University of Maribor
Faculty of Electrical Engineering and Computer Science

Self-evaluation Report
Academic year 2011/2012
Summary

December 2012

Collaborators who participated in the preparation of this report: editors from supporting offices, education office, research office, international office, student council, working group for promotion, and quality review committee.

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1   INTEGRATION WITH THE ENVIRONMENT

1.1   Mission

The Faculty of Electrical Engineering and Computer Science (FERI) at the University of Maribor (UM) provides students with knowledge based on internationally recognized scientific research work, thus enabling them to be successfully integrated within future working environments in Slovenia and/or abroad.

1.2   Vision and Strategy

- To strengthen the positions of our internationally-recognized university education and research institutions within the fields of electrical engineering, computer science, information technology, communications, media, telecommunications and mechatronics, throughout Central Europe,
- To maintain high quality and be of interest for undergraduate and graduate students from Slovenia and abroad.

Strategic aims:

- Improvement of teaching based on scientific research work,
- Achievement of internationally-comparable scientific research excellence,
- Increasing our share of motivated students from Slovenia and abroad,
- Preserving the areas of applied tasks, and further developing tasks and resources,
- Modernization of teaching and research infrastructures,
- Promoting the transfer of knowledge and technologies within our environment.

 Key values:

- Academic responsibility,
- The quality of teaching, scientific research, and development work,
- High ethical standards,
- Social responsibility and sustainable development.

1.3   Integration with the environment and connection with our graduates

FERI integration with the environment is reflected by close cooperation with industry in the regions of Styria, Carinthia, and Prekmurje, where the vast majority of our graduates are employed. Integration and cooperation are spanned, of course, also into other Slovenian regions. Regarding the research and development work 23 projects are in progress in the year 2013.
Another important aspect of FERI integration with the environment is a regular dialogue with our graduates through Alumni Club UM FERI. The survey of our graduates is in progress and the results will be available soon.

1.4   Employability of FERI graduates

Data from Employment Service of Slovenia show that there is a significant shortage of FERI graduates in the current labor market. Employment Service of Slovenia published in the newspaper Finance (29. 2. 2012) that 3,287 graduate from technical faculties have been employed in the year 2011. The number of job offers increased in 2011 by 20%.

Furthermore, data from Prognoses (Swiss research institute) show that occupations like electrical engineer, electronic engineer, industrial engineer, IT developer, programmer, software architect, advertising and media professionals are the most perspective occupations in EU towards the year 2020.

2 FUNCTIONING OF THE HIGHER EDUCATION INSTITUTION

2.1 Mission and development vision

FERI operates in accordance with its mission and development vision described in Section 1. The review of conditions and directions are presented in continuation for the following areas: organization and functioning of the faculty bodies, educational activity, research and development activity, and international collaborations.

2.2 Organization

Faculty of Electrical Engineering and Computer Science (FERI) is, in all legal operations, represented by the **dean** prof. dr. Borut ŽALIK, who can be replaced by a **vice dean**, from the rank of higher education instructors. FERI has three vice deans: vice dean of education Prof. dr. Bojan GRČAR, vice dean of research prof. dr. Denis ĐONLAGIĆ, and vice dean for student affairs Mateja MEH. The dean, by its function, is also a member of the **Senate**, which is composed of 17 members from the rank of higher education instructors and 5 members from the student rank. Two members of each institute are represented in the Senate and are elected by Academic staff. **Academic staff** of the faculty is composed of all higher education instructors, science specialists and higher education collaborators. Chair of Academic staff is prof. dr. Marjan HERIČKO. **Board of Directors** of the faculty decides on the operation of the faculty, matters involved with material goods, control and disposal of means. Board of Directors of the faculty has 4 members of higher education instructors elected by Academic staff. The dean, faculty manager, and vice dean of education, by their function, are also members of Board of Directors. **Student council** is also one of the body, as part of the faculty. All of the mentioned bodies of the faculty have the competence and responsibility, defined in the Act on Higher Education and Statute of the University of Maribor. Departments of the faculty, such as pedagogical and scientific research organizations are called **institutes** (Table 2-1). Individual **laboratories** work within the frameworks of the mentioned institutes. Non-pedagogical part of the faculty represents faculty secretariat, whose director is a faculty manager g. Maks SVENŠEK. In accordance to the systematization and organization of the faculty, there are 9 services, units or administration departments, which are directed by managers, collaborator specialists or directors.

Table 2-1: Institutes (Source: http://www.feri.uni-mb.si)

Name of the Institute	Head
1. Institute of Automation	Prof. dr. Denis Đonlagić
2. Institute of Electronics and Telecommunications	Prof. dr. Zdravko Kačič
3. Institute of Informatics	Prof. dr. Ivan Rozman
4. Institute of Mathematics and Physics	Prof. dr. Igor Tičar
5. Institute of Media Communications	Assist. Prof. dr. David Podgorelec
6. Institute of Power Engineering	Prof. dr. Drago Dolinar
7. Institute of Computer Science	Prof. dr. Nikola Guid
8. Institute of Robotics	Prof. dr. Miro Milanovič

2.3 Educational Activity

2.3.1 Rank and the extent of the execution of the study programme

In Table 2-2, accredited study programmes (both full and part time) are given, and the number of registered students in individual study programme is presented.

Table 2-2: Number of students based on levels and the study programmes (Source: AIPS – Report on student registration)

Legend:
EL – Electrical Engineering
GING-E – Industrial Engineering, study option Electrical Engineering
ITK – Informatics and Technologies of Communication
MK – Media Communication
MEH – Mechatronics
RI – Computer Science and Information Technology
RI* – Computer Science and Informatics
RIT – Computer Science and Information Technologies
TK – Telecommunication

1. st. UN – 1st cycle Bologna Study Programme ACADEMICS
1. st. VS – 1st cycle Bologna Study Programme PROFESSIONALLY
2. st. MAG – 2nd cycle Bologna Study Programme MASTER
3. st. DR – 3rd cycle Bologna Study Programme PHD

