

**REPORT  
of the Expert Panel  
on the  
RE-ACCREDITATION OF  
Department of Biology  
Josip Juraj Strossmayer University of Osijek**

**Date of the site visit:  
13<sup>th</sup> - 14<sup>th</sup> of April 2015.**

June, 2015

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## INTRODUCTION

This report on the re-accreditation of the Department of Biology, University Josip Juraj Strossmayer in Osijek 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, supporting documentation and a site-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 programmes.

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:

1. **Prof. Jürg Bähler, Ph. D.**, Division of Biosciences, University College London, United Kingdom of Great Britain and Northern Ireland
2. **Prof. Thorsten Bernhardt, Ph.D.**, Institute of Surface Chemistry and Catalysis University of Ulm, Federal Republic of Germany
3. **Prof. Vesna Benković, Ph.D.** associate professor, Department of Biology, Faculty of Science of the University of Zagreb, Republic of Croatia (**panel chair**)
4. **Prof. Hrvoj Vančik, Ph.D.**, full- professor, Department of Chemistry, Faculty of Science of the University of Zagreb, Republic of Croatia
5. **Snježana Dunder, student**, Department of Chemistry, Faculty of Science of the University of Zagreb, Republic of Croatia

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

- Frano Pavić, coordinator, ASHE
- Goran Briški, interpreter at the site visit and report translator, ASHE.

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

- The Management;
- Representatives of the Commission for Quality
- The students;
- Deputy Head of Department of Education and Students;
- Deputy Head of Department of Research;
- The Teachers;
- Teaching assistants and junior researchers
- Leaders of scientific projects.

The Expert Panel also had a tour of the library, IT rooms, student register desk, and the classrooms at the Department of Biology, University Josip Juraj Strossmayer in Osijek, where they held a brief question and answer session with the students who were present.

Upon completion of re-accreditation procedure, the Accreditation Council renders its opinion on the basis of the Re-accreditation Report, an Assessment of Quality of the higher education institution and the Report of Fulfilment of Quantitative Criteria which is acquired by 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** to the higher education institution, which confirms that the higher education institution meets the requirements for performing the higher education activities or parts of activities, in case the Accreditation Recommendation is positive,
2. **deny a license** for performing the higher education activities or parts of activities to the higher education institution, in case the Accreditation Recommendation is negative, or
3. **issue a letter of recommendation** for the period up to three (3) years in which period the higher education institution should remove its deficiencies. For the higher education institution the letter of recommendation may include the 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

