan ZORMAN	5
63.	<b>Applied biostatistics in Clinical research</b>	Full prof. Peter KOKOL	5
64.	<b>Applications of molecular immunology in clinical practice</b>	Full prof. Ivan KRAJNC Full prof. Uroš POTOČNIK	5
65.	<b>Modern surgical techniques and applied surgical anatomy</b>	Full prof. Vojko FLIS	5
66.	<b>Experimental surgery</b>	Full prof. Vojko FLIS	5
67.	<b>Dermatovenerology</b>	Assoc. prof. Jovan MILJKOVIĆ	5
68.	<b>Chosen chapters on dermatooncology</b>	Assoc. prof. Jovan MILJKOVIĆ	5
69.	<b>Comprehensive approach towards health problems</b>	Assoc. prof. Zalika KLEMENC KETIŠ	5
70.	<b>The role of family in health and illness of individual person</b>	Assoc. prof. Zalika KLEMENC KETIŠ	5
71.	<b>Doctor patient communication</b>	Assoc. prof. Zalika KLEMENC KETIŠ	5
72.	<b>Corporate governance in health care</b>	Assoc. prof. Borut BRATINA Full prof. Žan Jan OPLOTNIK	5
73.	<b>Urology – selected topics</b>	Assist. prof. Tine HAJDINJAK	5
74.	<b>Telemedicine</b>	Full prof. Dejan DINEVSKI	5
75.	<b>Molecular allergology</b>	Assoc. prof. Peter KOROŠEC	5
76.	<b>Female and male infertility</b>	Full prof. Veljko VLAISAVLJEVIĆ	5
77.	<b>Reproductive biology and Embryology</b>	Assoc. prof. Borut KOVAČIČ Full prof. Veljko VLAISAVLJEVIĆ	5
78.	<b>Advanced multidisciplinary analytics in biomedicine</b>	Assist. prof. Uroš MAVER Assist. prof. Matjaž FINŠGAR	5
79.	<b>Chosen chapters from emergency medicine</b>	Assist. prof. Matej STRNAD	5
80.	<b>Ultrasound in emergency medicine</b>	Assist. prof. Matej STRNAD	5

Table 1: Kind of the subject units regarding its percentage in the structure of the programme

**First year:**

<b>SUBJECT</b>	<b>KIND OF SUBJECT</b>	<b>ECTS</b>	<b>PERCENTAGE (%)</b>
Biomedical informatics	Obligatory	10	16,6
Seminar 1	Obligatory	5	8,3
IRW I.	Obligatory	15	25
1. Basic subject	Basic	10	16,6
2. Basic subject	Basic	10	16,6
3. Basic subject	Basic	10	16,6

### Second year:

Study syllabus will be carried out if **at least five** candidates have applied, otherwise it will be carried out **individually**.

SUBJECT	KIND OF SUBJECT	ECTS	PERCENTAGE (%)
1. Optional subject	Optional	5	12,5
2. Optional subject	Optional	5	12,5
3. Optional subject	Optional	5	12,5
IRW II.	Optional	45	62,5

### Third year:

SUBJECT	KIND OF SUBJECT	ECTS	PERCENTAGE (%)
IRW III.	Obligatory	60	100

Table 2: Number and percentage of lectures, seminars and practical work in Biomedical Technology study program

Year	Hours total	Lectures	%	Seminar	%	Lab. work	%	Ind. work	%
1	1800	80	4,44	205	11,38	60	3,33	1455	80,83
2	1800	45	2,5	105	5,83	30	1,66	1620	90
3	1800	0	0	0	0	0	0	1800	100
<b>Total</b>	<b>5400</b>	<b>125</b>	<b>2,31</b>	<b>310</b>	<b>5,74</b>	<b>90</b>	<b>1,66</b>	<b>4875</b>	<b>90,27</b>

Third year: 60 ECTS credits gains a candidate for individual research work (IRW), which is meant to be a doctoral thesis.

## 5 Biomedicine Technology postgraduate study subjects are linked horizontally and vertically

Horizontal link of the subjects is assured, so students are able to choose logically linked subjects giving them theoretical basis for their doctoral dissertation.