Accredited study programmes	Academic year 2012/2013			Academic year 2011/2012		
	study programmes	Number of students (full/part-time)		study programmes	Number of students (full/part-time)	
1st cycle Professional	EL	-	f= 827 p= 75	EL	-/5	f=824 p=82
	RI	-		RI	-/7	
	1. st. EL	272/29		1. st. EL	287/35	
	1. st. RIT	242/29		1. st. RIT	273/35	
	1. st. ITK	241/14		1. st. ITK	264/-	
	1. st. MEH	45 (FERI) + 27 (FS) =72/3				
1st cycle Academic	EL	-	f= 914 p= 25	EL	38/2	f=1042 p=43
	RI	-		RI	76/-	
	GING-E	-		GING-E	-/-	
	TK	-		TK	-/-	
	MK	-/3		MK	-/15	
	1. st. EL	120/-		1. st. EL	109/-	
	1. st. RIT	286/-		1. st. RIT	280/-	
	1. st. ITK	161/-		1. st. ITK	176/-	
	1. st. TK	33/-		1. st. TK	31/-	
	1. st. MK	226/22		1. st. MK	224/26	
	1. st. GING-E	8/-		1. st. GING-E	11/-	
	1. st. MEH	34 (FERI)+ 46(FS)= 80/-		1. st. MEH	97/-	
2nd cycle	2. st. EL	110/15	f= 571 p= 15	2. st. EL	68/15	f=383 p=15
	2. st. RIT	124/-		2. st. RIT	106/-	
	2. st. ITK	115/-		2. st. ITK	65/-	
	2. st. TK	26/-		2. st. TK	20/-	
	2. st. MK	135/-		2. st. MK	82/-	

	2. st. GING-E	17/-			2. st. GING-E	12/-	
	2. st. MEH	44/-			2. st. MEH	30/-	
PhD	EL	1	12		EL	7	48
	RI*	1			RI*	10	
MSc+PhD	EL	5			EL	15	
	RI*	5			RI*	16	
3rd cycle	3. st. EL	30	80		3. st. EL	37	85
	3. st. RI*	42			3. st. RI*	40	
	3. st. MK	8			3. st. MK	8	
Total			**2519**				**2522**

2.3.2 Student Mobility

In Table 2-12, international mobility of undergraduate students is presented.

Table 2-12: International mobility of undergraduate students (Source: Committee for International relations)

Academic year	Number of students going abroad		Number of foreign students
	Studying	**Practical work**	**Studying**
2001/2002	4	NA	9
2002/2003	14	NA	13
2003/2004	14	NA	21
2004/2005	7	NA	25
2005/2006	11	NA	33
2006/2007	17	NA	27
2007/2008	16	4	53
2008/2009	30	5	43
2009/2010	29	6	52
2010/2011	21	7	70
2011/2012	9	5	72

The number of incoming foreign students under Socrates programme is increasing each year. In the academic year 2011/12 there was 72 foreign students. Most of them are coming from Spain and Turkey. However, the number of outgoing students is much less than the number of incoming students. We are trying to remedy this situation by increasing the promotional activities.

2.3.3 Activities of the working group for promotion October 2011 – September 2012

In the academic year 2011/2013 the working group for promotion continued with various activities that were defined as its working tasks. The main goals were:
- presentation of FERI to the prospective students,
- construction and upgrading of FERI visibility and building its positive image,
- motivating the employees and the students for participating at various promotion activities.

2.3.4 Review of the condition and directions

FERI has been successfully performing its mission, because our graduates are respected and successfully find an employment in both business and non-business sectors. With the goal to increase quality of educational work, FERI has the following short-term and long-term directions:

Area	Review of conditions	Directions and Activities
Freshmen enrollment	Freshmen enrollment is above our expectations. It was recently increased slightly at academic study programs of electrical engineering and telecommunications. Our estimation is that increased enrollment is due to better promotional activities and students' awareness how important is employability. Professional study programmes are practically full. More foreign students are attracted by our study programmes.	We need to increase freshmen enrollment into academic study programmes. With promotional activities we would like to reach better and more motivated students. Due to low interest for Industrial Engineering (GING) study programme we decided not to enroll students in this programme in academic year 2013/14. We would like to decrease the number of enrolled students at professional programmes in order to attract better students.
Transfer of students among academic years	Transfer of students among academic years is more or less constant over several years. The most critical is transfer from the freshmen into sophomore year for all professional study programmes. The experimental introduction of tutoring system didn't increase considerably the transfer of students among academic years. The main reasons for lower transfer among academic years are: lack of high school knowledge, non-motivated students, and poor working habits. Transfer of students between 2nd, 3rd and 4th years is suitable for technical studies.	Intensification of tutoring system with active involvement of better students from higher academic years. Additional education of tutors, teachers and students, through various workshops organized by UM. Intensification of activity for carrying out regular checks of student's knowledge.
Quality of education	Teaching overload has been mostly eliminated in the previous year. According to student surveys the pedagogical work is of good quality. The results of student surveys are discussed at various levels (e.g., Senate, institute meetings). Habilitation rules are strictly enforced and will be tightened in the near future. We have some problems with the schedules which are due to the large number of students, and the large number of different study programmes.	Introduction of additional student projects as a learning method. Our past experience is that student projects are effective learning methods. Tightening the conditions for enrollment into higher study year. Eliminating the overload for teaching assistants and increasing their involvement into research.
Students	Students are actively involved into promotional activities, tutoring system, and FERI information days. Students are represented in all faculty bodies and committees. Students have the rights and possibilities to be part of the discussions and have impact on the decision making. The cooperation with students is estimated as very good.	Continuation of planned activities, especially with respect of tutoring. FERI will encourage students to involve into research projects and participating at various student competitions.
Mobility of Students	Newly established International office enables more organized student mobility. Interest for our study programmes by foreign students is high (70 foreign students are studying at FERI). Despite organizing a special information day for studying abroad the interest for such a study is still too low. Open problems are lectures in English for foreign students and evaluation of extra work with foreign students. Both are serious obstacles for	Continuation of planned activities for motivating our students for studying abroad. Criteria for work evaluation must be enhanced by instruments for working with foreign students.

	internationalization of University of Maribor.	
Material conditions	Budget cuts in all working areas are serious threats to quality of education and research. Several austerity measures have been implemented (e.g., elimination of teaching overload, rationalization of study programmes, stopping new positions, decreasing material costs). The current condition is unsustainable and prohibits any progress. It will have irreparable consequences for academic sphere and economy.	With implemented austerity measures we reach the point where additional measures are not feasible. New actions must bring systemic solutions proposed by University of Maribor and by Ministry of Higher Education.
Graduates and employment outcomes	421 FERI students graduated in the year 2012. The vast majority of graduates don't have problems finding the first job in their professional field. Furthermore, newly established Career Center serves them as a job search assistant. Many students find their first job through practical training. Connections with our graduates are maintained through Alumni Club, which is not fully working as expected.	Work intensification at Career Center and re-structuring Alumni Club.

