



**REPORT
of the Expert Panel
on the
RE-ACCREDITATION OF
Faculty of Science, University of Split**

**Date of the site visit:
25th – 26th November 2015**

January 2016

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INTRODUCTION

This report on the re-accreditation of the Faculty of Science, University of Split was written by the Expert Panel appointed by the Agency for Science and Higher Education, on the basis of the self-evaluation of the institution and supporting documentation and a visit to the institution.

Re-accreditation procedure performed by the Agency for Science and Higher Education (ASHE), a public body listed in EQAR (European Quality Assurance Register for Higher Education) and ENQA (European Association for Quality Assurance in Higher Education) full member, is obligatory once in five years for all higher education institutions working in the Republic of Croatia, in line with the Act on Quality Assurance in Higher Education.

The Expert Panel is appointed by the ASHE Accreditation Council, an independent expert body, to perform an independent peer-review-based evaluation of the institution and their study programs.

The report contains:

- a brief analysis of the institutional advantages and disadvantages,
- a list of good practices found at the institution,
- recommendations for institutional improvement and measures to be implemented in the following period (and checked within a follow-up procedure), and
- detailed analysis of the compliance to the Standards and Criteria for Re-Accreditation.

The members of the Expert Panel were:

- Professor Donald Sannella, School of Informatics, University of Edinburgh, UK, chair
- Professor John Doran, School of Physics, Dublin Institute of Technology, Ireland
- Izv. prof. dr. sc. Luka Grubišić, Department of Mathematics, Faculty of Science, University of Zagreb
- doc. dr. sc. Maja Molnar, Faculty of Food Technology, Josip Juraj Strossmayer University in Osijek
- Valentina Gačić, Department of Physics, Faculty of Science, University of Zagreb - student

In the analysis of the documentation, site visit and writing of the report the Panel was supported by the ASHE staff:

- Marina Cvitanušić Brečić, coordinator, Agency for Science and Higher Education
- Lida Lamza, interpreter at the site visit and report translator, Agency for Science and Higher Education.

During the visit to the Institution, the Expert Panel held meetings with the representatives of the following groups:

- The Management;
- The Vice-Dean for Academic Affairs, Vice-dean for Development and Finance and Vice-dean for Science;
- research projects' leaders;
- Teaching assistants and junior researchers;
- Teaching staff (full-time employed);
- The students (self-selected set of students present at the interview);
- The person(s) in charge of student and teaching issues;
- Administrative staff.

The Expert Panel also had a tour of the library, IT rooms, student register desk, and the classrooms at the Faculty of Science, where they held a brief question and answer session with the students who were present.

Upon the completion of the re-accreditation procedure, the Accreditation Council renders its opinion on the basis of this Re-accreditation Report, the Assessment of Quality of the higher education institution and the Report of Fulfilment of Quantitative Criteria acquired from the Agency's information system.

Once the Accreditation Council renders its opinion, the Agency issues an Accreditation Recommendation by which the Agency recommends to the Minister of Science, Education and Sports to:

1. **issue a confirmation on compliance** with the requirements for performing higher education activities or parts of activities (renew the licence),
2. **deny the license** for performing the higher education activities or parts of activities to the higher education institution, or
3. **issue a letter of recommendation** for the period up to three (3) years in which period the higher education institution should make the necessary improvements. The letter of recommendation may include suspension of student enrolment for the defined period.

The Accreditation Recommendation also includes an Assessment of Quality of the higher education institution as well as recommendations for quality development.