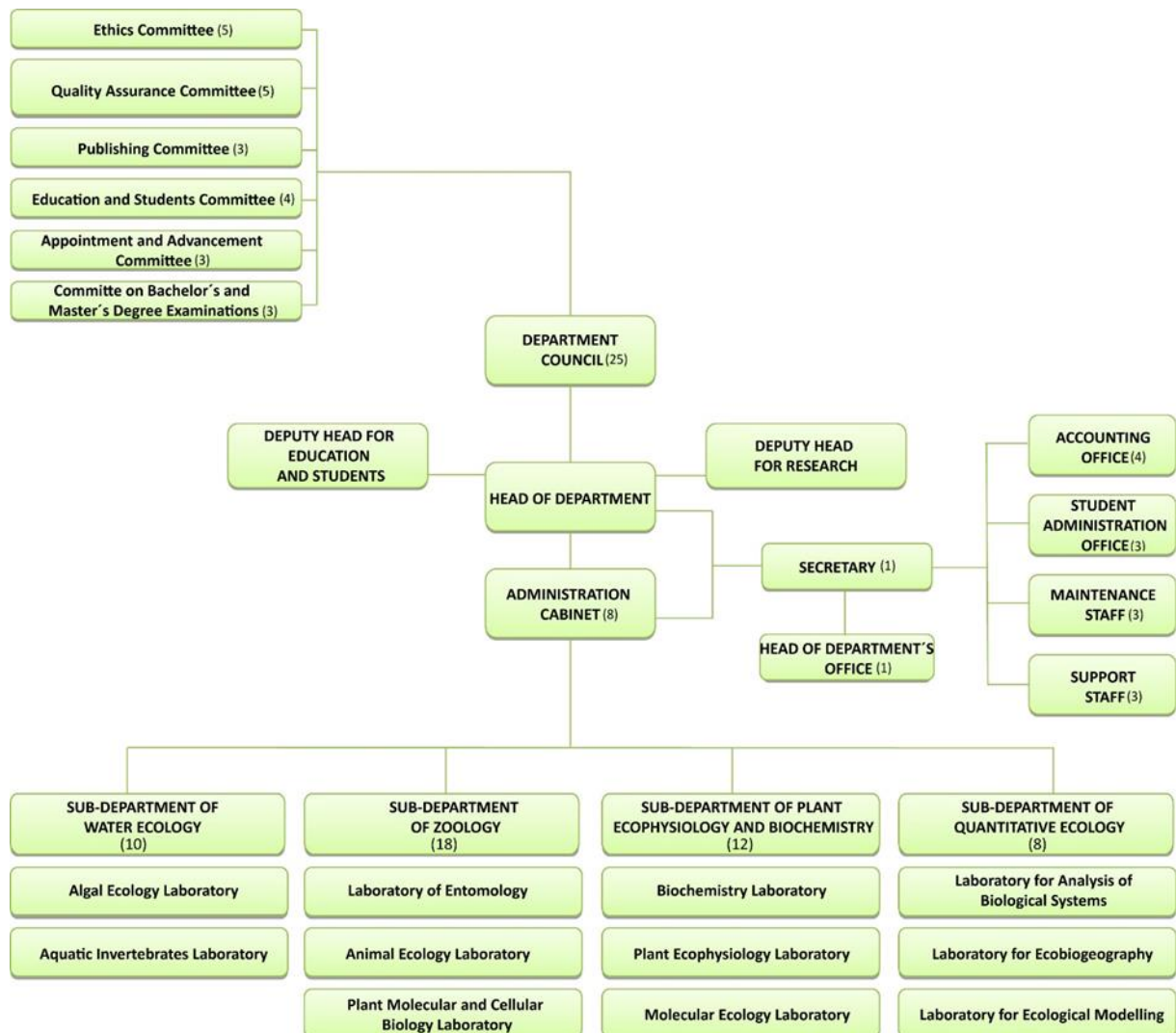
# SHORT DESCRIPTION OF THE EVALUATED INSTITUTION

**NAME OF HIGHER EDUCATION INSTITUTION:** Department of Biology, University Josip Juraj Strossmayer in Osijek

**ADDRESS:** Ulica cara Hadrijana 8/A, HR-31000 Osijek

**NAME OF THE HEAD OF HIGHER EDUCATION INSTITUTION:** Prof. Enrih Merdić, Ph.D.  
associate professor

**ORGANISATIONAL STRUCTURE** (e.g. chairs, departments, centres): according to Table 1.B.1. of the Self-evaluation document on page 4.



**LIST OF STUDY PROGRAMMES** (and levels):

- Undergraduate university study programme in Biology
- Graduate university study programme in Biology
- Graduate university study programme in Biology and Chemistry Education
- Graduate university study programme in Nature and Environmental Protection
- Postgraduate University interdisciplinary doctoral study programme in Nature and Environmental Protection, University Josip Juraj Strossmayer in Osijek in cooperation with the Ruđer Bošković Institute in Zagreb.
- Postgraduate University interdisciplinary doctoral study programme in Molecular Biosciences, University Josip Juraj Strossmayer in Osijek in cooperation with the Ruđer Bošković Institute in Zagreb and University of Dubrovnik

**NUMBER OF STUDENTS** (part-time/full-time/final-year): according to Self-evaluation document, the institution has 234 full-time students and 96 final year students