2.4   Research and Development Activity

2.4.1   Research and development projects

Research and development activity is presented in Tables 2-14 to 2-17 showing the number of national projects and programmes, financed by the ARRS (Slovenian Research Agency). We were not able to increase the number of basic and post-doctoral projects in the last period. Results from the last call for projects are not available yet at the time of writing this report. ARRS due to budget austerity measures decreased the number of call for projects. On the other hand, the number of international projects is at the same level as in the previous years. It can be noticed that this number is even increased. Due to economic crisis the number of non-budgetary projects is decreased. Furthermore, because of reorganization of Slovenian government, ministries and agencies, a call for young researchers from industry was canceled, as well as some other call for projects.

Table 2-14: National projects and programmes, financed by the ARRS (Source: Committee for scientific-research affairs)

	Research programme	Infrastructure programme	Basic projects	Applied projects	Post-doctoral projects
2004	7	2	1	13	4
2005	7	2	1	8	2
2006	7	3	2	13	2
2007	7	0	4	11	1
2008	7	0	5	3	1
2009	8	0	1	7	0
2010	8	0	2	7	1
2011	8	0	2	8	1
2012	8	0	1	5	1

Table 2-16: International cooperation (Source: Committee for scientific-research affairs)

	5. FP	6. FP	7. FP	Other projects	Bilateral projects
2004	6	-		6	24
2005	-	1		14	22
2006	-	1		18	25
2007	-	2	1	9	19
2008		2	0	11	24
2009		2	1	11	18
2010		1	2	11	14
2011	-	1	6	14	14
2012	-	-	4	23	15

Table 2-17: Other projects/non-budgetary (Source: Committee for scientific-research affairs)

	Number of projects
2004	84
2005	73
2006	53
2007	42
2008	44
2009	25
2010	31
2011	37
2012	23

2.4.2 Inclusion of the research work into the pedagogical work

The research work at FERI is tightly connected with study programmes courses. Students from all study levels (B.Sc., M.Sc., PhD) are actively involved in the research and development for budgetary and non-budgetary projects, international projects, and ARRS projects. In this manner the research results are successfully and efficiently transferred into pedagogical process.

2.4.3 Inclusion of students into the research work

Our students can take part in the research work at 28 laboratories with a varied research activity. Hence, the students can easily find research field that is the most interesting to them. In our laboratories, they can also moderate devices that they have made themselves at the home workshops. We should emphasize the competition with the mobile robots, which is arranged and organized annually by FERI. The competition attracts a large number of competitors from primary schools. Together with University of Ljubljana and University of Primorska we are also organizing the ACM programming competition 'Programming Marathon'. Our students are also competing annually with their research works and diploma thesis at the International Conference for Electric Engineering and Computer Science (ERK), and bi-annually at the Slovenian forum of electric power engineers. Graduates from all levels (B.Sc, M.Sc., Ph.D) are also competing in the field of electrical engineering for Bedjanič award, which is under the auspices of Slovenian

Committee of Electric Power Engineers CIGRÉ, FERI Maribor and Faculty of Electrical Engineering Ljubljana.

2.4.4   Presentation of the research results

We are aware of the importance to present our results to the local, as well as world public. In that respect we inform specialized local and foreign media on the course of our professional achievements via:
- active participations at the professional and above all scientific meetings with the presentation of results,
- invited lectures at the universities, locally and abroad,
- publications in professional and scientific periodicals.

Speaking of numbers, the members of our faculty publish around 250 papers in the professional and scientific conferences, both locally and abroad, as well as over 100 articles in the scientific journals. In regards to that, there is a considerably positive trend when publishing in the journals of the highest rank, even in the journal at top 5% in a particular research field.

2.4.5   Self-evaluation of research programmes

Eight programme units exists at FERI, which are registered with the Slovenian Research Agency (ARRS).The work in these programme units represents the basics of fundamental research at our faculty, as they include the majority of our researchers. In this academic year all researchers with PhD were evaluated under ARRS/SICRIS methodology and the results were presented at the Senate. Three programme units will be evaluated by ARRS this year.

2.4.6   Review of the condition and directions

The extent of research activities among our researchers varied considerably. This was a case also in the previous years. There are at least two reasons: overload with teaching and a non-stimulating environment with deep roots in the rigid labor legislation. Due to budget cuts we limit or eliminated teaching overload this year. Hence, our higher education instructors will have more time for research. Unfortunately, non-stimulating environment due to the rigid labor legislation is still an obstacle and prevent us to increase the number of most successful researchers.

Equipment of our laboratories is behind trends in the world, and in EU. Our government should strategically invest into research equipment in order to prevent intellectual drain. Unfortunately, this is not the case.

Our goal in the research and development is continuation of publishing our achievements in the most renowned scientific journals. This is also a prerequisite for obtaining more basic and applied grants. We would like to keep the number of non-budgetary projects at the same level, despite the tightened economic situation. This is utmost important since these projects establish a good connection with the environment.

2.5   International Cooperation

The main task of Committee for International Relations in the year 2012 was promoting mobility for students, teachers, and staff under various programmes (Erasmus, Ceepus).

Tables 2-18 and 2-19 show mobility realization under Erasmus programme and mobility of incoming students.

