

**We create the professions
of the future**



FNM in 2018



**Faculty of
Natural Sciences
and Mathematics**

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MARIBOR - UNIVERSITY CITY

Maribor is **the second largest city in Slovenia** with approximately 110,000 inhabitants. It is the economic, cultural and educational centre of the north-eastern part of Slovenia. It lies at the intersection of transport routes from central to south-eastern Europe and from western central Europe to the Pannonian Plains. Settlements at this place date back nearly a thousand years ago, but the city began to develop faster **in the middle of the 18th century**.

University of Maribor is the second largest and the second oldest university in Slovenia. **Around 14,000** students and 2,000 employees at the University make **Maribor a university city in all respects**. Students give the city a youthful pulse and an intellectual perspective, and professors add their academic and professional excellence.

Maribor boasts a rich and diverse cultural tradition; in 2012, it was the **European Capital of Culture**. It is the site of the **world's oldest vine**, which is over 400 years old. It has beautiful green surroundings. Mountain range Pohorje has a ski centre that regularly hosts FIS World Cup races in skiing. The university aside, there is also developed congress tourism. Maribor is, among other things, the city where pioneer of space research **Herman Potočnik Nordung** was active and **Nikola Tesla** lived for a while.



FACULTY OF NATURAL SCIENCES AND MATHEMATICS



The Faculty of Natural Sciences and Mathematics (FNM) boasts one of **the oldest traditions** at the University of Maribor. It was founded from the Faculty of Education, which was a founding member of the University.

The Faculty is distinguished by **exceptional research excellence and above-average students' assessments of professors**. The excellent relations between the employees prevail, there are very collegial relations between students, where the **tutoring system** is particularly important. We are proud of the exemplary relationships between students and professors.

FNM, as the only faculty at the University of Maribor, is according to **World University Rankings** ranked among the top 400 in the world within two study fields.

There are 4 departments at the faculty, departments of biology, physics, mathematics and computer science, and technology. We cover **13 study programs at all three levels**. All programs boast numerous opportunities for students to acquire the in-depth understanding of theoretical background, important practical skills and competences. This provides them with **excellent employment opportunities** and a great competitive advantage in the labour market. We are the only faculty in Slovenia who have a pedagogical master study program that directly opens doors for the employment at primary and secondary schools.

We are proud of our graduates, masters and PhDs, whose success and career progress we monitor each year at the Alumni Club meetings. And we are especially proud of our employees who perform their work on a high and globally comparable level.

Dean of the FNM
prof. dr. Mitja Slavinec

**We strive
for slogan:**



We create the professions of the future.

**We are
persistently
following our
vision**



To be the leading educational, research and development centre in the region in the field of basic natural sciences and mathematics as well as being the leading centre in Slovenia for the education of teachers in all fields of science, mathematics and technical professions at all levels of education.

EDUCATION

At the Faculty of Natural Sciences and Mathematics University of Maribor we offer pedagogical and non-pedagogical university study programs in the fields of biology, ecology with nature conservation, physics, mathematics, computer science, technology and chemistry. As the first and the only one in Slovenia we offer a **5-year pedagogical master program** which also enables **three-course study**. We are particularly proud of our doctoral study programmes, with a deepened scientific research work in their forefront.

Our most important educational goals are the placement of our graduates into the labour market, their integration with employers, the quality of our education and the appropriate staffing structure as well as the relationship between assistants and professors in relation to students. We provide constant development of teaching and research competences of our lecturers and the students are motivated with a creative competition, and are offered international mobility and lifelong learning.

In the academic year 2018/19, **191 students were enrolled** in the first year of study, of which there are:

- **98** BSc students,
- **25** MSc students of 5-year program
- **55** MSc students and **13** PhD students.

In total, **498 students are studying** at the faculty, of which there are:

- **233** BSc students,
- **54** MSc students of 5-year program
- **172** MSc students and **39** PhD students.

In 2018, **154 students** graduated, of which there were:

- **85** BSc diplomas,
- **65** MSc diplomas and **4** PhD Theses.