**NUMBER OF TEACHERS** (full-time, external associates): according to Table 4.1 of the Self-evaluation document on page 89, the institution has:

Staff	Full-time staff		Cumulative employment		External associates	
	Number	Average age	Number	Average age	Number	Average age
Full Professors	5	58.6	1	63		
Associate Professors	4	51			3	49
Assistant Professors	11	38.1			9	44.9
Postdoctoral Researchers, Senior Teaching/Research Assistants	12	35.3			1	39
Teaching/Research Assistants	7	31.6			7	31
Junior Researchers - Postdoctoral Researchers	2	30				
Senior Lecturers	0	0			1	36
Lecturers	0	0			1	45
Professional Advisors	2	42.5				
Senior Professional Associates	2	46				
Professional Associates	1	31				
Laboratory Technicians	2	47				
Maintenance staff	3	40				
Administrative staff	9	44				
Support staff	3	47				

**NUMBER OF SCIENTISTS** (doctors of science, elected to grades, full-time): 20 scientists

**TOTAL BUDGET** (in kuna): 11,097,463.10 HRK

**MSES FUNDING** (percentage): 91 %

**OWN FUNDING** (percentage): 4.5%

**SHORT DESCRIPTION OF HIGHER EDUCATION INSTITUTION:**

The higher education of biologists in Osijek dates back to 1977, the year of the establishment of the Chair of Biology at the Faculty of Education of the Josip Juraj Strossmayer University of Osijek. In 1984, the Chair grew into the Sub-department of Biology. On 1 April 2005, the University Department of Biology (hereinafter referred to as the Department of Biology) was established as a constituent of the University of Osijek. In June 2005, based on the accreditation license issued by the Ministry of Science, Education and Sports, the Department started delivering the Undergraduate university study programme in Biology (PSB) and two graduate programmes: the Graduate university study programme in Biology (DZSB) and the Graduate university study programme in Biology and Chemistry Education (DNSBK). The teaching according to the Bologna education system began in the academic year 2005/2006. Since 2005, the Josip Juraj Strossmayer University of Osijek has been offering the Postgraduate University interdisciplinary doctoral study programme in Nature and Environmental Protection, in cooperation with the Ruđer Bošković Institute in Zagreb. The Postgraduate university interdisciplinary doctoral study programme in Molecular Biosciences was established in the academic year 2005/2006. The doctoral study programme was jointly developed by the University of Dubrovnik, the Ruđer Bošković Institute in Zagreb and the University of Osijek. Part of the lectures and experimental work in the mentioned postgraduate studies is carried out in the classrooms, specialized teaching laboratories and the research laboratories of the Department.

In February 2012, the Department was relocated to the University Campus, located in 8/A Cara Hadrijana Street, Building No. 3. Overall, the Department has an area of 2,003 m<sup>2</sup> space at its disposal: 4 lecture halls, 4 teaching laboratories and 9 laboratories (for ecophysiology of plants, biochemistry, ecology of plants, cellular and molecular biology, aquatic invertebrates, algal ecology, entomology, ecology of animals and for the analysis of biological systems), 29 offices, 8 toilet facilities, two changing rooms, a kitchenette, a student room, the archives, a workshop for the custodians, a storage and three suites.

## **CONCLUSIONS OF THE EXPERT PANEL**

### ***ADVANTAGES OF THE INSTITUTION***

1. Department is young, dynamic, and ambitious
2. State-of-the-art space and infrastructure, good working environment
3. Closeness of the “Kopački rit” National Park
4. Good opportunities for collaboration with public institutions
5. Good opportunities for collaboration with other departments, especially with the Department of Chemistry (although this is not currently exploited).