Table 2-18: Mobility realization under Erasmus programme

Programme	2007/ 2008	2008/ 2009	2009/ 2010	2010/ 2011	2011/ 2012
ERASMUS – students (actual)	16	30	29	21	9
ERASMUS – students (announcement)	25	44	40	30	20
% realization	64	68	72,5	70,0	45,0
ERASMUS – practice (actual)	4	5	6	7	5
ERASMUS – practice (announcement)	6	7	7	7	7
% realization	66,7	71,4	85,7	100,0	71,4
Programme	2007/ 2008	2008/ 2009	2009/ 2010	2010/ 2011	2011/ 2012
ERASMUS – teachers (actual)	14	10	18	14	9
ERASMUS – teachers (announcement)	12	16	15	15	16
% realization	117	62,5	120	93,4	56,25

Table 2-19: Mobility of incoming students

Programme	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	2007/ 2008	2008/ 2009	2009/ 2010	2010/ 2011	2011/ 2012	2012/ 2013 (winter semester)	Sum
Erasmus	13	21	25	33	27	53	43	51	70	72	60	468
CEEPUS	4	3	2	1	0	0	0	1	2	12	/	25
Sum	17	24	27	34	27	53	43	52	72	84	60	493

2.5.1 Review of the condition and directions

Promotional activities for mobility of students, teachers, and staff should be increased in order to achieve greater mobility. One of such promotional activities should be printed materials and brochures about various options for mobility. An additional attention should be given to statistical data about mobility, especially to those parts with missing data. A better information system support is expected under the university project 'Internationalization of University of Maribor'. A greater attention should also be given to promoting mobility through web presentation, Facebook, and Twitter. Finally, we need to be ready for new mobility programme 'Erasmus 4 ALL', which will enter into force in 2014.

2.6 Practical Training of Students

FERI offers two separate types of study programmes, and each one leads to different types of degree: academic and professional. The latter is more oriented towards practice.

Graduates of professional degrees become specialists in their profession. Hence, during the education they need to be trained in practice. In this manner our tradition, closeness with industry, lives on. Practical training in industry is implemented in the 6th semester of professional programme and is realized with various enterprises and organizations in Slovenia and abroad. On the other hand, graduates of academic study programmes spent one month at practical training, most often in organizations outside the faculty.

Students are seeking enterprises for practical training with the help of information system called 'Borza praks' (http://www.praksa.uni-mb.si), and by the coordinator of practical training, who is employed at FERI. Before a practical training an agreement must be concluded between the applicant and the enterprise with written consensus by FERI. The agreement of practical training defines student advisors at the enterprise and at FERI, enterprise's rights and duties, student's rights and duties, a type of insurance, a payable compensation, and duration of practical training.

3   HUMAN RESOURCES

3.1   Higher Education instructors, collaborators and researchers

The number of higher education instructors, collaborators and researchers according to the titles and circulation of full time and adjunct employees over the years are presented in Table 3-1.

Table 3-1: Number of higher education instructors, collaborators and researchers (status on 31.8.2011) (Source: Human resources office)

Title	2011/2012		
	Full time	Contracts	Sum
Full professors	23	5	28
Associate professors	14	6	20
Assistant professors	20	8	28
Senior lecturers, lectors, PE teachers	7	0	7
Lecturers			
Teaching Assistant with Ph.D	45	1	46
Teaching Assistant with M.Sc.	6	3	9
Teaching Assistant with B.Sc.	40	3	43
Sum	**155**	**26**	**181**

3.2   Review of the condition and directions

FERI has 155 higher education instructors, among them are 23 full professors, 14 associate professors, 20 assistant professors, 7 senior lecturers, 1 lector, 1 coordinator of practical training, 45 teaching assistants with PhD, 6 teaching assistants with M.Sc., and 40 teaching assistants with B.Sc. 26 contractors participate in education activities, mainly at the Media Communications study programme where it is difficult to obtain adequate staffing. FERI has 62 researchers and 53 technical workers that participate in education and research activities. The number of full professors decreased this year because 4 of

them retired, whilst empty positions were not filled. The number of employees is decreasing over the last years. The internal structure of FERI has been re-classified by decreasing a number of full professors and by increasing teaching assistants, researchers and technical workers. For example, FERI had 287 employees in 2011, whilst 272 in 2012.

3.3 Survey » Workplace satisfaction study - employee survey 2012.«

Survey »Workplace satisfaction study - employee survey 2012.« was performed from 19.3. − 6.4.2012. We received 119 valid samples (88 samples in 2010 and 93 samples in 2011). The results show that there are no important differences from previous years. The employees are most satisfied with the working environment, whilst least satisfied with the salary and cooperation among different organizational units.

4 STUDENTS

One of the functioning bodies of FERI is the Student Council. Besides representing the students, it also serves for solving problems and difficulties that may arise in the course of their study. Two representatives of each grade are elected to the Student Council; among them one is the president of the respective Grade's Student Council, while the other is the elected member of the Grade's Student Council. The Student Council is, therefore, formed by representatives of the 1., 2., and 3. grades, representatives of pre-graduate (absolvent) students, and finally, by representatives of postgraduate students. The Student Council is headed by the Vice-Dean for Student Affairs. The Student Council of FERI consists of 13 members - that is of 12 representatives of the distinct grades, and the Vice-Dean for Student Affairs, who is a member by his function. The members of the Student Council are elected each year by the students, usually in the month of November. During the academic year 2010/2011 the Student Council of FERI operated with 13 members, hence all of the Student Council's member slots were fully occupied.
The Student Council of FERI has, in accordance with the Statute of the University of Maribor, it's representatives in the Senate committees of FERI, in the Student Council of the University of Maribor, in the Senate committees of the University of Maribor, and in the Senate of FERI. The Vice-Dean for Student Affairs is by his function a member of the Management board of FERI as well. There are two student representatives in the Committee for study affairs, same as in the Committee for scientific-research affairs, the Committee for quality review, and in the Committee for postgraduate studies. Additionally, there is one student representative in the Student Council of the University of Maribor, just as in the Disciplinary Court of First Instance, while there are five student representatives in the Senate of FERI. Within the Academic Council of FERI there are 36 slots intended for students, and all of them are fully represented in the current academic year. The names of the students, which are members of the Academic Council of FERI, can be found on the webpage: http://studentski-svet.feri.um.si/ss-feri/clani/. The students can in such a manner, through their representatives, participate in discussions and impact various decisions. The members of the Senate Committees of FERI are appointed by the senate based on propositions by the Student Council; the student members of the Senate of FERI are meanwhile elected by the Student Council of FERI after completed candidating procedures. The members of the Committees, and of the Senate of FERI, report about the developments at their Committees at regular sessions of the Student Council of FERI. The Student Council of FERI performs it's duties in regular, irregular, and correspondence sessions.