Vertically, subjects are upgrading, so that the first-year-subjects are upgraded in the second year, offering theoretical basis for doctoral work.

There is a possibility of subject exchange with the comparable programs of the same quality carried out at other universities. This possibility has to be approved by the Senate of the Medical Faculty University of Maribor. International exchanges are carried out on the basis of international mutual contracts and agreements about mutual recognition of obligations. ECTS evaluation of the subjects stimulates international exchange.

## 6 Credit evaluation of the program

Complete study program is evaluated according to ECTS. Study year is valid 60 ECTS credits, i.e. semester is valid 30 ECTS credits. There are three obligatory subjects valid 5, 10 and 15 ECTS credits. Each obligatory subject, with hours and ECTS credits, is shown in the Table 3.

There are six basic subjects, of which students chose three. Basic subjects, shown in the Table 4, are valid 10 ECTS credits.

At the moment, there are 78 optional subjects, of which students choose three. Each subject is valid five ECTS credits. Syllabus will be implemented if there are **at least five applied students**, otherwise it will be carried out **individually**. Optional subjects are shown in the Table 5.

Individual research work in the first study year is valid 15 ECTS credits, in the second year 45, and in the third year 60 ECTS credits.

Postgraduate student is able to choose subjects from the other home or foreign universities if their program has been evaluated according to ECTS. Students are allowed to collect up to 20 ECTS credits outside the primary study program.

Table 3: Obligatory subject (hours and ECTS credits)

Obligatory subjects	ECTS credits	Contact hours	IRW (hour)
Biomedical Informatics	10	75	225
Seminar I	5	30	120
Ind. Research work - IRW	15	15	435

Table 4: Basic subjects (hours and ECTS credits)

Basic subjects	ECTS credits	Contact hours	IRW (hour)
Biophysics	10	75	225
Biochemistry	10	75	225
Molecular biology	10	75	225
Genetics	10	75	225
Pharmaceutical biotechnology	10	75	225
Research in Clinical Practice	10	75	225



Table 5: Optional subjects (hours and ECTS)

	OPTIONAL SUBJECTS	ECTS	CONTACT HOURS	IRW (HOURS)
	Ind. Research Work – IRW II.	45	45	1305
1.	Nanoparticles in biomedicine	5	45	105
2.	Bio-ceramics	5	45	105
3.	Nutraceuticals and new trends in nutrition	5	45	105
4.	Synthesis, structure and characteristics of polymers	5	45	105
5.	Bioactive oriented polymers Synthetic biopolymers	5	45	105
6.	Synthetic biopolymers	5	45	105
7.	Membrane mass transport phenomena	5	45	105
8.	Polymeric membranes in medicine	5	45	105
9.	Selected topics in Medical cell biology	5	45	105
10.	Microbial pathogenesis	5	45	105
11.	Microbiological typing methods	5	45	105
12.	Cell physiology	5	45	105
13.	Methods in cell physiology	5	45	105
14.	Mathematical physiology	5	45	105
15.	Rheology of biological systems	5	45	105
16.	Clinical biochemistry and laboratory medicine	5	45	105
17.	Clinical pharmacology	5	45	105
18.	Clinical pharmacokinetics	5	45	105
19.	Chosen chapters from toxicology	5	45	105
20.	Pharmacoepidemiology and pharmacoconomics	5	45	105
21.	System theory in Medicine	5	45	105
22.	Telematics	5	45	105
23.	Biomedical signal processing	5	45	105
24.	Simulations and virtual environments for medical training	5	45	105
25.	Artificial intelligence methods	5	45	105
26.	NMR in biomedicine	5	45	105
27.	Biomedical electronics and photonics	5	45	105
28.	Endoscopy and ultrasound in gastroenterology	5	45	105

