

Strategic plan of the Faculty of Natural Sciences and Mathematics of the University of Maribor (FNM UM)

- The strategic plan presents the fundamental quality objectives for the 10-year period (2012 – 2022) and the required action plan.
- The strategic plan draws on the faculty's vision and mission that were adopted by the Senate of the FNM UM in its 14th regular meeting as of 24 Jan 2012.
- The attainment of the set quality objectives is the responsibility of the management of the FNM UM (the dean and vice-deans).
- More detailed procedures for achieving the goals and persons in charge are determined annually in the FNM UM work programme and action plan.
- The FNM UM strategic plan includes the quality objectives in the following areas:
 - educational work,
 - scientific and research work,
 - professional work,
 - the faculty as a whole,
 - international positioning and recognition of achievements in all areas of our activities.

Faculty vision

To be a leading educational, scientific research and application development centre of the region in biology, ecology, physics and mathematics; to be a leading training centre in Slovenia for teachers of natural sciences, mathematics and technical disciplines at all levels of education.

Faculty mission

To generate new knowledge in fundamental science: in mathematics, physics, biology, ecology and educational sciences in the areas of biology, mathematics, physics, chemistry, technical and computer science and environmental education; transfer of knowledge to educational, scientific and professional sphere in order to improve the quality of life of people and foster sustainable development.

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1 Scientific research activities

Situation:

→ please see the 2010/11 Self-evaluation report.

Objectives:

- top-class international scientific research work in all areas of our study courses,
- globally acknowledged faculty with well-known expert researchers,
- to bring to the UM such research discoveries which will rank the UM among the first 500 universities in the world,
- in top laboratories in Slovenia and its wider region develop also specific original research areas which complement the research areas that are being explored at the institutes in the vicinity (e.g. Graz, Ljubljana),
- to enter the European project system,
- the share of the staff employed in research positions amounts to at least 30 % of all the employees,
- to establish a system that would enable a sabbatical year every 7 years (at least for the best researchers),
- to develop interdisciplinary scientific areas and realise broader research projects by connecting research groups within the faculty, among the UM faculty members and in co-operation with other research institutions in the Republic of Slovenia and the EU,
- to include students in research work from study level 1 onwards.

Actions:

- expansion of research laboratories and upgrade of the existing ones in the frame of the ARRS public tenders for the purchase of equipment and the EU projects,
- proposals for participation in national and international projects as project leaders and partners; from the quantitative point of view: post-doctorate students normally propose a postdoctoral project; academic staff every few (3 or 4) years propose or participate in the preparation of project proposal documentation.
- young researchers' mentorship proposals: applied by anybody meeting the Slovenian Research Agency (ARRS) quantitative criteria,
- participation in larger projects in companies that include employment of young researchers, hiring of researchers from JRO, employment of foreign researchers, hiring of internal researchers,
- stimulation of scientific research performance in connection with the planned method of recruitment and promotion (habilitation) at the UM and in Slovenia,
- to study the possibility of introducing the so called "lecturers" and thus reduce the work load of the most successful researchers; to achieve that they will lecture between 3 and 6 lessons a week on the subjects from their research area,
- in every period specified by the ARRS attract and host at least one top researcher from abroad at each of the research institutes,
- invite top international professionals (via the calls of the ARRS, Ad Future, national and international European projects),
- internationalise scientific research job positions,
- prioritize potential employments to bridge a very large qualitative gap in the existing research areas or to launch and establish new research areas which are of crucial importance for the faculty,
- to simplify the promotion (habilitation) system for recruitment in scientific research positions and thus enable employment of foreign researchers for the duration of a project,
- annually or bi-annually organise or co-organise an international scientific research conference,
- participation in bodies that shape research policy at the UM level and especially at the national level; encourage collaboration in the European region as reviewers, project supervisors etc.