4.1   Review of the condition and directions

Although it is the assessment of the Student Council that the situation is improving, and that an ever increasing number of students is communicating with the Student Council and willing to help, we remain convinced that the situation can be further improved. An important task set for the coming year is to reintroduce Abakus – a free magazine written and edited by the students, which has during the previous year and a half almost ceased to be published. In order to do so, it is our task to find a new editor that will introduce new ideas and creativity, and will be able to attract students to work at the magazine. By doing so we will demonstrate as well our will and energy to the other students that we are working for the common good of all the students of our faculty.

Besides the above mentioned aim, we also intend to improve our connections with the Career Centre of the UM, and to use their support to organize various lessons and workshops, which will be intended for our students and will bring them additional skills. Further, it is our aim to improve connections with the other Student Councils, and to use our combined efforts in order to accomplish projects, which are intended for the good of all students. By doing so, we will as well achieve improved connections between the students of different faculties, and share the knowledge, which has been acquired during the course of our studies.

5   MATERIAL CONDITIONS

5.1   Facilities and equipment

The faculty disposes with a useable area intended for the study process of a total of **14.420,84** m^2. Out of this area, 6.953,67 m^2 are intended for the educational process (lecture rooms, laboratories and staff cabinets), 1.396,82 m^2 are occupied by various others facilities (administrative and management, sanitary, and other auxiliary facilities), and finally, 6.070,35 m^2 consist of communications infrastructure (hallways, staircases, terraces etc.).

5.1.1   Review of the condition and directions for facilities and equipment

    1. Capacity of facilities
In the year 2006 we expanded the capacity of our facilities with a newly built object G2 – a new building located adjacent to the previously existing object FERI – G1:
-      lecture rooms/laboratories   :   2.007,27 m²
-      staff cabinets   :   907,42 m²
-      dean's office/senate   :   179,67 m²
-      student office   :   67,44 m²
-      garages in G2   :   3.186,00 m²
-      garages in PC PRISTAN   :   90 spaces.

After having used the facilities for 7 years our findings are:
-      The number of staff cabinets is satisfactory.
-      We notice an ever increasing demand for small and middle-sized lecture rooms (up to 70 seats). This is due to the introduction of the Bologna process, which dictates a larger number of elective lessons that require using small and middle-sized lecture rooms. An increased usage of the lecture rooms in the afternoon hours is the result of further changes in the way of how the part-time study is implemented.

- The need for computer-lecture rooms for the 1st grades is increasing as well (rooms of the type of F-103 and F-104), since the existing ones are occupied during peak times from 7AM till 9PM. There is further problem concerning the airing of the computer-lecture rooms. Therefore, we are planning a replacement of obsolete and non-functioning windows.

2. The equipment of the facilities at FERI is satisfactory. Within the last years, almost all of the lecture rooms have been equipped with projectors and modern whiteboards. The laboratories are upgrading their respective equipment primarily using funds obtained from enterprise as well as large-scale projects.

3. The directions for solving spatial problems at FERI are divided into short-term and medium/long term ones.

- In the short-term, the spatial problems are mitigated by an optimal use of the capacities available.
- In the middle-term, we aim to milder the spatial problems by arrange in phases the facilities at the location of Prežihova ul. 8 (more than 1.000 m²).
- In the longer term, we plan to expand our spatial capacities by the construction of new facilities for the use of the Technical faculties, where we participate with a 10% share.

5.2   Library and IT activities

5.2.1   Presentation of the library, library services for members of the Library of Technical Faculties

The Library of Technical Faculties is the common library of four engineering faculties of the UM: Faculty of Electrical Engineering and Computer Science, Faculty of Mechanical Engineering, Faculty of Civil Engineering, Faculty of Chemistry and Chemical Engineering. The library is primarily intended for students, teachers, and researchers of the engineering faculties, with the aim of supporting the educational process and scientific research. Meanwhile, it is open as well for any other user. Data regarding the Library of Technical Faculties is available online at http://www.ktfmb.uni-mb.si/.

The Library of Technical Faculties is a full member of the COBISS[1] system (available at http://www.izum.si). All of the Library's material is processed by computer and the data is collected in the local base of the LTFMB[2]. Searching for information in the local base of the LTFMB, respectively in the local bases of various other libraries, and in the common bibliographic base, is made possible for users through the use of ten PC's, which have all internet access. Within the facilities of the Library there are also (wired) connection spots for laptop's, as well as a wireless network with internet connection (EDUROAM).

The basic services provided by the library are: borrowing of library materials at home (at staff cabinets for employees) and at the reading room, interlibrary borrowing, acquisition and processing of new materials (cataloging and inventorying), managing the biographies of researchers, database queries, informing users about materials and using the library (Table 5-5).

Table 5-5: Display of Library services (number of units borrowed respectively number of records added to biographies of researchers)

Library services	Academic year			
	2011/2012	2010/2011	2009/2010	2008/2009
Borrowing at home	**12.453**	15.774	14.232	14.445
Borrowing at the reading room	**2.577**	3.332	4.420	4.995
Interlibrary borrowing	**373**	547	477	563
Bibliography	**2.754 (FERI 632)**	2.652 (FERI 749)	2.591 (FERI 753)	2.741 (FERI 720)

All of the employees of the UM have access to electronic resources via their PC's (registered IP address range of the UM). The students can access the mentioned electronic resources at the library, using one of the ten PC's provided for member access, and further in the computer-lecture rooms at the various faculties. Students of the UM (with valid status) as well as employees of the UM have further the ability of remote access to all of the electronic resources of the UM. Therefore, it is possible for them to access electronic journals and data bases from home, using the UKM entry point http://vir.ukm.si/UKM/. The sole requirements are an active membership in the Library and the password for COBISS/OPAC.

Within the scope of IT activities, the Library carries out individual lessons for introducing members to using the Library, searching within the COBISS system and other digital information sources, and querying data bases (about disertability, citations, etc.).