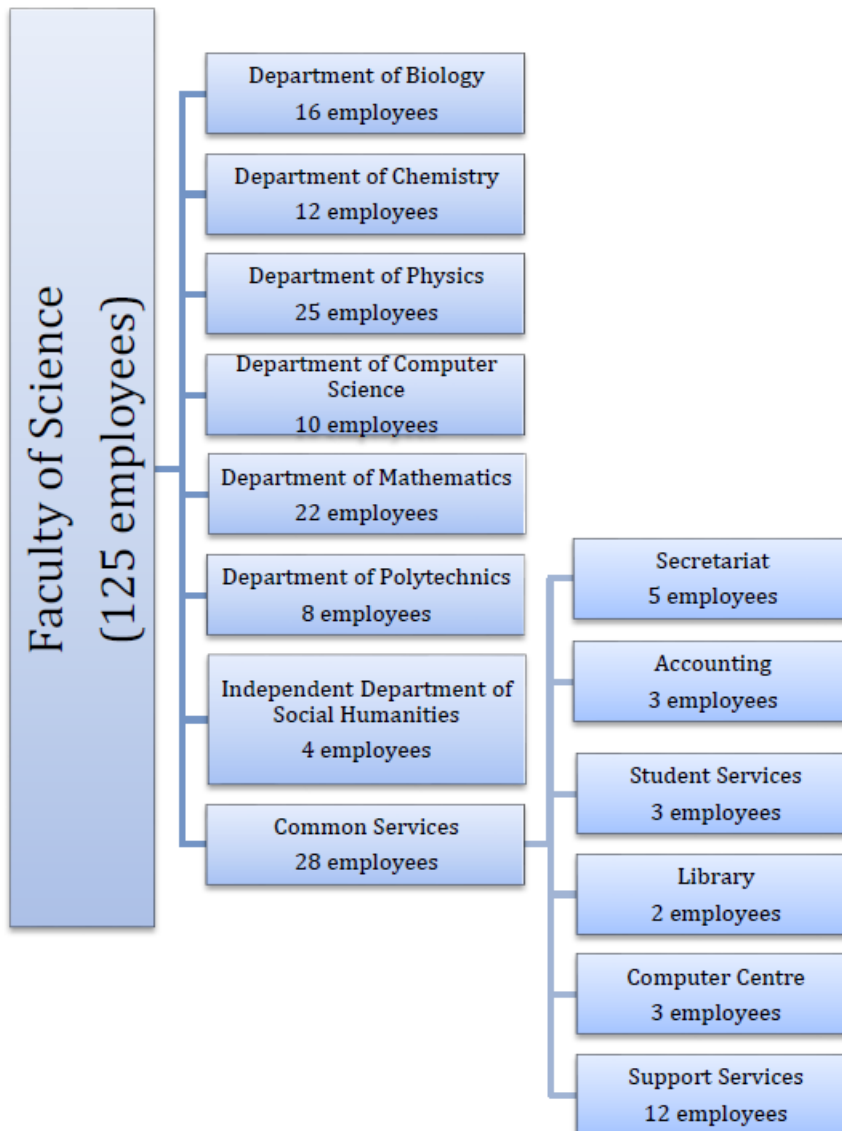
SHORT DESCRIPTION OF THE EVALUATED INSTITUTION

NAME OF HIGHER EDUCATION INSTITUTION: Faculty of Science, University of Split

ADDRESS: Teslina 12, HR-21000 Split, Croatia

NAME OF THE HEAD OF HIGHER EDUCATION INSTITUTION: prof. dr. sc. Ante Bilušić

ORGANISATIONAL STRUCTURE:



LIST OF STUDY PROGRAMMES: The Faculty of Science in Split currently conducts 10 undergraduate and 9 graduate studies, three of which have several orientations, as shown below.

Undergraduate studies	Graduate studies
Biology and Chemistry	Biology and Chemistry, teaching orientation
Physics	Teaching orientation
	Astrophysics
	Environmental Physics
	Biophysics
	Computational Physics
Physics and Computer Science	Physics and Computer Science, teaching orientation
Computer Science	Computer Science, teaching orientation
Computer Science and Technics	Computer Science and Technics, teaching orientation
Engineering Physics, Thermodynamics and Mechanics	Mechanical Systems
	Thermodynamic Devices
Mathematics	Teaching orientation
	Computing orientation
	Theoretical orientation
Mathematics and Physics	Mathematics and Physics, teaching orientation
Mathematics and Computer Science	Mathematics and Computer Science, teaching orientation
Nutritionism	

Postgraduate university studies are:

- Biophysics
- Research in education of natural and technical sciences.

