



agency for science and higher education

**REPORT  
OF THE EXPERT PANEL  
ON THE  
RE-ACCREDITATION OF  
Faculty of Food Technology and Biotechnology  
University of Zagreb**

**Date of site visit:  
11 – 13 June 2019**

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**MAMFORCE**



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## INTRODUCTION

The Agency for Science and Higher Education (the Agency) is an independent legal entity with public authority, registered in the court register, and a full member of the European Quality Assurance Register for Higher Education (EQAR) and European Association for Quality Assurance in Higher Education (ENQA).

All public and private higher education institutions are subject to re-accreditation, which is conducted in five-year cycles by the Agency, in accordance with the Act on Quality Assurance in Science and Higher Education (Official Gazette 45/09) and subordinate regulations, and by following *Standards and Guidelines for Quality Assurance in the European Higher Education Area* (ESG) and good international practice in quality assurance of higher education and science.

The Agency's Accreditation Council appointed an independent Expert Panel for the evaluation of the Faculty of Food Technology and Biotechnology at the University of Zagreb.

Members of the Expert Panel:

- Prof. Pattanathu Rahman, Ph. D., Centre for Enzyme Innovation (CEI), School of Biological Sciences, University of Portsmouth, United Kingdom, Chair
- Prof. Cristina M Rosell, Institute of Agrochemistry and Food Technology (IATA-CSIC), Kingdom of Spain.
- Prof. Maja Molnar, Ph. D., Faculty of Food Technology Josip Juraj Strossmayer University of Osijek, Republic of Croatia
- Dr. Zdravko Matotan, Ph. D., Podravka d.d., Republic of Croatia
- Leon Grbeš, Graduate student, Faculty of Food Technology Josip Juraj Strossmayer University of Osijek, Republic of Croatia

During the site visit, the Expert Panel held meetings with the following stakeholders:

- Management
- Self-evaluation Report Committee
- Students

- Heads of study programmes
- Full-time teaching staff
- Assistants and junior researchers
- heads of doctoral programmes and leaders of research projects
- Representatives of the business sector and potential employers
- Alumni students

The Expert Panel members had a tour of the work facilities, laboratories, library, IT classrooms, student administration office and classrooms and attended sample lectures, where they held a brief Q&A session with students.

In accordance with the site visit protocol, the Expert Panel examined the available additional documents and study programme descriptions (learning outcomes).

The Expert Panel drafted this Report on the re-accreditation of the Faculty of Food Technology and Biotechnology at the University of Zagreb on the basis of their self-evaluation report, other relevant documents and site visit.

The Report contains the following elements:

- Short description of the evaluated higher education institution,
- Brief analysis of the institutional advantages and disadvantages,
- List of institutional good practices,
- Analysis of each assessment area, recommendations for improvement and quality grade for each assessment area,
- Detailed analysis of each standard, recommendations for improvement and quality grade for each standard,
- Appendices (quality assessment summary by each assessment area and standard, and site visit protocol),
- Summary

In the analysis of the documentation, the site visit to the Faculty of Food Technology and Biotechnology, University of Zagreb and writing of the Report, the Expert Panel was supported by:

- Iva Žabarović, coordinator, ASHE,
- Viktorija Juriša, assistant coordinator, ASHE,
- Ivana Rončević, interpreter at the site visit, ASHE,
- Ana, translator of the Report, ASHE.

On the basis of the re-accreditation procedure conducted, and with the prior opinion of the Accreditation Council, the Agency will issue the following accreditation recommendation to the Minister for Higher Education and Science:

1. **issuance of a confirmation on compliance with the requirements** for performing the activities, or parts of the activities
2. **denial of a license** for performing the activities, or parts of the activities
3. **issuance of a letter of expectation** with the deadline for resolving deficiencies of up to three years. A letter of expectation can include the suspension of student enrolment within a set period.

The accreditation recommendation also includes a quality grade of a higher education institution, and recommendations for quality improvement.

