

Meet the Faculty of Science, Masaryk University

The Faculty of Science was established in 1919. The faculty is founded on the tradition of Gregor Johann Mendel (1822–1884), the world-famous father of genetics. During the course of its existence, the faculty has successfully produced many prominent figures (luminaries, notable scientist, standouts) in biology, chemistry, geography, geology, physics, and mathematics. To this day, it primarily remains a research-oriented faculty, offering university education closely linked to both primary and applied research and high school teaching of the following sciences: mathematics, physics, chemistry, biology, and Earth sciences.

To date, the Faculty of Science is credited with several scientific achievements of international significance. Specific areas of research focusing on the harmonic development of the individual natural sciences are the priority objectives. A substantial part of the faculty's research activity is also devoted to non-specific research, closely linked to instructions in doctoral degree programmes.

Faculty's Mission

- We strive to teach and train next generation of scientists and teachers.
- We carry out basic and applied research and make discoveries.
- We integrate research in a multidisciplinary and international manner.
- The main goals of basic and applied research are to acquire knowledge and experience.
- We make an effort to apply our discoveries for the benefit of the humanity.

Education

The Faculty of Science provides education in all natural sciences: Biology, Chemistry, Geography, the Earth sciences, Physics; and Mathematics.

At present, there are 54 bachelors, 64 masters and 40 doctoral majors of studies.

The Faculty has about 3700 students, 800 of them doctoral students.

The studies are based on the ECTS credit system, and Masaryk University has been awarded a prestigious ECTS label.

The high scientific output of the faculty is evidence of the excellent professional skills of academic staff and is instrumental in maintaining state of the art laboratories that are available to students as well. Broad cooperation with international institutions gives many students an opportunity to spend part of their studies abroad.

Study Programmes

The Faculty of Science provides higher education in all fundamental majors of natural sciences, such as biochemistry, biology, chemistry, geography, geology, mathematics, and physics.

There are 158 accredited majors of study in bachelor's, master's, and doctoral degree programmes, designed to educate specialized researchers in sciences, and also future secondary school teachers.

Double-major studies are also available thanks to interfaculty agreements with the Faculty of Arts, Faculty of Education, Faculty of Economics and Administration, Faculty of Informatics and Faculty of Sports Studies.

Doctoral Degree

The primary goal of the graduate studies is to prepare students to engage in original research after acquiring thorough knowledge and understanding of a discipline. All graduate programmes are focused on scientific research and independent, creative practical or theoretical work in fundamental and applied research and development. The standard period of the graduate study is four years, which may be extended to a maximum period of seven years. Studies are pursued according to an individual study plan under the guidance of a supervisor and are completed by passing a standard examination and by defending a submitted dissertation.

Employment Possibilities of our Graduates

Master's degree programme graduates find employment as educators, as researchers in both primary and applied research at universities, government research institutes, institutes of the Czech Academy of Sciences, and in the commercial sector. The best graduates may continue their studies and enroll in either full-time or combined doctoral studies.

Graduates of accredited Teacher training for secondary education follow-up master's degree programmes and are fully qualified and eligible for teaching positions in majors such as mathematics, physics, chemistry, biology, geography, and cartography.



Master's degree programme graduates find application as educators and as research workers.

Research and Development

The Faculty of Science performs fundamental research to expand the knowledge base and to create the starting point for applications with innovative contributions. The faculty also

fosters cooperation both with the government and private sector in terms of applied research and development (R&D). The R&D takes into account the needs of society, oriented towards enhancing the quality of human life. This approach encompasses scientific activities in interdisciplinary branches such as life and materials sciences and environmental research, as well as in basic research disciplines.

The research is carried out through close links with doctoral studies organized in 9 main programmes - Biochemistry, Biology, Chemistry, Geography, Geology, Mathematics, Physics, Advanced materials and nanosciences, and Life sciences.

At present, around 400 scientific projects from various grant providers are carried out at the MU Faculty of Science with few examples given below.

One of the major research funding resources are the EU structural funds that supported development of two major R&D centres at the Faculty – RECETOX and CEPLANT. These receive further support from the National large research infrastructure roadmap. In 2018, the faculty continued working on other projects funded from the EU structural funds (Operational Programme Research, Development and Education - OP VVV). These include infrastructure building (projects CETOCOEN +, RECETOX RI, Bioanalytical Technology Infrastructure, Chemistry Infrastructure, ECOPOLARIS) as well as grants supporting development of doctoral research programmes in Chemistry, Bioanalytical Technology and Physics. In August 2018, the implementation of two other important OP VVV projects started including the preclinical research of novel compounds attractive for commercialization by innovative pharmaceutical companies (PRECLIN Progress project) and contributing to development of the strategic Czech nuclear fuel repository (GEOBAR).

We are also successful in the calls from the EU framework programme. Faculty of Science has carried out eleven EU H2020 projects during 2017-2018, and currently received positive decision on four other H2020 grants starting in 2019 that will address various aspects of environmental impacts on health of human populations (projects OBERON, ERGO, ONCOBIOME, HERA).

Basic research at Faculty of Science is from large part supported by competitive grants from the Czech National Science Foundation (GAČR). Currently, four Centres of Excellence supported by GAČR run at the Faculty focusing on basic research in the fields of plant diversity, algebra and geometry, advanced bioanalytical technologies or European centre for ichthyoparasitology. In addition, individual researchers at faculty run 60 standard GAČR grant projects, 9 junior grants awarded to starting PIs and 2 bilateral international GAČR projects.

Among other activities, Faculty of Science currently prepares the EU H2020 Teaming project CETOCOEN EXCELLENCE, which aims to strengthen the international position in the field of environmental health by creating a Centre of Excellence together with major European partners like UCL - University College London, Swiss ETH, and the European BBMRI biobanks consortium.

During last ten years (2007-2017), researchers of the Faculty published around 7 000 research papers or reviews in the impacted journals of the ISI Web of Science that all together received more than 80 000 citations. The Faculty of Science thus creates about 50 % of the scientific output of the entire Masaryk University.



Figure: Polar research in Antarctica is carried out by the scientists of the Faculty of Science at the Johann Gregor Mendel Station. This station was founded and is operated by Faculty of Science MU.

Technology Transfer

The Faculty of Science benefits from the establishment of the Technology Transfer Office (TTO) at MU. The TTO assisted Faculty of Science in filing 50 national and 29 international patent applications and 33 utility model applications. Thanks to this, Faculty of Science was granted 40 Czech and 31 international patents and 32 utility models. In cooperation with TTO, 5 spin-off companies were established and several trademarks were registered. The TTO team helped to launch a number of successful commercialization projects at Faculty of Science. Students can enroll in courses taught by TTO lecturers, and employees have an opportunity to attend workshops and meetings with commercial partners. TTO promotes research results of Faculty of Science scientists on a long-term basis – e.g., in the field of protein engineering, plasma surface modifications, or forensic anthropology.

The dissemination of knowledge acquired through research is one of the main functions of the research faculty. In recent years advanced economies have placed great emphasis on the transfer of new technologies and knowledge to the industrial sector.

Our faculty is an important link in the "education -> science, research and development -> investment -> transfer to industry -> product" chain.

Outreach to School Students, Teachers and Public

The faculty has a long established reputation for delivering excellent outreach activities to primary and high school students and teachers.

Outreach activities are available during the year both in-house, in the field, and at schools.

We offer a wide variety of science and maths events for pupils and teachers, such as long-term correspondent seminars, one-day competitions, weekends and days for prospective students and the public.

Every year The Night of Scientists attracts many visitors.