### ***DISADVANTAGES OF THE INSTITUTION***

1. Too narrow research programmes that are not on the front of modern biology
2. Limited availability of equipment
3. Inappropriate study programme for combined studies with chemistry
4. Too little collaboration with the Department of Chemistry
5. Institution is mostly regionally oriented

### ***FEATURES OF GOOD PRACTICE***

1. Good communications between teachers and students
2. Positive working atmosphere
3. Ambitions in extending the research and study programmes
4. Outstanding public engagement and outreach activities



## ***RECOMMENDATIONS FOR IMPROVEMENT***

### **1. Management of the Higher Education Institution and Quality Assurance**

- The Department has developed an effective organizational structure and should continue the process they already initiated to optimize the monitoring mechanisms.
- Regarding quality policy and procedures, we recommend improving of institutional teaching and research activities (annual analyses, annual action plans for improvement, self-evaluations, regular meetings of the quality assessment committee with minutes, and follow up decisions, etc.), according to regulations.
- Mechanisms of monitoring unethical behaviour must be implemented in practical life of the Department.

### **2. Study Programmes**

- The Department should redesign the Graduate university study programme in Biology and Chemistry Education, in close collaboration with the Department of Chemistry. The existing programme does not provide the competence of future teachers to teach chemistry in schools, because the program is unbalanced, with a too strong bias towards biology. University teachers of chemistry courses within the biology program must be chemists by vocation. The Department of biology should exploit the teaching expertise of the Department of Chemistry, rather than hiring external teachers. The panel members all agree that this problem is serious and must be addressed.
- We strongly recommend formation of a working group for monitoring and developing the study programmes.
- The ECTS points for the elective courses should be checked more appropriately for accuracy.

### **3. Students**

- We recommend that the Institution should require the highest level on the State Matura exams, at least for mathematics.
- Contact of present students with the alumni should be supported.

### **4. Teachers**

- Number and qualification of the teaching staff ensure that the assessment of student learning is in line with the defined learning outcomes for all study programmes, except for the Graduate university study programme in Biology and Chemistry Education. University teachers of chemistry courses within the program must be chemists by vocation (See also point 2 above).

- As also stated and supported in the report for the Chemistry Department, the panel urges both Departments (Departments of biology and Department of chemistry) in its efforts to collaborate, with respect to the educational graduate programme in Biology and Chemistry.
- The Institution should establish formal criteria for the professional development of the scientific-teaching staff, besides the criteria already established by law and within the University.

#### **5. Scientific and professional activity**

- Since the research strategy is somewhat generic and not tailored to the specific conditions of the Department, the Department should more carefully develop its research strategy to include more of their own leadership in collaborative projects.
- Efforts should be made to increase the research productivity, which is somewhat mediocre (reflecting limited resources and heavy teaching loads).
- The Department should regulate the workloads to provide more working time for research activities.
- They have to extend the number of Ph.D. students that stay within the Department.

#### **6. International Cooperation and Mobility**

- Outgoing and incoming students must be better informed and encouraged to continue or partially continue their study in other institutions.

#### **7. Resources, Administration, Space, Equipment and Finance**

- Laboratory equipment should be improved to approach international standards.
- The library, availability of literature data, electronic equipment, and professional support should be improved to approach international standards.

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

### **1. Institutional management and quality assurance**

#### 1.1

The strategic plan of the Department is part of the strategic plan of the University and contains all the necessary elements. The Department has also developed its own strategic plan for the period 2012.-2017. This plan looks comprehensive and is appropriate to the present activities of the Department. Since the strategic plan is in its initial phase, they still need to develop the details, and the monitoring mechanisms are not completely implemented. The Department should continue the process they already started to optimize the monitoring mechanism.

#### 1.2

The Department has developed an effective organizational structure, which appears to be in agreement to the legal documents.

#### 1.3

Not applicable for Department.

#### 1.4

The study programmes are in line with the mission of the University and with the mission of the Department.

#### 1.5

Quality monitoring is partially implemented because it only comprises the quality assessment of teaching. We recommend to complete implementation of procedures according to regulations.

#### 1.6

Sensible mechanisms for monitoring and improving teaching quality have recently been employed.