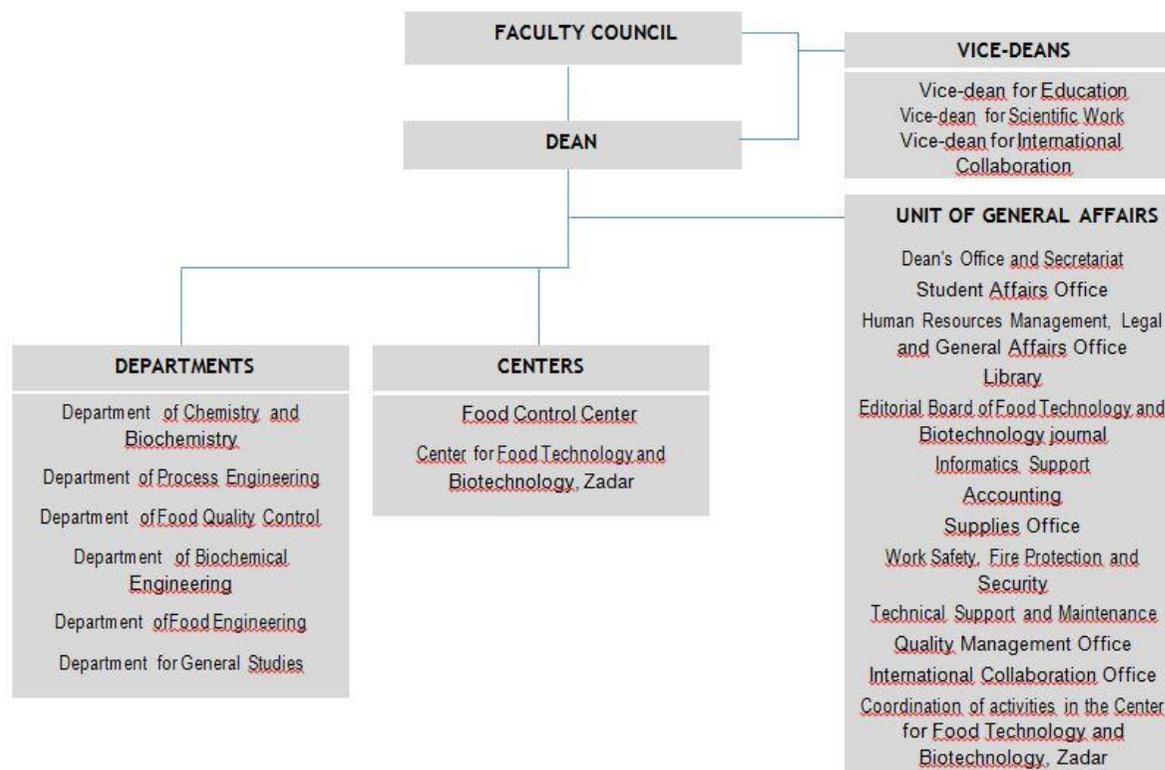
## **SHORT DESCRIPTION OF THE EVALUATED HIGHER EDUCATION INSTITUTION**

**NAME OF HIGHER EDUCATION INSTITUTION: Faculty of Food Technology and Biotechnology, University of Zagreb**

**ADDRESS: Pierottijeva 6, 10000 Zagreb**

**DEAN: Prof. Damir Ježek, PhD**

## ORGANISATIONAL STRUCTURE:



## STUDY PROGRAMMES:

List of study curricula delivered by the FFTB

Name of the study programme	Qualification	Study programme type	Degree type	Field and subject covered by the study curriculum	Issuing institution	Education provider	Programme duration (years)	ECTS credits	Mode of delivery	Location	Accredited	CRODF
Food Technology	Bachelor of Food Technology Food Technology Engineer	University	Undergraduate	4.05.	University of Zagreb	FFTB	3.0	180	Full-time	Zagreb	2005	6
Biotechnology	Bachelor of Biotechnology Biotechnology Engineer	University	Undergraduate	4.04.	University of Zagreb	FFTB	3.0	180	Full-time	Zagreb	2005	6
Nutrition Science	Bachelor of Nutrition Science	University	Undergraduate	4.06.	University of Zagreb	FFTB	3.0	180	Full-time	Zagreb	2005	6
Food Engineering	Master of Food Engineering	University	Graduate	4.05.	University of Zagreb	FFTB	2.0	120	Full-time	Zagreb	2005	7.1.
Food Safety Management	Master of Food Safety Management	University	Graduate	4.05.	University of Zagreb	FFTB	2.0	120	Full-time	Zagreb	2005	7.1.
Bioprocess Engineering	Master of Bioprocess Engineering	University	Graduate	4.04.	University of Zagreb	FFTB	2.0	120	Full-time	Zagreb	2005	7.1.
Molecular Biotechnology	Master of Molecular Biotechnology	University	Graduate	4.04.	University of Zagreb	FFTB	2.0	120	Full-time	Zagreb	2005	7.1.
Nutrition Science	Master of Nutrition Science	University	Graduate	4.06.	University of Zagreb	FFTB	2.0	120	Full-time	Zagreb	2005	7.1.
Food Quality and Safety	Food Quality and Safety University Specialist	University	Postgraduate	4.05.	University of Zagreb	FFTB	1.5	90	Full-time	Zagreb	2007	7.2.
Food Management	Food Management University Specialist	University	Postgraduate	4.05.	University of Zagreb	FFTB	1.5	90	Full-time	Zagreb	2008	7.2.
Biotechnology & Bioprocess Engineering, Food Technology and Nutrition Science	A PhD degree	University	Postgraduate	4.04., 4.05., 4.06., 4.07.	University of Zagreb	FFTB	3.0	180	Full-time	Zagreb	2017	8.2.