NUMBER OF STUDENTS: In the academic year 2013/2014, the number of students enrolled in undergraduate studies was 600 and in graduate studies 300. At the postgraduate doctoral study of Biophysics there were 10, and at the postgraduate university study of Research in education in the field of natural and technical sciences 30 enrolled students.

NUMBER OF TEACHERS: On the 31st December 2014, the Faculty had 124 employees: 95 in all teaching positions and 29 in professional and administrative-technical positions.

NUMBER OF SCIENTISTS:

- Doctors of Science (57)
- Master of Science (3)

Source: Self-evaluation, Table 4.3. List of teachers

TOTAL BUDGET (in 2014 in kunas):

TOTAL INCOME (A)	27,794,985.19
TOTAL EXPENSES (B)	27,963,842.90
Balance from previous year (C)	5,756,055.95
TOTAL BALANCE (A-B+C)	5,587,198.24

MSES FUNDING: 24,817,581.22 kn ($\approx 90\%$)

OWN FUNDING (percentage): 843,316.43 kn ($\approx 3\%$)

SHORT DESCRIPTION OF HIGHER EDUCATION INSTITUTION:

Today's Faculty of Science in Split is a continuation of work of the Higher Pedagogical Academy which, in its 60-year history, has experienced several programme, organizational and status changes. From 2008, it is known under its present name - Faculty of Science in Split.

Over the past ten years, the Faculty of Science in Split has experienced significant changes in its educational activity. Since 2005, when the Bologna Process was introduced into Croatian higher education system, several undergraduate, graduate and postgraduate university study programmes have been developed. Interdisciplinary approach is particularly emphasised in educational studies, but it is applied in all other undergraduate and graduate studies.

In recent years, the Faculty significantly intensified activities connected to popularization of science, with emphasis on STEM fields.

The Faculty of Science conducts its activities at multiple locations: Teslina Street 12 and 6 and at Kopolica 5, but relocation into a new Faculty building on the University Campus is in progress.

CONCLUSIONS OF THE EXPERT PANEL

The Expert Panel visited the Faculty of Science of the University of Split at a transitional point in its history, shortly before its long-overdue move from inadequate accommodation into a new building that provides a good basic infrastructure for teaching and research. Despite the severe limitations of its current facilities, the Faculty has been successful in producing good graduates and good research, obtaining funding for research projects, and cooperating with other organisations internationally.

ADVANTAGES OF THE INSTITUTION

1. Ability to attract both middle stage as well as senior stage researchers from Croatian diaspora to settle in Split.
2. The soon to be realised relocation to new premises on the University Campus. This has the potential to further foster collaboration with faculties in the field of engineering and biomedicine. There is early evidence, with respect to hiring new faculty members, of new research links being created.
3. Establishment of the STIM research center of excellence.
4. The attractive location and history of the city of Split is an advantage in attracting students (including exchange students), research visitors, collaborators and scientific meetings.
5. There are doctoral programmes in two niches for which the HEI is unique in Croatia.
6. The Faculty covers a broad spectrum of disciplines which should allow for a robust repositioning of the institution to the changing research priorities both on national as well as international level.

DISADVANTAGES OF THE INSTITUTION

1. The current accommodation is inadequate for lab-based scientific research and for high-quality teaching. It appears that this disadvantage will be addressed in the near future with the Faculty's move to a new building. It is vital that nothing is allowed to prevent or further delay this important improvement.
2. Lab facilities in the current accommodation are inadequate. Resources for equipping labs in the new building appear to be available and it is important that these are forthcoming without delay.
3. The institution is not leveraging its potential for both incoming as well as outgoing research and teaching mobility.
4. Although the staff to student ratio of 1:17 is recognised by the institution itself as very favourable, there are staff members which are considerably more involved in teaching than others. This indicates that there are organisational bottlenecks in the allocation of the teaching load. It is understandable that such an imbalance must occur in an institution which covers such a broad range of research and teaching fields. However, the imbalance is preventing the institution from realizing its full potential for research and development activities.