5.2.2   Review of the condition and directions for the Library of Technical Faculties

Directions

The spatial problems need to be dealt with – additional storage space is of critical importance, which is partly due to the problem of storing older library materials, and especially due to the increased number of new theses (due to newly introduced courses, which are in accordance with the Bologna process). The amount of materials for write-off will as a consequence be increased, while the current subscriptions to journals will be changed from print versions to e-journals. Additionally, the faculties should consider discontinuing the printed version of theses since an electronic version of them is stored in the DKUM, and to amend accordingly the Rules of an obligatory version of the UM.

The webpage of the Library has to be renewed. The offer of the Digital Library of the UM has to be extended with e-books from the UM. Users have to be taught about the available electronic resources and how to make efficiently use of them, while the UKM and libraries of the faculties have to organize programs for information literacy. The funding from ARRS for financing foreign journals has to be maintained, while at the same time at least the current scope of accessible e-journals and various other electronic information sources has to be kept.

5.2.3   Information system

Just as the other faculties of the UM, FERI is using the Information System of the University of Maribor (ISUM). This system is designed in a modular structure, which means that the components of information subsystems are separate modules, which are

mutually connected and use a common data base, which ensures the elimination of any duplicated data entries. The logical architecture of ISUM can be represented by it's information subsystems. ISUM consists of five subsystems:
Staff information subsystem (KIPS),
Academic information subsystem (AIPS),
Financial information subsystem (FIPS),
Support subsystem (PPS),
Digital Library of the University of Maribor (DKUM).

Situation assessment of UM FERI:

The backbone of the computer network on FERI has a bandwidth of 1 Gbit/s. There are more than 600 computers that are connected to the communication infrastructure (almost 200 of them, which are located in various computer-lesson rooms and laboratories, are open to students). A wireless network has been set up in the whole of the C, E, F, G1 objects and in parts of the G2 object. Towards the end of 2006, and during the beginning of 2007, FERI has introduced IP telephony, what resulted in significantly reduced telephony costs. It would also be necessary to reduce costs for calls to mobile phones, or calls from mobile phones, by introducing a system that would connect the IP telephony server with mobile operators.

Within the whole of FERI a wireless network has been set up, which is actually part of the wider academic wireless network EDUROAM. During the current year we have also upgraded the computer-lesson rooms F-103 and F-104 with 37 new PC's, and have additionally purchased two new file and web servers.

5.3 Funding

5.3.1 Method used for preparing the financial plan

The Ministry of higher education, science and technology, now the Ministry of education, science, culture and sport (MESCS), submits towards the end of the year instructions for preparing the work, respectively financial plan. The plan is then regularly made during the month of January of the current year. The financial plan consists of a general as well as a special part.

The general part of the plan shows revenues and expenditures of specific users on a cash flow principle, financial claims and investments of specific users, as well as the statement of funding of specific users.

The special part of the financial plan meanwhile contains the planned structure of revenues and expenditures by source of funding, as well as the structure of expenditures for study activities by type of activity by cash flow, source MESCS.

5.3.2 Fundraising

A rough picture of financial operations of UM FERI is given in Tables 5-8 and 5-9. The faculty provides a public service that is funded from the budget of the RS, the budget of the EU, from payments of tuition fees for part-time study, and in addition to that carries out also market activities, which are funded by revenues from these activities.

Table 5-8 shows the overall revenues and expenditures in the years 2011 and 2010. The overall revenues in the year 2011 were 5% higher in comparison to those of 2010, while the expenditures were 3% higher.

Table 5-8: Overview of revenues and expenditures of the institution (in EUR)

	2011	**2010**	**Index**
Revenues	13.688.138	13.052.853	105
Expenditures	13.420.272	13.015.549	103

Table 5-9: Composition of revenues of the institution (in percent)

	2011	**2010**
Revenues, gathered in the market	9,98 %	9,79 %
Revenues of public service	90,02 %	90,21 %
Donations and subventions	0 %	0 %

The revenues gathered by market activities accounted for 9.98 % of the overall revenues in 2011. The proportion of revenue from public service was meanwhile 90.02 % of the overall revenues in 2011.

CONCLUSION

As for the moment, ongoing financial operations are ensured at FERI. Funding for large-scale international projects is, however, still not provided sufficiently neither on the faculty's nor on the university's side.
As for systematic solutions for the funding of FERI and UM there are no new solutions. On the contrary – in accordance with the enforcement of the Public finance balance act (ZUJF), has the funding for study activities in 2012 been cut by 6.5 %, while the funding for scientific development activities has been cut by 12 %.

5.3.3 Review of the condition and directions

FERI is predominantly funded by public funds. The funding of higher-education activities is covered by the Decree on public funding of higher-education and other institutions, and since the funding of core activities is decreasing, greater efforts to acquire new sources of funding will have to be made.
Overall revenues in the year 2011 have been higher than in the year 2010 because the faculty was successful at securing research projects (competence centers) at various tenders. In the period to come FERI will undertake activities (cooperation with the industry) in order to ensure adequate funding, which is obligatory for co-financing research projects, and thereby increase the proportion of non-budgetary funds, thus funds acquired in the free market.
With the aim of enabling future development, which the faculty is capable of considering it's staff and research potential, we believe that it would be necessary to adopt comprehensive systematic solutions at university and state level, which would as well result in a better financial position of the faculty, and provide for it's faster and successful development.

6 QUALITY ASSURANCE

The system of quality assurance at FERI incorporates all processes that are necessary for quality functioning of the faculty and operating of the study programme as well as constant improvement of quality. The faculty's activity is planned regularly and is being

integrated into the work quality already at this phase, while plan execution monitored and graded in annual self-evaluation. The self-evaluation is managed and prepared by the Quality Review Committee along with appropriate services and FERI committees.

In continuation the work of the Committee as well as specific analyses are presented, based on which the quality evaluation and recommendations for improvement are provided.

6.1   The Quality Review Committee

In the academic year 2011/12 the committee gathered 10 times (5.10.2011, 17.11.2011, 12.12.2011, 23.1.2012, 23.2.2012, 26.3.2012, 16.4.2012, 14.5.2012, 18.6.2012 in 14.9.2012). The following activities were performed:

With the help of professional services and senate committees we have prepared the FERI self-evaluation report for the academic year 2010/11 consisting of 171 pages. All employees were notified about the contents of the report in December 2011. The FERI self-evaluation was examined by the University Committee for quality assessment and graded with the highest grade – excellent.