**NUMBER OF STUDENTS: 1.076**

**NUMBER OF TEACHERS: 113**

### SHORT DESCRIPTION OF THE EVALUATED HIGHER EDUCATION INSTITUTION

The Faculty of Food Technology and Biotechnology (hereinafter referred to as: the FFTB) is a leading Croatian science-research and higher education institution when it comes to the fields of Biotechnology, Food Technology and Nutrition Science. A multiyear FFTB engagement in education of top-notch experts and science research and expertise-based projects has been, and still remains, the main propelling force of the development of Croatian economy in the areas correspondent to the institutional line of business. Over the years, the FFTB has provided education for numerous generations of Food Technologists, Biotechnologists and Nutrition Scientists that worked and still work in the food, fermentation and pharmaceutical industry, and occupy various public sector positions. Many of these former students have continued their academic and scientific career in Croatia and abroad and made the study tracks offered by the FFTB and the FFTB itself internationally recognisable.

## **BRIEF ANALYSIS OF THE INSTITUTIONAL ADVANTAGES AND DISADVANTAGES**

HE Institution with a very global approach to Food Technology and Biotechnology covering multiple disciplines related to those subjects and with a very strong engagement of the HE taskforce from the Faculty Council, Dean and Vice Deans at different management levels.

### **ADVANTAGES OF THE INSTITUTION**

1. They have established ISO 9001:2015 and received the Certificate of Education Quality from the Agency for Science and Higher Education
2. Certificate for data protection.
3. They established a Laboratory for Sensory evaluation education and conducting a lifelong learning programme.
4. They have very close cooperation between teachers and students.
5. An outstanding Alumni and Stake-holders network.
6. Collaboration and cooperation between staff and students are excellent.
7. Experienced Manager for Quality Assurance.
8. Institution of HE that provides a complete Nutrition background (theoretical and practical) from undergraduate to PhD.
9. Their own journal supported by the Institution itself.