- collaboration with research groups of other faculties via academic and research staff in the areas of physics, mathematics, biology, employed at other faculties; to show the importance of fundamental science for research work in other fields (medicine, health, economy, technical sciences ...) and also by such co-operation transfer fundamental research to the application level.

2 Educational activities

Situation:

- please see the 2010/11 Self-evaluation report.

Objectives:

- to help graduates from all disciplines and at all levels to enter the labour market and at the same time contribute to annual increase in demand for graduates in mathematics, physics, biology and ecology with nature conservation,
- to link students with potential employers already during study at all academic levels,
- to permanently increase the quality of educational work,
- improve the staff structure by ensuring one university teacher - tutor per maximum 15 students,
- to hire top researchers who are also excellent lecturers to teach at level 2 and 3,
- to reach a critical number of enrolled students to ensure quality competition during their studying (15 or 30 students in the first year of a study course) and increase the interest for study courses so that for the majority of them enrolment restrictions in place will be harmonised with the requirements of society,
- to increase international mobility of incoming and outgoing students,
- to attract a major share of students from the central and western Slovenia as well as foreign students (internationalisation of studying),
- to offer alumni (and others) a possibility of life-long learning and professional education in all areas for which our study courses are held.

Actions:

- to permanently increase the quality of educational work:
 - evaluate the quality of work and student workload by means of surveys/questionnaires,
 - development of student and teaching staff tutorship,
 - design of procedures and strategy for continuous improvement of pedagogical work,
 - development of e-study material identify the areas for which it is advisable to prepare e-materials and increase their volume on an annual basis,
 - provide extra-curricular activities,
 - include foreign lecturers in the study process implementation,
 - include education, economy and research institute experts in the study process implementation (as well as challenges/problems/ideas/skills from these areas)
 - actively involve students in professional and scientific research projects at all study levels,
- to ensure the critical number of students:
 - permanent promotion of the importance of natural sciences and mathematics with the general public (please see the area of communication under quality objectives for the faculty as a whole) and promotion of the significance of scientific research work in all FNM work areas to improve general wellbeing and sustainable development,
 - promotion of the elective applied subjects during open days: at the FNM we do not offer merely education, but also contacts with those who require graduates in our study areas,

- to increase international nature of study and mobility:
 - introduce subjects that can be potentially taught in English in all the courses at level 2 (at level 3 they are already available if required); to select subjects also for level 1;
- to introduce graduates to the labour market:
 - to introduce elective applied subjects in all study courses and include at minimum 50 % of all 3rd-year students at level 1 and 1st and 2nd year students at level 2,
 - scope of co-operation with businesses: minimum one company per 5 3rd-year students at level 1 and 1st and 2nd year students at level 2,
 - to include information on innovation process from the areas of all study courses in the study process (with the help of the Career Centre),
- to ensure life-long learning:
 - identify areas suitable for life-long learning, for instance by means of surveys aimed at graduates/alumni,
 - offer the option of life-long learning to business partners (prepare clear topics for the target audience),
 - improve tracking of our graduates' employability and select appropriate employability areas for life-long learning,
 - prepare and when required accredit new study courses to update the knowledge; accreditation is not a requirement; if the contents prove to be useful, the seminars will be attended, provided that they are supported by sufficient promotion: promotion is carried out through our alumni club, internet news and direct e-mailings aimed at potential users.

3 Professional activities

Situation:

- please see the 2010/11 Self-evaluation report.

Objectives:

- strengthening co-operation with the economy in the area of joint development of innovative products and services,
- strengthening co-operation with educational institutions at all levels of education, participation in expert committees of the ministry in charge and public institutions in the field of education,
- to continuously increase student participation in business projects by means of preparation of seminar and research papers as well as diploma theses,
- providing and continuously increasing the scope of professional services for business partners,
- encouragement of transfer/application of fundamental research achievements to the economy in the form of patents and improvements,
- to increase recognition of graduates in all disciplines and at all levels on the job market and at the same time influence the annual increase of demand for graduates in mathematics, physics, biology and ecology with nature conservation,
- to link potential employers with students at all study levels via problem based learning in the frame of the existing subjects and by introducing selected applied subjects,
- to attract experts from the economy, schools, public administration and research institutes in order to include them in the study process,
- active participation in the school policy-related decisions,
- building and maintaining a network of potential employers for the skills provided at our faculty.