29.	Research methods in pathology	5	45	105
30.	Neurosurgery	5	45	105
31.	Biomechanics, osteology, osteosynthesis	5	45	105
32.	Therapeutic methods in anesthesiology	5	45	105
33.	Gynecologic oncology	5	45	105
34.	Three-dimensional ultrasonography in neurology	5	45	105
35.	Nephrology	5	45	105
36.	Tissue oxygenation. Metabolism and microcirculation	5	45	105
37.	Cardiology	5	45	105
38.	Clinical immunology	5	45	105
39.	Infectious diseases	5	45	105
40.	Chosen chapters in pediatry	5	45	105
41.	Chosen chapters from ophthalmology	5	45	105
42.	Selected topics from psychiatry	5	45	105
43.	Molecular and cellular endocrinology	5	45	105
44.	Ethics of bio-medical research	5	45	105
45.	Carcinogenesis and tumor biology	5	45	105
46.	Materials for controlled drug delivery	5	45	105
47.	Care of elderly people in a field of gerontology technology	5	45	105
48.	Biomechanics load of low back	5	45	105
49.	Molecular biophysics	5	45	105
50.	Pharmacogenomics	5	45	105
51.	Assessment of cardiac and circulatory function	5	45	105
52.	Vascular implants	5	45	105
53.	New technologies in family medicine	5	45	105
54.	Nutraceuticals and technology	5	45	105
55.	Functional cell models	5	45	105
56.	Breast oncology	5	45	105
57.	Urogynecology and pelvic reconstructive surgery	5	45	105
58.	Maxillofacial surgery introduction to stomatology	5	45	105
59.	Tuboperitoneal infertility	5	45	105

60.	Mechanisms and biomechanics of injury in trauma	5	45	105
61.	Clinical pathophysiology of emergencies	5	45	105
62.	Intelligent data analysis in Medicine	5	45	105
63.	Applied biostatistics in clinical research	5	45	105
64.	Applications of molecular immunology in clinical practice	5	45	105
65.	Modern surgical techniques and applied surgical anatomy	5	45	105
66.	Experimental surgery	5	45	105
67.	Dermatovenerology	5	45	105
68.	Chosen chapters on Dermatooncology	5	45	105
69.	Comprehensive approach towards health problems	5	45	105
70.	The role of family in health and illness of individual person	5	45	105
71.	Doctor patient communication	5	45	105
72.	Corporate governance in health care	5	45	105
73.	Urology – selected topics	5	45	105
74.	Telemedicine	5	45	105
75.	Molecular allergology	5	45	105
76.	Female and male infertility	5	45	105
77.	Reproductive biology and Embryology	5	50	100
78.	Advanced multidisciplinary analytics in biomedicine	5	45	105
79.	Chosen chapters from emergency medicine	5	45	105
80.	Ultrasound in emergency medicine	5	45	105

*Third year: 60 ECTS credits for Individual research work – IRW, oriented towards a doctorate.*

## **7 Admission requirements**

Admission requirements are accordant to the valid Law of High Education Act.

Candidates who completed the following may apply for the doctoral (3rd-cycle) programme “Biomedical Technology”:

- A master’s (2nd-cycle) programme in the field of medicine (medicine and dental medicine), pharmacy and veterinary medicine. Other graduates must pass an entrance examination in the following subjects: biochemistry, molecular biology, pharmacology, and biophysics.
- An undergraduate programme adopted prior to 11 June 2004 in the field of medicine (medicine and dental medicine), pharmacy and veterinary medicine. Other graduates must pass an entrance examination in the following subjects: biochemistry, molecular biology, pharmacology, and biophysics.
- A bachelor’s vocational programme adopted prior to 11 June 2004 and a specialisation programme in the field of medicine (medicine and dental medicine), pharmacy and veterinary medicine. Other graduates must pass an entrance examination in the following subjects: biochemistry, molecular biology, pharmacology, and biophysics. Prior to enrolment, these candidates must fulfil study obligations corresponding to 60 ECTS credits.
- A study programme educating students for professions regulated by EU directives and corresponding to 300 ECTS credits (e.g. medicine, dental medicine, veterinary science, as well as the five-year programme “Pharmacy”). Other graduates must pass an entrance examination in the following subjects: biochemistry, molecular biology, pharmacology, and biophysics, corresponding to 300 ECTS credits.
- Graduates of other Slovene universities and foreign universities in the field of medicine (medicine and dental medicine), pharmacy and veterinary medicine. Other graduates must pass an entrance examination in the following subjects: biochemistry, molecular biology, pharmacology, and biophysics, as applies to students of the Republic of Slovenia. In accordance with the Statute of the University of Maribor, the equivalency of foreign academic qualifications is determined in the procedure for the recognition of academic qualifications.