### **DISADVANTAGES OF THE INSTITUTION**

1. Unbalanced distribution of the workload among teachers, especially assistants, who are doing their doctoral thesis
2. Not enough support for Erasmus and other funding systems for mobility
3. Teaching in English is not stimulated, and neither is student attendance to English courses.
4. Knowledge transfer activities should be encouraged and international participation in project proposals should be improved.
5. Students' opinions should be monitored closely, and an annual internal survey should be introduced

## **LIST OF INSTITUTIONAL GOOD PRACTICES**

### **EXAMPLES OF GOOD PRACTICE**

1. Survey to ensure the balance between ECTS and staff workload
2. Record of all the scientific activities in the MOZVAG system
3. Meeting of the Economic Council (integrated by different stakeholders) to revise the study programs and align them with market demands
4. Evidence of students working in industrial projects/placements
5. Teaching Staff: Student ratio is within the threshold
6. Teaching staff with extensive research experience
7. Student-student mentoring system
8. Surveys conducted by some teachers on student satisfaction

## **ANALYSIS OF EACH ASSESSMENT AREA, RECOMMENDATIONS FOR IMPROVEMENT AND QUALITY GRADE FOR EACH ASSESSMENT AREA**

### **I. Internal quality assurance and the social role of the higher education institution**

#### **Analysis**

A quality assurance system is established, and its documents are well organized. The availability of all the information considering their activities is ensured. The mission and vision of the Institution is in line with the needs of society and its social role is encouraged. One lifelong learning program is implemented and is very successful. Although many stakeholders are included in the system, students should be more involved. The process of gathering information from the stakeholders is established, but should be improved, especially considering students. A strategic plan for the next five years has been established, but the financial plan of the implementation of the strategic goals should be created. All the strategic documents and compliance with the recommendations from previous reaccreditation processes should be discussed and elaborated with all stakeholders.

#### **Recommendations for improvement**

- Student inclusion should be promoted in the implementation and creation of quality management system documents, as well as periodically educating and informing them.
- Data gathering is one of the most important activities within the quality management system, and it should be improved, especially in the area of the

student's satisfaction with the teaching process. University survey is not enough for the Institution to gain all the relevant data and not all the teachers are performing their internal survey. Therefore, a suitable data gathering method/s, such as additional survey (which has already been created) should be implemented as soon as possible. All the results should be analysed, changes suggested, and actions taken in accordance. The whole process should be documented.

- It is strongly recommended and mandatory for the Institution to establish a financial plan considering their strategic plan, to show how all the strategic goals are to be realized within the financial frame work.
- Recommendations from the previous evaluations are mostly met, but some were met in part. A good thing is that compliance with those recommendations is still in progress, so the Faculty is strongly encouraged to comply with the recommendations in the future.
- A compliance with recommendations from other accreditations should be discussed and analysed on the Faculty council and all other internal meetings with all the stakeholders involved in the quality management system.
- Information compiled in the website should be presented in Croatian and English, which could contribute to the internationalization of the programs, encouraging foreign students to pursue their academic career or mobility in this Faculty.
- An information package or a brochure for foreign students should be included in the page, providing them with the basic information on the accommodation in the city, transportation and all other relevant information.
- Due to the existence of only one lifelong learning program, the Faculty is strongly recommended to pursue with the establishment of new programmes.

### Quality grade

Satisfactory level

## II. Study programmes

### Analysis

Learning outcomes are aligned with the Croatian Qualification framework and European qualification framework.

The learning outcomes for compulsory and optional courses are very well established and described in all the study programs, all those are recorded in MOZVAG.

Many innovations have been implemented through different educational projects funded by the European Social Fund, which have great impact on the quality level of the study programmes and the learning outcomes.

When the market demanded specific training or education, the institution has implemented in the study program.

Syllabi clearly identify the study program, the ECTS allocated to each one, the theoretical and practical parts and the assessments of those to achieve the learning outcome.

The Merlin system seems to be working great and the teachers are highly recommended to continue this practice.

Learning outcome of individual course syllabi are made public at the course website and are also included in the course elements in the Merlin system and the operational tuition delivery plans for each study programmes.

'Rector's award', and 'Ecotrphelia Hravatska' and 'Probion' are great examples for students' interactions and participations in scientific networks.