#### 1.7

Implementation of mechanisms for monitoring and improving research quality is still in its beginning. The expert panel highly recommends that institution develops existing mechanisms for monitoring and improvement of research quality.

#### 1.8

Monitoring mechanisms for unethical behaviour are declared but not implemented in practical life because the students are not fully informed in the best way.

## **2. Study programmes**

### 2.1

The Department did not develop effective procedures for monitoring development, innovation and improvements of existing study programmes. We have the impression that study programmes are not well coordinated internally, because of deficiency of a systematic analysis. Formation of a working group for monitoring and developing the quality of study programmes, as well as involving external stakeholders in those procedures (employers, public and private sector and the civil society), is recommended.

### 2.2

The enrolment quotas are appropriate but should not be increased.

### 2.3

The enrolment quotas are only partially in accordance with the system of study, because of the high drop-out rate of students. Additional efforts to minimize drop-out rate are necessary.

### 2.4

Learning outcomes are in line with the knowledge and the skill required by students. The learning outcomes defined at the course level match the learning outcomes stated at the study programme level.

### 2.5

The alignment of learning outcomes and methods of exams are satisfactory and appropriate to the qualification level.

### 2.6

The ECTS points for the elected courses should be checked more appropriately.

### 2.7

The content and quality of programmes only partially complies with international standards, since they did not equilibrate the contents and quality of the Graduate university study programme in Biology and Chemistry Education, the students who finish this programme are not competent to teach chemistry in high schools.

### 2.8

Teaching staff are highly motivated, and they try to use innovative methods for teaching and stimulating the students. The teaching peer-review and self-evaluation system should be fully implemented. The panel was pleased to see a true passion for teaching among most of the staff.

### 2.9

Teachers make efforts to compensate for the difficult situation with the lack of availability of the literature sources, in particular electronic.

2.10

Students have sufficient opportunities to apply their knowledge in practical research, as well as in collaboration with external partners.

### **3. Students**

3.1

The competences of the enrolled students are not satisfactory, because future scientists and especially school-teachers must have as good as possible education. We recommend that the Department should require the highest level on the State Matura exams, at least for Mathematics.

3.2

Students have full support, even financially, in all their extra activities, such as sports and organizing events.

3.3

The Institution offers the opportunity for mentorships and professional improvements for students.

3.4

Knowledge assessment procedures and methods of the Department are well established and comply with international standards.

3.5

The contact with former students through organization of the alumni club has recently been developed. Contact of present students with the alumni must be intensified.

3.6

The institution regularly informs the public about its study programmes, learning outcomes, qualifications and employment opportunities by promotional materials, website, open day, science fair, etc.

3.7

Students and teaching and research staff, as well as the institutional management, have developed excellent lines of communication. Students can express their opinions and give suggestions for improvement; they can also influence the decision-making and problem-solving processes on issues that concern them.

3.8

The institution provides feedback to students regarding the results of student surveys, as well as students' suggestions and opinions delivered via other channels. The institution improves the studying experience on the basis of student feedback.

#### **4. Teachers**

4.1

The number and qualifications of the scientific-teaching staff are in line with the strategic goals of the Department and adequately cover core disciplines. The self-analysis is acceptable for all the programmes, except for the Graduate university study programme in Biology and Chemistry Education (teachers of chemistry courses must be chemists by vocation).

4.2

The Department's policy of growth and development of human resources is limited and governed by the policy of the Ministry, but the Department should improve the human resource development plans.

4.3

The Department takes into account the number of full-time teachers, maintaining the optimal ratio between students and full-time teachers.

4.4

The Department does not have established formal criteria for the professional development of the scientific and teaching staff besides the criteria already established by law and within the University. Professional development strategy of scientific-teaching staff should be developed.

4.5

The roles that regulate the workload of teachers are established, which mostly enable the equilibrated contribution to teaching and research, but their additional development is recommended in order to improve the research productivity.