If the number of applications exceeds the number of positions available, candidates will be ranked according to:

- grade point average (15%);
- grade awarded for the undergraduate or master’s thesis (5%);
- grade in the elective exam (80%) – a written exam in the field of medicine, natural sciences and engineering. Candidates may replace 40% of the elective exam grade with the grade awarded for scientific research and professional work.

Criteria for the evaluation of scientific research:

- scientific monograph
- independent scientific paper or chapter in a monograph
- original scientific paper or review article in journals with impact factor (JCR) or journals indexed in SCI, SSCI or A&HCI databases

Criteria for the evaluation of professional work:

- professional monograph or review
- independent professional paper or chapter in a monograph
- published professional conference contributions
- professional papers and/or review of these papers

- participation in editorial boards of monographs or journals
- other documented forms of professional work

## **8 Study programme promotion prerequisites**

Assessments of the students' performance are given for their exams, seminars and practical work. Assessment methods are described for each syllabus.

Conditions for promotion into 2<sup>nd</sup> year are met when **ALL** study obligations from 1<sup>st</sup> year in the value of at least **45 ECTS** credits are collected, and following first year obligatory syllabus accomplished:

- Biomedical Informatics,
- Seminar I, and
- Individual research work - IRW.

Aim of the Seminar I. is to present content of the research work or project candidate is going to deal with during their study. Content of the seminar can be a review of the field or a conceptual frame of the work. Individual research work in the first study year means preparation of seminar work in writing and its oral presentation in front of the other candidates and tutor/mentor and moderator. Design of the seminar content should facilitate candidates to prepare their doctoral dissertation. When applying for the 2<sup>nd</sup> year, candidates must deliver an assignment for evaluation of its appropriateness for doctorate, and mentor's approval.

Condition for promotion into 3<sup>rd</sup> year is met when ALL study obligations from 1<sup>st</sup> and 2<sup>nd</sup> year, valid **120 ECTS** credits, are fulfilled. Enrolment into the third study year is also a dead line for students to submit application for evaluation of the chosen theme for doctoral work, as well as mentor's approval.

Last study year is reserved for Individual Research Work – IRW, oriented to preparation of doctoral thesis (**60 ECTS** credits).

Written doctoral work and its defending are prerequisites for finalisation of the study, as well as accomplishment of all the other obligations, collecting at least 180 ECTS credits. An article from the field of the doctorate, published in the SCI indexed review, or SSCI with the IF quotation, has to be submitted. An article which results from the doctoral thesis must be published after the enrolment to postgraduate study Biomedical Technology. Doctoral thesis has to be defended in front of the commission and has to be published by candidate as a first author.

## 9 Transfer between programmes

In accordance with the transfer criteria, candidates who completed the following may be admitted to the second year of the doctoral (3rd-cycle) programme “Biomedical Technology”:

1. A master’s programme (MSc) in the field of biomedicine and affiliated fields adopted prior to 11 June 2004 – these candidates are awarded 60 ECTS credits;
2. An undergraduate programme adopted prior to 11 June 2004 and a specialization programme in the field of biomedicine and affiliated fields – these candidates are awarded 60 ECTS credits.

In accordance with the transfer criteria, candidates may transfer to the doctoral (3rd-cycle) programme “Biomedical Technology” from programmes in the field of biomedicine and affiliated fields. The following criteria apply:

- fulfilled admission requirements,
- the number of positions available.

Under the recognition process, satisfied obligations that may be recognized are identified. Candidates must submit a programme outline, a certificate of the exams passed, and an official print-out of the programme. The Faculty’s Academic Affairs Committee decides on the applications and determines new study obligations required for completion of the doctoral (3rd-cycle) programme.

## 10 Obtaining of the scientific title

After doctoral postgraduate study programme has been successfully accomplished, a candidate is given the title **Doctor of Science in Biomedical Technology**.