5. Although the management is very agile in realization of the institution's vision and mission, the participation appears to be limited to a fraction of faculty members. This slows down the process of evolution to a research-oriented institution.
6. The progression and intake of young researchers is limited by policy on a national level. This slows the transition from a teaching-based institution to a more research-oriented establishment.

FEATURES OF GOOD PRACTICE

1. The Faculty's leadership is strong, active and quality oriented, and has done well in difficult circumstances to maintain and improve the quality of teaching and research.
2. The Faculty has developed a comprehensive information management system which allows access to information about individuals and their contribution to goals.
3. The Faculty has attracted high quality researchers in the medium and senior stages of their careers to relocate to Split from renowned foreign institutions.
4. The Faculty has positioned itself to receive funding from strategic initiatives such as cohesion funds and the national research centres of excellence initiative.
5. The STIM centre of excellence provides opportunities for new and better research cooperation.
6. The admission thresholds have been raised in order to improve the quality of intake of students, resulting in better quality of graduates, and ensuring that students taken in have the capacity to complete the programme.
7. The introduction of a 'best scientific paper' award is commended.
8. Initiatives on assessing workloads of students as input to ECTS allocation are commended.
9. Funds generated by external activities have been used to finance one teaching and research assistant and thus contribute to proactively managing the workload of the staff and for improving teaching quality.

RECOMMENDATIONS FOR IMPROVEMENT

1. Management of the Higher Education Institution and Quality Assurance

- The HEI's management needs to decide how to implement its strategic plan in terms of concrete actions with timescales and measures.
- The HEI would benefit from formalising practices that already exist informally.
- Buy-in and participation in teaching quality mechanisms needs to be more widespread. Feedback from students should be made to work and be related to teaching quality mechanisms.
- More formalised research quality plans and processes are required which apply to all staff.

2. Study Programmes

- The HEI should implement a mechanism for continuous monitoring of the operation of individual study programmes that involves management and teaching staff and students.
- The documentation of learning outcomes at course and programme level should be completed and published, and then assessment should be aligned with these learning outcomes.

- The HEI should consider introduction of formal industry internships with associated academic credit as part of study programmes, as appropriate.
- The HEI should investigate ways to provide support to staff in the development of teaching materials, such as on-line supplemental materials.

3. Students

- Communication appears to be lacking, between students and staff and between students themselves. Students are not providing feedback, appear to be worried about the consequences of doing so, and appear to be unaware of possibilities of having influence via student representation in the Faculty's decision-making processes.
- The students would benefit from having more opportunities to participate in scientific research activities.

4. Teachers

- Some members of staff appear to be resistant to change, with a lack of enthusiasm for new initiatives. Aspects of the vision expressed in the strategic plan do not appear to be fully supported by some members of staff. Nevertheless, they are not blocking change.
- Although there is a considerable activity on developing learning management systems, usage seems to be limited to only a fraction of the staff. Similar features can be observed in uptake of other noteworthy initiatives to enhance teaching standards. Effort should be made – and given force by, say, a decision of the Faculty Council – to set deadlines for achieving relevant milestones, to stimulate broader participation in novel activities.
- A very advanced home-grown information system supports all business processes in the institution. However, it is only used by a fraction of the staff. Practices on the use of technology should be standardised.

5. Scientific and Professional Activity

- Members of staff who are active in applying for and participating in national and international projects should be encouraged and supported.
- There is evidence that the professional activity in form of advisorships for local industry is increasing. These efforts should be further stimulated. The HEI has a broad field of expertise, and forming interdisciplinary teams in line with requests of industry partners should be easy.
- An effort to offer further lifelong learning programmes could help increase the revenue of the HEI – in particular, since there is considerable expertise within the HEI in using and customising learning management systems.