Vice-Dean for Education Affairs

Prof. dr. Franc Janžekovič



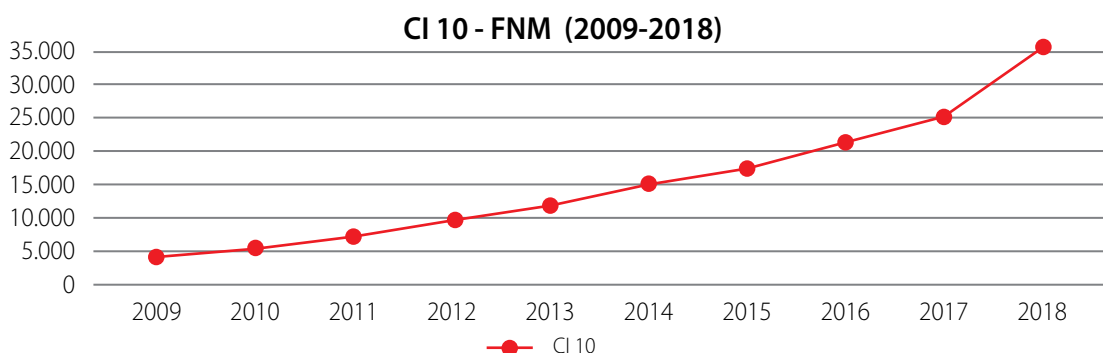
RESEARCH

Scientific research at the Faculty of Natural Sciences and Mathematics has a long and rich tradition. Our researchers also achieve excellent results on a global scale. Two of them were awarded with the **Zois Prize, the highest recognition of the Republic of Slovenia for scientific research**, one of them the Puch Prize and three of them the Zois Award. Among them we find a member of the **Slovenian Academy of Sciences and Arts** and a member of the **European Academy**. Therefore, it is no coincidence that the Faculty regularly ranks among the best in all grades of the research work of the University of Maribor and internationally. In 2017, the University of Maribor was ranked among the **top 300 world universities by the Times rankings** in the fields of mathematics, statistics, physics, astronomy, chemistry, geology and environmental sciences. The fields of mathematics as well as physics and astronomy, which we also develop at the Faculty of Natural Sciences and Mathematics, were ranked in the prestigious rankings of the **QS World University Rankings in 2017**. In the field of physics we managed to repeat this ranking also in 2018.

We have successfully completed 9 basic projects and a large number of applicative projects. We participate in 6 core programs. Current projects carried out at FNM include: Phase transitions against co-operation in coupled populations, Development, testing and evaluation of an autonomous intelligent and adaptable e-learning environment for raising the information literacy of adolescents, and Cross numbers and their use.

In the international arena, we are leaders or partners in projects from most research-relevant countries of all continents. Research activity is reflected in postgraduate studies in which students are very successful in their research work.

The **reputation of our research work is remarkable**, as evidenced by the trend of the ten-year index of citations of research articles at the Faculty of Natural Sciences and Mathematics (in 2018 the number exceeds 36.000).



Vice-Dean for Scientific Research and International Affairs
prof. dr. Boštjan Brešar

COOPERATION WITH THE COMMUNITY

In the field of research and education the Faculty cooperates with the community either directly within the framework of shared employee recruitments or as a participant in joint projects. Cooperation outside the university environment is also very important.

Partner companies

Cooperation with companies is the closest in the fields of statistical and algorithmic data processing and modelling as well as physics-based analyses and modelling of natural phenomena, machine construction, and mapping and nature protection-based evaluation of habitat types.

Partner schools

As a part of study, pedagogical students give lectures and attend the lectures at schools and thus come into contact with their future work environment and, hence, they are the first ambassadors who present our faculty to future students.

We invite pupils and teachers to presentations, such as days of science, research camps, open days at the faculty, to visit vivarium and more. Among participants we create a motivating atmosphere for learning about science, mathematics and technology, and give them opportunities to upgrade their interest for the study at FNM.



Participation in organizations, bodies and commissions

Employees and students participate actively in **commissions and bodies** at all levels, such as the General Council of the Republic of Slovenia for Education, the Research Agency, DMFA, the Society of Biologists of Slovenia, the State Secondary-School Graduation Commissions etc. through which they influence the development of policies, promote the development of science and technology knowledge and raise awareness of the importance of these skills for a modern society.

Science popularization

Many activities, such as thematic days and professional lectures for secondary schools and other interested public, organizing the competitions in physics, biology and constructing, publishing popular articles or media broadcasts on the latest scientific discoveries, are highly visible in the environment. However, they are also noticed by the professional public, who, as a rule, every year awards our employees with the **Prometheus in Science Award**.

Career centre

Through a network of companies students systematically gather informal knowledge through personal consultations and enrich their experiences. We provide employers with access to prospective candidates.