In November 2011 we performed an analysis for student transfer from the freshman into the sophomore year for the academic year 2010/11 for all study programmes by two approaches. The first approach considered all enlisted and all passing students (absolute grade), the second including all passing at least one exam in the first grade and all passing students (relative grade). The committee judges that the students that did not pass any exams had no serious intentions of studying.

In March 2012 the Comparative analysis of the first grade success rate of all study programmes for March 2010 and March 2011. Special attention was given to the number of students that did not manage to pass a single exam in the winter exam period, which we consider at the percentage of the success of individual courses. Professional programmes particularly are noticeable in this regard. While the percentage of such students is diminishing, it is still necessary to significantly reduce the number of students that have not passed any exams. The results were presented to the Committee for study affairs and head of the institutes.

In March 2012 we performed the survey "Workplace satisfaction study - employee survey 2012. The results were studied at the Committee as well as the FERI Senate and published on the website of the Committee. 119 co-workers participated in the survey.

At the student enrolment in the academic year 2011/2012 a student survey for evaluating the teaching staff was performed. The results of the analysis of the survey were published on the committee website. We suggested to the Dean of FERI to take discussions with the negatively evaluated members of the teaching staff, which took place. The surveyors were advised to verify actual teachers and whether the courses that the students passed were surveyed. The survey was performed according to the Directions for performing the student survey on actual student workload (ECTS). Due to the indistinct average values we suggested that the following survey is supplemented appropriately. The analysis performed by quality review committee revealed no significant deviations of actual workload from the anticipated one. The courses standing out were specified.

The meeting of the ALUMNI CLUB UM FERI was organized on 7.6.2012 at 17h in Alfa lecture hall. The meeting programme included two lectures, a cultural programme and social event.

We cooperated with other FERI committees; in particular we attended the meetings of the Committee for educational affairs, where we reported about out activities. We are monitoring the work of The Group for promotion and Committee for scientific-research affairs.

We cooperated at the implementation of the internal evaluation of the University of Maribor. Vojko Matko was a member of the committee for internal evaluation of the Faculty of Education in 2012.

Members of quality review committee attended the Annual work interview about quality on University of Maribor conducted by the Rector of UM.

6.2 Teaching evaluation provided by students

Student survey in the academic year 2011/2012

The Quality Review Committee discussed the results of the student survey for the academic year 2011/2012. The results reveal that the average grade of teaching staff is 1.13 (on a scale from -2 (negative) to +2 (positive)), which is slightly less than in 2010/11. Three teachers received a negative grade. We observe that this is less than in the survey from the previous year. A more thorough analysis of the student survey will be performed by the committee and inform the FERI Senate about the results. We will suggest the Dean to take discussions with negatively graded lecturers and teaching assistants. The results of the student survey will be delivered to the teaching staff as well as published on the committee website.

ECTS survey in the academic year 2011/2012

The survey of the actual workload of the students is performed biannually at student enrollment. As it was performed in the academic year 2010/11 the survey will not take place in the academic year 2011/12.

6.3 Analysis of the action plan of the Self Evaluation report for the academic year 2010/2011

The Quality Review Committee analyzed the execution of designated tasks stated in the self-evaluation report for the academic year 2010/2011. The analysis provides the following reports of self-evaluation:

1 INTEGRATION WITH THE ENVIRONMENT

Conclusion: The self-evaluation report for the academic year 2011/2012 requires defining the performed activities and recommend tasks in this field.

A survey about the connection with the nearer and broader environment as well as discussion with the graduates was performed by the members of the ALUMNI CLUB. The ALUMNI CLUB organizes meetings of FERI graduates, although the attendance is decreasing. Activities are required to amend the situation.

2 FUNCTIONING OF THE HIGHER-EDUCATION INSTITUTION

The aims and strategy of operation as well as the organisation and functioning of the bodies of FERI were given.

2.3 Educational activities

2.3.1 Activity of the work group for promotion:

For achieving the goals, the work group performed multiple activities. The activities were adapted to the calendar of the high-school enrolment periods. From the management's point of view, the activities were divided into 5 groups.

2.3.2 Educational activity as a whole:

FERI successfully performs its mission, as out graduates are valued and are successfully employed in the industry as well in the other fields. With the aim to increase the quality of the educational work, FERI has set the following short-term and long-term guidelines, which are presented in Section 2.3.4.

2.4 Research and development activities

Completed:
Concrete actions for improving the situation, namely raising the conditions for habilitations, motivating inactive laboratories and similar are taking place. FERI management is trying to reduce the pedagogic commitment in order to increase the research work. We have no influence on acquiring additional funds.

2.5 International cooperation

Completed:
Promotion activities within FERI for achieving better mobility results have increased, due to the Erasmus office. Erasmus presentation meetings are being organized, the website has been refreshed, updated brochures of FERI and UM were issued. Other promotion activities outside FERI and UM has been performed via Erasmus TS mobility. Printed reports from participants of the mobility are acquired and published on a web page. Facebook and Twitter presentations did not take place.

2.6 Practical training for students

Completed:
Student practicums of academic study programmes are not inserted into the appropriate data base (1st Bologna cycle academic study programmes). This requires dispatching short reports of the practicums at the same address.

3 STAFF

The total number of employees is comparable to the previous year, although by establishing the Balancing of Public Finances Act redistributed the internal employee structure. There are fewer full professors, more teaching assistants, researchers and technical personnel.
The number of administrative workers has been increased by 3 – support for Service for scientific and research for competition centres, support for Student office for Erasmus exchange that has been planned for a longer time, as well as support for Service for study organization for re-accreditation of study programmes.

4 STUDENTS

The FERI student council prepared the students' view on study on FERI by the Quality Review Committee initiative. The first results revealed that the students particularly favor interesting lectures where the lecturer provides the material in such a way that the students enjoy listening and asking questions. It had been revealed that some professor lecture topics that are out-dated. In their opinion such topics should be updated. Many students stressed the missing connection between the lectures and the exercises. Their wish is to discuss topics at the lectures that could be then used as examples during exercises. The students agreed that the schedule is very tight. After the final and concrete report is completed a joint meeting of the Student council and the Quality Review Committee will be held, where we will receive the assessment of the students' opinion as well recommendations and measures for improving the situation.

