



**CZECH TECHNICAL UNIVERSITY IN PRAGUE**  
**FACULTY OF BIOMEDICAL ENGINEERING**

study program

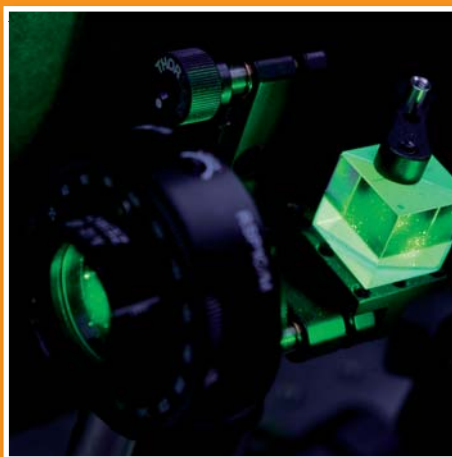
**BIOMEDICAL AND CLINICAL TECHNOLOGY**

Master's study

# **INSTRUMENTS AND METHODS FOR BIOMEDICINE**

full-time study

2 years



# INSTRUMENTS AND METHODS FOR BIOMEDICINE

## Master's study

### STUDY OBJECTIVE

Instruments and Methods for Biomedicine (IMBM) is a 2-year Master's study program intended for graduates of bachelor's program focusing on natural and life sciences, engineering and healthcare. IMBM is a multidisciplinary program with emphasis on novel advanced methods and technology and their applications to biology and medicine. It is suitable for graduates from bachelor's program in biomedicine

as well as other fields provided the applicant is eager to expand her/his expertise in different areas. Students will acquire advanced knowledge in physics, molecular biology, chemistry, applied mathematics, optics and optoelectronics, spectroscopy, nanotechnology and lasers, as well as physiology, biochemistry and immunology.

Due to the high multidisciplinary nature of the program, graduates of this program will find employment in progressive bio/technological and pharmaceutical companies, hospitals, companies developing devices, technologies and products for biological and clinical laboratories. Another possible engagement is with academic research institutes and universities. IMBM provides an ideal foundation for doctoral studies and academic career.



### CURRICULUM AND RESEARCH PROJECT

We place great emphasis on the integration of our Master's Degree students in the ongoing research at FBME. Your degree will include a significant piece of research that will result in a report (the first year project) and a diploma thesis. In the first year, each student will choose a research topic from the wide portfolio offered by academic staff of the faculty and experts from collaborating institutions both in the Czech Republic and abroad. Students thus can tailor their individual study program according to their own interests and/or needs of the prospective employer. Approximately one third of the 2-year study program is defined by core compulsory courses. The second third of the study content consists of optional modules in which the students choose their own specialization. The remaining third of the study is designated for the research project and independent study. As the number of mandatory classes gradually decreases, the students have more time for supervised research. The diploma thesis is the final phase of the study; the diploma project constitutes more than half of the last semester.

The Department of Natural Sciences has numerous partners in the Czech Republic (the institutes of the Czech Academy of Sciences, university hospitals) and collaborates with esteemed experts across the world. Students of the IMBM program can thereby complete part of their diploma project abroad, at one of collaborating

institutions (e.g., Brown University, Providence, RI, USA; University of Strathclyde, Glasgow, UK; University of Hasselt, Belgium; RWHT Aachen University, Germany; University of Kassel, Germany, etc.).

## SKILLS AND KNOWLEDGE YOU WILL ACQUIRE IN IMBM

### Responsibility

Throughout your study, you will work on your own project; you will be assigned a specific research task. You will seek suitable path towards solution, you will utilize knowledge from different fields and learn to apply new methods and approaches.

### Critical and independent thinking

You will learn to identify necessary information for your study. You will be able to apply knowledge from different areas to a wider context by recognizing connections and cross-links between them. You will be able to utilize them to your specific task. You will design the appropriate methodology and establish your own schedule for your experiments and analyze the results.

### Expertise and professionalism

You will attend a variety of specialized courses in physics, chemistry, and biology. You will build your professional profile by selecting your own optional modules.

### Collaboration and contacts

You can choose a research topic studied by teams from collaborating institutions – other universities, faculties or institutes of CTU, institutes of Czech Academy of Sciences, or foreign research and academic institutions. By doing so you will gain experience in different working environments, meet new people, start establishing professional and personal connections for your future career.



## GRADUATE PROFILE

As a graduate of IMBM, you complete a specific technical or research task in overlapping scientific fields, applying new methods and technology to biomedicine. You gain insight into a new field and directly applied newly learned knowledge to solve practical problems. You learn to search for relevant scientific and technical literature and to recognize information that will help you with your project. You learn to critically assess the results of your work and to clearly present them to experts of various fields. You acquire truly interdisciplinary experience. The experience in IMBM helps you think out of box and to bring new innovative solutions to transdisciplinary scientific and engineering problems.

# INSTRUMENTS AND METHODS FOR BIOMEDICINE

## Master's study

### EXAMPLES OF JOB OPPORTUNITIES

**R&D employee** – you have expertise, creativity, and courage to go beyond the primary field of your education. You know how to solve a specific technical task and bring it to its successful end. You are capable of communicating with people of different professions and of coordinating a broader team of experts.

**Product/Application specialist** – you represent link between the customer and the product of your company. You have a broad overview of the current topics in biomedicine and you are able to quickly familiarize yourselves with your client's field of expertise. You can deliver an optimal solution tailored for the client's needs.

**Academia** – you have a solid fundamental knowledge for further study in a doctoral program. You have valuable connections in academia and you are well informed of the most updated topics in biomedical research. You are creative and self-reliant.

### WHY IMBM?

You will

- + gain expertise in a cross-disciplinary, modern and dynamic field of biomedicine.
- + tailor your study plan according to your preferences and interest.
- + have two years for your research project. This gives you the opportunity to solve even a very complex task and to genuinely understand the topic/area you work on.
- + work on a project and diploma thesis outside FBME, on other institution in Czech Republic or abroad.
- + be eligible and qualified for a long-term study stay abroad, e.g. Erasmus program because of your project-oriented study.
- + learn to clearly present your results to multidisciplinary and international audience.
- + gain insight over a large spectrum of research areas as well as skills that are important for any profession – self-reliance, ability to search and critically analyze information, presentation and communication skills, responsibility, good time-management, ...

### CONTACT US

**DEPARTMENT OF NATURAL SCIENCES**

**siffnerova@fbmi.cvut.cz**

**phone: +420 224 359 915**

**<http://kpo.fbmi.cvut.cz/>**

**STUDY AFFAIRS**

**studijni@fbmi.cvut.cz**

**phone: +420 224 358 473**

**<http://www.fbmi.cvut.cz>**