6. International Cooperation and Mobility

- The students' lack of interest in opportunities for international exchange suggests that more encouragement and dissemination of information about the benefits to students of participation in such exchanges would be appropriate.
- Information about the study programmes should be published in English together with details about the provision for study in English, in order to improve attractiveness for exchange students from abroad.

7. Resources, Administration, Space, Equipment and Finance

- Since appropriate learning resources for all aspects of quality learning are lacking, relocation to a new building is highly recommended and should be completed as soon as possible. The problem of laboratories which are not properly equipped, thus not providing good support for teaching and research, will be partially resolved in this manner.

Although students have access to the University library, the Faculty library itself could have more textbooks available. The learning space for students will be much more appropriate upon relocation to the new building.

DETAILED ANALYSIS OF INSTITUTIONAL COMPLIANCE TO THE STANDARDS AND CRITERIA FOR RE-ACCREDITATION

In terms of classification under the designated assessment criteria, the degree of implementation has been influenced by national restrictions, e.g. staff recruitment and progression, by the spread of expertise of the Faculty's staff, and by other circumstances beyond the Faculty's control.

1. Institutional Management and Quality Assurance

- 1.1. There is a strategic plan and stakeholders were included in its development. The plan includes general goals but not (at least not complete) operational plans or monitoring mechanisms.
- 1.2. They have a well-defined and formalised organisational structure to provide the basis of what is needed, but that is not enough in itself to give excellence in teaching and research in the absence of adequate resources.
- 1.3. There appears to be no university strategy with which they can align. But there are regular meetings and good communication between the Dean and higher levels of the University. There is not a written research strategy that has been developed with relevant staff and clearly articulated. However, the HEI should be commended for its efforts to position itself to receive funding from strategic initiatives such as cohesion funds and the national research centres of excellence initiative.
- 1.4. Study programmes are in line with the Faculty's mission. Learning outcomes are lacking, but are being formalised. The Faculty's Strategic Plan includes the goal to make programmes more attractive to the labour market.
- 1.5. Relevant data is collected. There are QA processes in place in which it is analysed and used. There is good software support in place for processes. Communication between students and staff is not working well; communication with stakeholders is informal.
- 1.6. As 1.5: There are formal student feedback mechanisms in place, and also some informal peer review mechanisms. Feedback from students is not always effective – some staff question the methodology and usefulness of current student feedback methods directed at improvement of teaching quality.
- 1.7. Mechanisms for monitoring and improvement of research quality are informal and dependent on personal interaction. There is no transparent formalised procedure which gives all staff access to resources. The introduction of a 'best scientific paper' award is commended.
- 1.8. Proper mechanisms for monitoring unethical behaviour exist and are used.

2. Study Programmes

- 2.1. Learning outcomes have been written for all courses, but are not yet published and available to students in all cases. It is not clear if learning outcomes have been developed at the level of study programme. Individual study programmes do not appear to get dedicated attention from a team that includes teachers and students. The Head of Department is responsible for all of the study programmes within the department.
- 2.2. The admission thresholds have been raised in order to improve the quality of intake of students, resulting in better quality of graduates, and ensuring that students taken in have the capacity to complete the programme. This approach is commended.
- 2.3. Resources for teaching have been inadequate, but will improve dramatically with the planned move to a new building.
- 2.4. See 2.1.
- 2.5. See 2.1. Alignment of assessment with learning outcomes should take place and be documented.
- 2.6. Initiatives on assessing workloads of students as input to ECTS allocation are commended. There is evidence that student feedback has been used to change ECTS allocations.
- 2.7. It was not possible for all Panel members to see the detailed content of study programmes, which are written only in Croatian at present. Those study programmes that were examined were of appropriate international standard.
- 2.8. A good range of teaching methods are used, given constraints on resources and facilities. Websites were developed for many courses; the Faculty has recently adopted the use of Moodle. There is a lack of support for staff in the development of on-line support materials.
- 2.9. Many teaching staff make supplemental material available to students online, including course notes and e-texts. There are constraints at state level on access to journals and databases. Physical library facilities will improve with the planned campus move.
- 2.10. Interaction with industry is lacking, partly because of the current lack of facilities. There are examples in some areas of students having opportunities to spend time in industry, but this appears not to be formally structured into study programmes.