Natural Sciences and Mathematics Club

With the foundation of the Academy of Natural Sciences and Mathematics, the club started to create an environment in which it will provide additional support to the most talented pupils and students.

Centre for lifelong learning

It offers opportunity for further education of graduates related with the »pedagogical« social environment. It implements programs of continuous professional training of teachers, various forms of non-formal education and training. **FNM is the only institution in Slovenia** that offers study programs for additional qualification for primary schools teachers.

Vice-Dean for Cooperation with Public Institutions

prof. dr. Blaž Zmazek

STUDENTS

Student Council

Students interests and opinions are represented by the Student Council. It is the only body, which consists exclusively of students, and is led by a Vice-Dean student for student affairs. Our motto is »From students for students«. Members of the Council discuss about the strategies for successful study, how to raise the quality of studies, about the suggestions and possible problems, and we create common opinions on important issues regarding higher education, in particular about students rights and obligations. In the course of the year we organize events, in which we strengthen the relationships among students in a relaxed atmosphere.

Tutors

The tutors are successful students who help other students with advices. They also facilitate the adaptation of newcomers to the university environment and increase the transition of students to the next year of the study.

Society of Natural Science Students

Society of Natural Science Students associates students of biology, ecology with nature conservation and other natural sciences at FNM. We share the desire for more practical field work and professional lectures from the topics of the Life Sciences.

Vice-Dean Student for student affairs

Neja Trontel



IMPORTANT EVENTS AND ACHIVEMENTS



Obtainment of our own research program from **ARRS**



The study program physics was ranked on the **WUR scale**



Prof. dr. Matjaž Perc was awarded with **Zois prize**



The issue of commemorative mark on the occasion of the centenary of academian **Ivan Vidav**

The most cited paper of **prof. dr. Boštjana Brešarja** in the journal Discrete Applied Mathematics

Prof. dr. Matjaž Perc was ranked among the 1% of the most cited researches in the world

Ranking among the **250 best programs** in the world

Foundation of the Academy of **Natural sciences and mathematics**

The keynote speaker at the »Day of FNM« event was **prof. dr. Maja Makovec Brenčič**

Organisation of the 5th **International Entomological congress**

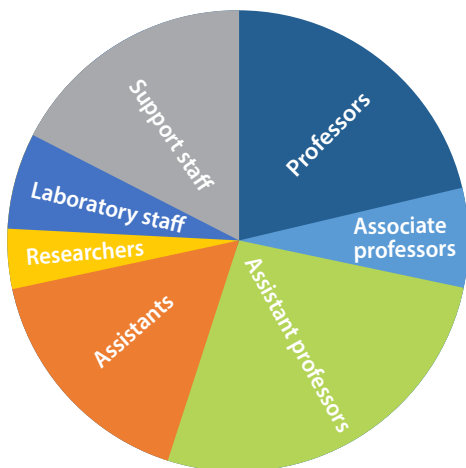
FNM IN NUMBERS

The Faculty of Natural Sciences and Mathematics employs 89 full-time and part-time employees and 57 other employees. A total of 528 students are studying at the faculty.

The average age of employees is 45 years, which indicates that the faculty has an optimal combination of young power and experience.

The total budget of the faculty is € 3.8 million.

► Professors:	19
► Associate professors:	12
► Assistant professors:	7
► Assistants:	20
► Researchers:	8
► Laboratory staff:	6
► Support staff:	16





PRESENTATION OF FNM DEPARTMENTS



Faculty of Natural Sciences and Mathematics

Department of

Biology



Department of

Physics

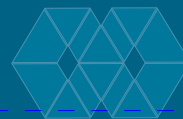


Department of

Mathematics and Computer Science

Department of

Technical Education



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 www.facebook.com/FNM.Maribor

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Department of

Biology and Chemical Education

STUDY PROGRAMS

- ▲ BACHELOR PROGRAM – BIOLOGY (3 years, 180 ECTS)
 - ▲ BACHELOR PROGRAM – ECOLOGY WITH NATURE CONSERVATION (3 years, 180 ECTS)
 - MASTERS PROGRAM – BIOLOGY AND ECOLOGY WITH NATURE CONSERVATION (2 years, 120 ECTS)
 - UNIFIED BACHELOR + MASTERS PROGRAM – TEACHER OF BIOLOGY AND*;
TEACHER OF CHEMISTRY AND*
 - * Biology, Chemistry, Mathematics, Physics, Design and Technology, Computer Science (5 years, 300 ECTS)
 - PhD PROGRAM – ECOLOGICAL SCIENCES (3 years, 180 ECTS)
- *large number of different field excursions*
 - *involvement of students in research and R&D projects already at bachelor and masters level*
 - *innovative and interdisciplinary elective courses*
 - *flexible MSc and PhD programme structure*
 - *possibility of internship and student exchange*