Several FFTB faculty members and students were involved in a summer school 'Clinical Nutrition and Diet Therapy' delivered in English and some ECTS credits should be allocated and similar summer school programmes can be rolled out in other departments to encourage internationalisation.

FFTB supports students' involvement into research work, as extracurricular research work, although for that, in general, they are not awarded any ECTS points, despite the workload involved. Some exceptions were described in the meetings, in which a student got ECTS based on the amount of time spent on research.

Gaining international experience is promoted by FFTB through different mobility programs, but the allocation of ECTS in foreign universities needs to be reviewed.

A list of available universities with similar studies to validate the ECTS should be placed in the website. In the same direction, the procedure to validate ECTS for mobility programs carried out in institutions with different study programs should be clearly stated.

Student lab practices are very well defined in the study programs and present in all those subjects that required them. Practices are present in the undergraduate and graduate programs, and internship or practices in the industry or research centre are mandatory for Food Biotechnology graduate students. In the other programs those external practices are optional. Nevertheless, internships in different stakeholders are encouraged in all the study programs, which is really welcomed by students and teachers and forms an important part of the education and training.

From the stake holder meeting and we could see some positive impact of FFTB student's involvement in gaining training from the Health Care sector (Nutrition students), Food Industries (Food Technology students) and Biotech companies (Bioprocess Engineering/Biotechnology students).

Stakeholders stressed out the excellent knowledge of the students from analytical and theoretical point of view. We could see the evidences of academia and industry collaborations encouraging creativity and innovations needed with these collaborative arrangements.

The economic impact of this can be identified through knowledge exchange activities. Some of the alumni and stakeholders are actively engaged in these developments.

There is close cooperation between stakeholders and faculties in training and education, that cooperation is mostly based on financing from Croatian Foundation. There are also some problem-solving projects, which allow knowledge transfer to the industry sector.

### Recommendations for improvement

- Collaborative partnership agreement with local and international industries for contract research or consultancies will enhance the economic impact of the academia and industry partnerships.
- Employability skills such as enterprise, presentation, project management, product design, leaderships, marketing, data analytics or even psychology for nutrition-oriented students, could be introduced at UG/PG level (stake holders request). Also, mandatory internship could be introduced at UG study level.
- FFTB should encourage the faculties to meet the criteria and indicators reported in the syllabus, regarding grading criteria, lab hours and so on.
- Practicals or internship in industry or research centres should be established in undergraduate and graduate programs, and a right assignment of ECTS to that activity should be established, considering the workload involved.

- A clear system for assigning ECTS regarding extracurricular activities should be established.
- Several faculty members at FFTB were involved in a summer school 'Clinical Nutrition and Diet Therapy' delivered in English and some ECTS credits should be allocated and similar summer school programmes can be rolled out in other departments to encourage internationalisation.
- Recommendation is to publish a list of similar programs abroad and number of ECTS, they would get after completion.
- Curricular or extracurricular practices in the industry or research centres should be encouraged and included within the studies programs with the specific allocation of ECTS
- Those could help students to understand better the market needs, to decide how to pursue a professional career and could help industry to identify potential employees in any recruitment process.
- FFTB programs ensure that the ECTS are well allocated, but some additional practical training (professional or research) would be advisable to improve their soft skills, as well as, independent thinking to face real problems.

### Quality grade

Satisfactory level

### III. Teaching process and student support

#### Analysis

Admission criteria for enrolment at FFTB are clear and public, although some improvements could be made, like including a concrete protocol to enrol graduate studies from similar faculties.

FFTB has well established procedures for collecting data on student development and monitoring progress. Student and professor mentors have a major role in this and that is an example of good practice. The website of the faculty is updated, but some information is missing in English (not translated in full). FFTB supports students' involvement in research work, but could encourage it more, especially with excellent students (perhaps the response would be greater if ECTS points are awarded for that).

Students evaluate their teachers every three years. Although that is a good practice, more consistent data could be gathered if faculty would conduct internal annual surveys to get better input. Merlin and repositorium platforms allow students to have easily accessible systems to information. In the teaching process there is room for improvement. Although students generally think that their professors are really devoted to teaching, they pointed out some of the “irregularities” teachers could work on.