3. Students

- 3.1 Admissions thresholds have been raised in reaction to inadequate preparation of students, based on performance data. The staff provides remedial pre-courses on their own initiative.
- 3.2 Students are offered various sports activities as well as participation in events such as the Festival of Universities, but there are not many students involved in scientific research activities. Students say that if they come with a request to Dean, he provides help including funding if required.
- 3.3 Each student has a personal mentor to help with course choices and professional development.
- 3.4 There are systems for appeals etc. but students do not seem to be aware of the process. Good mechanisms for giving feedback and analysing performance exist, but it is not clear that students and staff are using them in all courses.
- 3.5 An Alumni Association of the Faculty of Science was recently founded. Cooperation with former students who work as school teachers is still based on individual contacts.
- 3.6 The institution participates in events such as the Festival of Universities, Festival of Science, Researchers Night, school visits, etc. Information about study programmes is published on the Faculty's new website.
- 3.7 Students seem reluctant to express their opinion. Some students are engaged in providing feedback to staff, while others are not using feedback mechanisms at all.
- 3.8 Students normally receive feedback on the measures that have been taken on the basis of their opinions and suggestions, but in some cases there is no clear response to feedback.

4. Teachers

- 4.1. The continued stall on the national level on recruitment and promotion of academics is an obstacle to meeting the University's and Faculty's strategic needs. A continuation of the policy will have further adverse effects on the national science base. There is some evidence that the HEI is using the flexibility which the new system offers upon retirement of a staff member in allocating appointments in areas identified as strategically important. However, this process is quite slow, and high institutional inertia is hampering the strategic repositioning of the HEI. The HEI should be commended for its ability to attract researchers in the medium and senior stages of their careers to relocate to Split from renowned foreign institutions.

- 4.2. As in 4.1.
- 4.3. The staff/student ratio is very favourable. However, there are big differences between different departments. The model for balancing workload seems to be perceived as fair. However, the model should be amended so that the extra work of the more proactive members of the staff is taken into account.
- 4.4. The Faculty supports the professional development of its scientific-teaching staff within its resources constraints, e.g. by redistributing teaching and administrative loads so that staff members are able to go abroad when required by work on projects. The established centre of excellence should further facilitate professional and scientific development as well as scientific mobility.
- 4.5. The staff workload is comparatively high, but its distribution is seen as fair by all staff. However, it seems that the enthusiasm for the strategic repositioning of the HEI is not equally shared by all staff members and this creates a further workload for the more proactive members of staff. Ideally, these extra tasks – which are performed voluntarily for the benefit of the whole HEI – should be included into the workload balancing model as they may affect adversely team research efforts and new developments.
- 4.6. There is no evidence of external activities affecting adversely the delivery of teaching.

5. Scientific and Professional Activity

- 5.1 The HEI has a general strategic plan which covers only 3 years. This plan should be augmented with a plan for specific strategic research focus covering research activity over 5 years (see 1.1.).
- 5.2 The institution provides for cooperation with other scientific organizations, but since the HEI does not have a clear strategic focus this cooperation is opportunistic and on an individual basis rather than strategic.
- 5.3 The HEI has an adequate number of researchers, but some of them are overloaded with teaching. The institution has attracted high quality people from abroad, which is certainly a feature of good practice and should be supported even more, but because of the HEI's limitations (space, equipment, etc.) the HEI has not been able to leverage their connections etc. as much as could have been done.
- 5.4 Researchers in the HEI have published high quality scientific papers, but their distribution among departments is very uneven.