5 MATERIAL CONDITIONS

5.1 Facilities and equipment

Completed:
Windows are under repair in computer room C-202 where no airing is provided. It is also planned to replace the worn out windows in C-202, F-103, and F-104. On medium-term we plan to reduce the space problem by gradual arrangement of the spaces located on Prežihova 8 (over 1000 square meters).

5.2 Library-informatics activities

In recent years after the retirement of two employees, the library was left without their posts and were consequently were not occupied by new workers. The workload is increasingly distributed among the remaining staff, especially two FERI employees that are additionally burdened with cataloguing and other work.

5.3 Financing

Completed:
Currently, FERI has guaranteed fiscal business. There is still no appropriate financial basis for financing larger international projects neither by the faculty, nor by the University. No solutions were found in systematic solving of FERI and UM financing. On the contrary, according to the intervention act of public funding, the financing of the pedagogic work was reduced by 6.5% and research by 12%.

6 QUALITY ASSURANCE; INNOVATION AND DEVELOPMENT OBJECTIVES

6.1 Committee for quality assessment

Completed:
All planned activities are either completed or are running. Remaining are the analysis of the number and success rate of freshmen in all study programmes and the analysis of study success, which will be done in October.

6.2 Teaching evaluation by the students

Completed:

A detailed analysis of student surveys was performed, and the FERI senate was informed about the results. The Dean took interviews with negatively graded teachers and assistants with the president of Quality Review Committee present. The negatively graded workers provided measures for improving the situation. The analysis of actual student workload was done, and the Committee for educational affairs was informed about it. We found that there is no significant deviation from the anticipated workload. The courses that stood out were stated. The authors of the report were asked to supplement the surveys next year to enable a better interpretation of the results.

6.3   Student pass rate

The Quality Review Committee performed the analysis of the pass rate and study success in March 2012. The Committee for student affairs and the FERI Senate were informed about the findings. In comparison to the previous year a slight decline in passed exams is visible. A similar trend is visible in the programmes of the second cycle.

6.4   Analysis of enrolment and student pass rate on programmes (October 2011)

Completed:
The comparison will take place after the analysis in October.

6.5   The survey "Workplace satisfaction study – employee survey 2011" was done

6.6   Quality evaluation of FERI activities and recommendations for improvement

1) Intensifying and designing promotion with emphasis on less encumbered study programmes (electrical engineering, telecommunications), which will include teaching staff and students of named programmes and activities provided in Section 2.3.4. The promotion shall be focused into employment options of the graduates.

2) Improving the transfer rate from the freshmen into sophomore year for all professional study programmes by including student tutors and teaching staff. It is necessary to stimulate the students for attendance at the lectures as well as to perform the specified work load.

3) With the help of the FERI student council to find existing shortcomings in the pedagogic work process in concrete study programmes and along with the Quality Review Committee provide suitable recommendation to the Committee for study affairs for dealing with the shortcomings.

4) With the help of students that participated in international exchanges to encourage increased mobility of our students. Including teachers into the promotion of student mobility. Reducing the workload of teaching staff to increase their mobility.

5) FERI management to prepare measures for including all teaching staff into research, providing better equipment for the laboratories, increasing the number of publications in quality journals, and transferring knowledge into the pedagogic process. This requires a suitable workload of teaching staff by the pedagogic process.

6) FERI management along with UM to prepare measures for ensuring the financial basis to allow FERI participating in larger international projects and ensure funds for development of FERI.

7) According to the results of the workplace satisfaction survey, the heads of the institutes and head of professional services, should prepare a plan for improving cooperation between organization units. Annual discussions with the employees about their career, work success should be introduced and advancements in the working position and titles should be followed strictly.

Completed:

Ad 1) Increased activities in the field of promotion provides first results. There is space for improvement by including FERI laboratories, especially Electrical Engineering and Telecommunications in the promotion activities, specifically organizing scientific-technical days at FERI laboratories.

Ad 2) Student tutors are active, their success will be monitored.

Ad 3) Concrete shortcomings in the pedagogic process were not yet discussed with the Student council

Ad 4) Activities for promoting mobility were carried out within FERI and UM.

Ad 5) Concrete actions for improving the situation, namely raising the conditions for habilitations, motivating inactive laboratories, etc. took place. FERI management is trying to reduce the pedagogic workload through rationalization to allow more research work. We have no influence on funds for laboratory equipment.

Ad 6) FERI management along with UM did not succeed with measures for acquiring finances for participating in large international projects.

Ad 7) The heads of institutes and professional services had not begun with the interviews about work success and improving cooperation between organization units.

6.4 Quality assessment of FERI activities and forming recommendation for improvements

The Quality Review Committee estimates that the educational institution performs its mission and follows its selected vision and strategy. The analysis of performing the planned tasks in the Self-evaluation report for the academic year 2010/2011 reveals that in all fields that exposed shortcomings measures were taken to mend them. In the academic year 2012/2013 it is necessary to intensify the following activities:

1) Improving the pass rate of students with the help of student tutors and removing the shortcomings in the pedagogic process on certain study programmes stated by the Student council.

2) Improving the dialog with FERI graduates via the ALUMNI club. The ALUMNI club needs to be included in all FERI activities, such as conferences, scientific meetings, FERI day celebration, etc. This is the responsibility of all FERI institutes. It is necessary to include graduates in the surveys to gain important information about the employment of the graduates and their insight on the acquired knowledge.

3) In the field of scientific-research activities it is necessary to aim for publications in the journals of the highest ranking and at least keep the level of non-budget projects. Reducing the workload of the teaching staff should contribute to this.

4) In the field of international cooperation it is necessary to continue the activities on recommendations of the Committee for International relations, by which the visiting of FERI students to foreign faculties will increase as well as visits of the teaching staff.

5) FERI management, especially in the tightened financial situation, is required to inform the employees about the situation of the institution as well as employee activities that are necessary to overcome the current situation.