PROBION and the Croatian Society for Biotechnology play a certain role in career development, so there should be more involvement of industry stakeholders for providing career support on the faculty level.

The Faculty and the university have well established protocols for students with disabilities and cooperate in that field if necessary. Student internships should be established in all the studies because it is of great importance that bachelors get practical knowledge after finishing their 3-year study.

Students have the ability to achieve international mobilities via Erasmus, Ceepus or bilateral projects. The FFTB could improve it in a way to educate and inform one person about Erasmus programs and make him/her in charge for all the questions regarding Erasmus (it would facilitate student access and involvement).

Students can get international experience via all the mobility programs mentioned. The recommendation is to publish a list of similar programs abroad and number of ECTS they are rewarded after completion. As for foreign students coming to the FFTB via mobility programs, teaching could be more organised and in English. That would certainly give out more international recognition to the institution.

Criteria for evaluation of student progress and learning outcomes are clearly defined, made public and available in faculty web-page. Evaluation of teaching and grading is conducted but could be improved with annual evaluations (surveys). Professors, if graded insufficiently must perform self-analysis and attend workshops. Changes in the teaching and examination process could be conducted, if necessary, regarding students with disabilities and should be defined at the university level. It is reported that institution makes changes in curriculum based on the student input they get by conducting open hours with the Dean of Education (change in ECTS points, buying books, microscopes and changing examination procedures).

After finishing the studies, faculty issues corresponding diplomas and diploma supplements (both in Croatian and in English) that are completely free of charge. As for employability, faculty could make student internship mandatory for all levels of study. That could greatly improve the competences students get upon finishing their studies.

Cooperation between Institution and alumni is very good, but it would be even better if official alumni association is established. Open doors day, science festival and other manifestation improve the recognition of the institution in community.

### Recommendations for improvement

- The drop-out of the students should be carefully addressed to reduce it. Although those numbers have been kept constant in the last years, the outcome from the survey analysis should be considered for implementing correcting measures.
- The recommendation is to standardize the procedure of enrolling bachelors from different faculties and to determine exactly which bachelors can or cannot enroll for graduate studies at the faculty and which bridge exams should be passed. That criteria should be publicly available immediately.
- A survey should be implemented in the syllabus for evaluating the performance of teachers after the completion of each subject. It should clearly include the most important indicators for tuition, teaching competencies, supporting material and so on. Scores and comments should be considered for improving the studies program.
- Professors should encourage excellent undergraduate students to do some research.
- Improvements could be made by including case studies or project assignments in practice.
- Annual survey should be conducted to assess and improve teaching quality and student experience.
- The recommendation is to strive to implement as much new technology as possible into the curriculum so students would be more interested. Mobile phone quizzes are a great example.
- Teachers should be encouraged to prepare well before delivering their lectures.
- Laboratory modules could be conducted in smaller groups to promoted independent learning and better outcome for the students.

- Teachers should encourage an active participation of the students in the professors mentoring system, putting more effort to attract students to attend meetings with their mentors.
- Additional student support for career development is recommended. For instance, by arranging meetings of alumni and students where they could discuss career paths, opportunities and future real work problems. All those actions for providing guidance and career guidance for students must be officially provided by the Faculty.
- One staff with extended knowledge about mobility procedure should be established by FFTB to answer all students' questions and concerns about Erasmus outgoing mobility (Erasmus coordinator).
- HEI should ensure the availability of enough hard-copies of compulsory literature and prolong the working hours of the library. HEI should encourage the participation of teachers in providing e-learning material that could be easily accessible to all students.
- WiFi should be faster and available throughout the facility.
- Faculty should improve the support to foreign students because the website is not completely translated in English.
- Training to use scientific databases should be provided at an undergraduate level.
- The Erasmus+ is attracting many students to gain international experience, but FFTB should implement a better information system. A list of available universities with similar studies to validate the ECTS should be placed on the website with enough information about how to apply and the selection system, through a unique contact point.
- FFTB should increase the list of cooperation agreements with other European Universities to facilitate the students' mobility.
- Additional efforts are required to attract foreign students and for that, apart from the institutional actions with other Universities, the FFTB should provide support and assistance to all of them, including the teaching syllabus, university life and accommodation. It is particularly important that the website covers all aspects for supporting students in English as it currently only includes part of the information.