Actions:

- every year increase the scope of co-operation with businesses by including students in business projects by means of preparation of seminar and research papers as well as diploma theses,
- identify potential professional services for businesses and establish contacts with companies based on collaboration proposals,
- joint proposals with businesses for Slovenian and international project calls,
- identification of educational needs in the economy and preparation of suitable forms of training,
- regular presentations of study courses, of the faculty as a whole and the FNM graduates' competences to potential employers,
- development of joint projects with companies, public service and research institutions,
- increase collaboration in development projects with schools,
- promotion of study of natural sciences and mathematics through applicative and research workshops at schools,
- conduct purpose-designed functional forms of training for the needs of the economy,
- participation of academic staff in professional committees and work groups of the ministry in charge and public institutions in the field of education,
- participation in target research projects and other projects in education,
- to hold regular annual workshop "How to obtain mathematics and natural sciences skills for your organization" in co-operation with the Chamber of Commerce and Industry of Štajerska (Styria), Association of Employers of Slovenia, Slovenian Human Resources Association and Association of Municipalities and Towns of Slovenia, including the presentation of applied subjects and other potential ways of collaboration,
- promoting the innovation process with students and potential employers and collaboration with companies in order to translate results of applied subjects into innovations; innovation proposals for tenders of the Chamber of Commerce and Industry of Štajerska.
- organisation of innovation workshops in the frame of the FNM Career Centre and UM Technocentre and encouragement of students to consider commercialisation of outcomes of the target applied subjects.

4 Faculty as a whole

Situation:

- please see the 2010/11 Self-evaluation report.

Objectives:

- to gain competitive advantages by renovation of our facilities and permanent modernisation of laboratory equipment to perform pedagogical and research activities,
- to provide sufficient facilities for the faculty through the construction projects planned by the UM,
- permanent effort to ensure quality pedagogical and research staff,
- promotion of natural sciences and mathematics in the society and raising awareness in society of the importance of science in every-day life,
- establish a donation system based on successful faculty alumni (individuals and companies),

- by systematic reporting on all major events and responding to media invitations and appeals,
- ensure sufficient staff for all areas of the faculty's activities,
- constant efforts to ensure positive atmosphere and relationships among employees, students and between the faculty staff and students.

Actions:

- maintain and modernise the facilities on a yearly basis by using the ministry funds and additional donations,
- based on our communication strategy promote natural sciences and mathematics in society,
- implement regular annual interviews with employees,
- regular annual analysis of quality of our pedagogical and research staff and if required, preparation of corrective measures,
- implementation of personal responsibility for the growth of scientific research and result attainment,
- link annual reviews with assessment of objective attainment for the previous year and setting objectives for the next year,
- link the promotion criteria with attainment of these personal objectives,
- regular updates of the faculty's strategy, link the strategy with the employees personal objective.

5 International positioning and international recognition in all areas of our activities

Situation:

- please see the 2010/11 Self-evaluation report.

Objectives:

- scientific research work of the FNM UM staff is internationally acknowledged in all the areas of our study process,
- our educational work is internationally recognised, as evident from the mobility of incoming students at the FNM and from the number of foreign students who study regularly at the FNM UM.

Actions:

- the quality of scientific research work at the FNM UM is measured by the ARRS indicators and the Web of Science indicators,
- measures for achievement of quality objectives in a scientific area are given under item 1; scientific research in fundamental disciplines of natural sciences, mathematics and special didactics is positioned and assessed in the international environment,
- measures for achievement of quality objectives in educational area are given under item 2.