RESEARCH AREAS

- Vegetation Ecology of Grasslands, Flora of Slovenia
- Coastal Habitats, Archaeobotany, Landscape ecology
- Zoology, Animal Behaviour
- Basic and Applied Ecology
- Biodiversity and Nature Conservation
- Microbiology
- Plant and Animal Physiology
- Biology and Chemistry Didactics



The study of life at the Department of Biology UM embraces many areas of biological interest to expand our knowledge of biodiversity and its conservation.

www.biologija.fnm.uni-mb.si

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www.facebook.com/katedraizokem.fnmum
Email: biologija.fnm@um.si

Physics

STUDY PROGRAMS

- ▶ **BACHELOR PROGRAM – PHYSICS** (3 years, 180 ECTS)
 - **UNIFIED BACHELOR + MASTERS PROGRAM – TEACHER OF PHYSICS AND*** (5 years, 300 ECTS)
* Mathematics, Chemistry, Biology, Design and Technology, Computer Science
 - **MASTERS PROGRAM – PHYSICS** (2 years, 120 ECTS)
 - **PhD PROGRAM – PHYSICS, BIOPHYSICS, EDUCATIONAL PHYSICS** (3 years, 180 ECTS)
-
- *theory and application oriented programs*
 - *involvement of students in research and R&D projects already at bachelor and masters level*
 - *innovative and interdisciplinary elective courses*
 - *possibility of internship and student exchange*

RESEARCH AREAS

- Physics of Complex Systems
- Soft Matter Physics
- Biophysics
- Applied Physics
- Physics Education



ESSENTIAL SCIENCE INDICATORS - THOMSON REUTERS:

„The University of Maribor has entered the top 1% of institutions in the field of Physics - and it did so with the highest number of citations.“
<http://archive.sciencewatch.com/inter/ins/08/08mayMaribor/>

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Department of

Mathematics and Computer Science

STUDY PROGRAMS

- ▶ **BACHELOR PROGRAM – MATHEMATICS** (3 years, 180 ECTS)
- **UNIFIED BACHELOR + MASTERS PROGRAM – TEACHER OF MATHEMATICS AND*;
TEACHER OF COMPUTER SCIENCE AND***
* Mathematics, Computer Science, Biology, Physics, Chemistry, Design and Technology (5 years, 300 ECTS)
- **MASTERS PROGRAM – MATHEMATICS** (2 years, 120 ECTS);
EDUCATIONAL MATHEMATICS (2 years, 120 ECTS)
- **PhD PROGRAM – MATHEMATICS** (3 years, 180 ECTS)

- *educating experts with knowledge of mathematics and computer science to work in the economy, financial sector and research institutes*
- *educating mathematicians, future teaching assistants and university professors*
- *educating teachers of mathematics*
- *educating teachers of computer science*

RESEARCH AREAS

- Algebra
- Applied Mathematics
- Differential Equations
- Discrete Mathematics
- Geometry
- Mathematics Education
- Computer Science Education and E-learning
- Topology



WE COUNT ON YOU

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✉ matematika.fnm@um.si

Department of

Technical Education

STUDY PROGRAMS

- ▲ **UNIFIED BACHELOR + MASTERS PROGRAM – TEACHER OF DESIGN AND TECHNOLOGY AND*** (5 years, 300 ECTS)
* Biology, Chemistry, Computer Science, Mathematics, Physics
- **MASTERS PROGRAM – EDUCATIONAL DESIGN AND TECHNOLOGY – SINGLE MAJOR** (2 years, 120 ECTS)
- **PhD PROGRAM – EDUCATION IN TECHNOLOGY AND ENGINEERING** (3 years, 180 ECTS)

- *education of design and technology teachers*
- *the link between theory and practice in pedagogical terms*
- *innovative and interdisciplinary elective courses*
- *possibility of internship and student exchange*



RESEARCH AREAS

- Development of Teaching Models
- Cognitive Neuroscience and Philosophy of Mind
- Intelligent Tutoring Systems and Smart Learning Environments
- Integration of Technical Sciences and Knowledge Transfer to Education

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