4.6

The Department takes care that the activities of the staff out of the University do not disturb their institutional obligations.

## **5. Scientific and professional activity**

### 5.1

The research strategy is sound, but it is still in an early phase. The implementation of this ambitious strategy will be a challenge. The research strategy is somewhat generic and not tailored to the specific activities of the Department. Extension of the research programmes in a way to cover more of teaching fields is recommended.

### 5.2

There seem to be too many collaborations envisaged to be realistic, and also a lack of ambition to lead these collaborations. The opportunity of having several good groups in chemical research located in the same building is not pursued for joint research project. There would be a fantastic opportunity here for inter-disciplinary research (e.g. taking advantage of the sensors developed by chemists to detect water quality). Such inter-disciplinary research can be very fruitful and popular with funding agencies.

### 5.3

The Department has an adequate number and profile of researchers for the implementation of its strategic research agenda.

### 5.4

The research output is limited, although quite remarkable given the limited resources and time available for research. Efforts should be made to move towards more cutting-edge research directions within biology (e.g. by collaborating with Chemists), whilst maintaining the focus on the unique strengths (e.g. ecological impact of river flooding, mosquito control). The papers with most impact were obtained only in collaboration with external colleagues and were not led by the Department.

### 5.5

Financial rewards and recognition for younger scientists were recently implemented.

### 5.6

The Department research productivity is limited, with average output, reflecting the limited resources available.

### 5.7

There are only few collaborative projects, and it would be good to see that more of them are led by the Institution.

### 5.8

There seems to be one example of cooperation with the public sector in transfer of knowledge and innovation (advice on mosquito control). Additional engagement in projects with external partners is recommended.

5.9

The staff does not seem to have sufficient time for any external paid engagements, given their heavy workloads.

5.10

The Department participates in the implementation of two Ph.D. programmes at other institutions. In the Department there are several Ph.D. students, but many of the mentors seem to be external.

## **6. International cooperation and mobility**

6.1

The Department encourages and supports internal mobility of students from other institutions. This is also stated in the Ordinance on studies and studying at Josip Juraj Strossmayer University of Osijek. Undergraduate study programme students have possibilities to enrol graduate study programmes in natural science field at other Universities in Croatia and Europe.

6.2

The students have opportunities to complete part of their programme abroad, but they are not satisfactorily informed about all options.

6.3

The Department intends to encourage their scientists and teachers to increase the mobility and international collaboration. Further efforts for international cooperation and mobility of teachers (researchers), and implementation of this international experience in their activities are needed.

6.4

The Department is part of international associations of similar scientific institutions, exchanging the results of scientific research and other kinds of collaborations.

6.5

Conditions for attracting students from other countries should be improved.

6.6

Conditions for attracting teachers from other countries are still not satisfactory and should be improved.

6.7

The Department has enhanced only partially the development of other forms of international collaboration, such as Erasmus, IAESTE, etc.



## **7. Resources: administration, space, equipment and finances**

### 7.1

Resources such as classrooms, laboratories, equipment, study spaces, are very good, but the library and the computer equipment are of low standard.

### 7.2

The Department maintains a good ratio between technical and administrative personnel *versus* teaching and scientific personnel.

### 7.3

The Department takes care of professional development of non-teaching personnel by organizing various seminars and other events in line with the institution's mission.

### 7.4

Laboratory equipment and usage protocols do not completely satisfy international standards, although they meet the needs for research and teaching. The Department intends to implement in the future the corresponding international requirements regarding laboratory accreditation/certification.

### 7.5

The equipment, technology and technical support seems to be used in a satisfactory way for teaching and research activities.

### 7.6

Library, availability of literature data, electronic, and professional support is still in the initial phase. The absence of electronic journal subscriptions is a serious problem.

### 7.7

The Institutional funding is transparent, and satisfactory for enabling students to finish their study programmes.

### 7.8

Extra income of the Department is used as regular and meaningful investments into quality improvement of teaching and research activities.