- 5.5 The HEI gives a financial reward to researchers with the best publications, thus encouraging their excellence.
- 5.6 The number of peer-reviewed scientific publications is adequate, with respect to the ratio of papers per researcher per year, but, as already mentioned, there is a great difference between departments, meaning that quality in some areas could be much better.
- 5.7 From the HEI's participation in national and international projects it can be concluded that only a few members of staff are very active in participation in projects, and many appear to be inactive. The research centre of excellence is one point that should be emphasized as good practice possibly leading to new and better cooperation at the institution.
- 5.8 The culture of research and industrial collaboration with industry and the public sector is not well developed and needs further support and fostering. There is some evidence of limited interaction with industry as well as that the HEI is taking steps towards increasing it, e.g. by opening an office to manage projects including the hiring of further staff members towards this end.
- 5.9 There is some evidence of the practice of making some additional earnings on the market. There is much potential for further activities which could generate revenue for the Faculty, and new structures should be put in place to support these activities. The funds which were thus acquired have been used to finance one teaching and research assistant and thus contribute to proactively managing the workload of the staff and for improving teaching quality. The HEI should be commended for this practice.
- 5.10 There are doctoral programmes in two niches for which the HEI is unique in Croatia. The data provided indicates that they have a sufficient number of good mentors and the criteria for becoming a supervisor/mentor are clear. PhD students are actively involved in scientific work in their own institution as well as other institutions they are cooperating with.

6. International Cooperation and Mobility

- 6.1 Transfer of students from other HEIs is possible. Procedures exist and are applied, but information on these procedures is not published.
- 6.2 Students are informed about possibilities for international exchange and the HEI has made arrangements for exchange with an adequate number of partner institutions. However, there is little evidence of desire for mobility among students.

- 6.3 Staff travel abroad as required for their research, and resources to enable this are made available. There appears to be no systematic analysis of the effect of these exchanges.
- 6.4 There is not much evidence of participation in international associations at institutional level, but individuals do participate.
- 6.5 The HEI hosts students from Serbia and Bosnia, which demonstrates adequate conditions for accommodating students from these countries at least. The study programmes are relatively inaccessible for the majority of European students because of the lack of teaching in English, although there is willingness to provide individual assistance in English where required.
- 6.6 The HEI has succeeded in attracting an Emmy Noether scholarship holder from Germany. Their ability to attract others is improving because of the new facilities that will be available once they move to the new building.
- 6.7 There are adequate Erasmus partner institutions and participation in joint doctoral programmes within Croatia, for instance in Mathematics with the University of Zagreb.

7. Resources: Administration, Space, Equipment and Finances

- 7.1 The institution is obviously lacking appropriate learning resources for all enrolled students. Classrooms, laboratories and equipment are quite inadequate and do not serve their purpose. Most of the students are obliged to attend classes at different locations, with travel between locations by public transportation, causing them to waste lots of time. This situation will change when they move to the new building, providing them with all the learning resources they need.
- 7.2 The ratio of teaching and non-teaching staff is adequate. But teachers in all departments are overloaded and it is difficult to harmonize all of their obligations in teaching and research. In addition, they also do lots of administrative work, since there is no administrative support in departments, leading to an excessive workload.
- 7.3 The institution ensures professional development of non-teaching staff, providing them with support and opportunities for their professional development, and to exchange practices and information with others on the same level elsewhere in the university.
- 7.4 During the site visit, the Expert Panel concluded that the laboratories are not equipped in line with professional standards, thus not providing for high quality teaching and research. But there is a tendency for improvement as soon as they move to the new building, although this depends on funding coming through as expected.

- 7.5 See 7.4.
- 7.6 The HEI supports student learning through the availability and usability of its library, which could have more resources available within the Faculty rather than relying on the university facility.
- 7.7 The institutional funds are limited and the HEI's manner of allocating funds seems to be good within the constraints of their financial resources. Their funding seems sustainable and transparent.
- 7.8 The HEI allocates its limited funds appropriately, taking the quality of teaching and research into consideration. This seems to be the right direction for the further improvements they are planning.