Also, the information signals and laboratory names should appear in Croatian and English to facilitate directions.

- Teachers that provide English courses should receive recognition and those working hours should be included in the workload. Although the panel understands that this recommendation is out of the Faculty control, we strongly recommend flagging this up with the responsible policy makers.
- The recommendation is to establish the criteria for grading every subject.
- Evaluation of grading should be conducted to improve the internal quality of the institution.
- Internship as extra-curricular or curricular activities could cover the existing gap between academy and the professional market. Currently, it is mandatory in one program and optional in the others, FFTB should encourage it and provide the required support, likely it could be a general University service for facilitating the access of the students to the labour market in different disciplines. Cooperation agreements with different industries should be promoted.
- FFTB should encourage the creation of alumni association to strengthen networking, which could increase the professional opportunities of all students.

#### Quality grade:

Satisfactory Level

#### **IV. Teaching and institutional capacities**

##### Analysis

The number of full-time teachers performing lectures is adequate and the ratio of students and a full-time teacher are more than appropriate to ensure the high-quality study. The teacher workload reveals an unequal distribution therefore some teachers are overloaded than the others.

The teacher appointment procedure is prescribed by internal acts and is aligned with the legislation, while all the vacancies are properly advertised. Evaluation of selected teachers is performed considering their overall contribution to teaching, research activity and student surveys. The final decisions are made by the expert body. The Institution promotes excellence in teaching and research and the new ordinance was

established taking into account the additional activities for potential promotions to higher grades.

Professional development of teachers are strongly supported by the Institution. Teachers have the opportunity to improve their competencies by participation in different workshops and seminars. Teaching competencies are assessed in a peer-review process conducted by their colleagues. However, student assessment of their teaching competencies is monitored solely based on the university survey.

The excellence in teaching, as well as the participation in international mobility program, scientific productivity, participation in international research competitions, should be encouraged through the rewarding program. A facility infrastructure capacity is adequate for research activity.

Institutional strategic goals include a plan for improvement of the infrastructure development for improving the delivery of study programmes, but the financial plan supporting this strategic goal is missing. Equipment and infrastructure could be improved to ensure that the learning outcomes of study programmes delivered by Institution are achieved. A laboratory training groups are formed and the Institution is very active in the project applications, so the laboratories are very well equipped for the implementation of research and professional work. But Wi-Fi signal don't provide a good access from all the facilities.

Library contains large number of hard-copy books and also access to electronic journals provided by the University, but students were not completely satisfied with the amount of mandatory literature in the library, the site visit and the available data revealed that certain number of books have been supplied on student's request. Some of the mandatory literature aren't available in Croatian language. The publication activity of the Food technology and biotechnology journal is greatly acknowledged.

Institution haven't Vice-Dean for finance. The self-evaluation financing report does not reflect the sustainability of the Institution. The negative financial balance has been increasing from -2.5M Kn in 2017 to -4.2M Kn in 2018. A negative balance of income and expenses are not in accordance with the sustainability and rational management of the financial resources.

A financial plan for supporting the institutional strategy for teaching and researching is missing.

### Recommendations for improvement

- Despite the great qualifications of the teachers and a good student: teacher ratio, high workload of some teachers can influence the quality of their teaching and

research. Therefore, the Institution is strongly recommended to find the appropriate tools and methods to overcome this problem.

- The panel strongly supports the application of the newly established ordinance in all future promotions and recruitments.
- Panel recommended that the Institution need to install an additional student survey on teaching competencies of the teachers and implement it. An establishment of the professional development plan is recommended.
- Strategic plans need to have clearly established financial key performance indicators for incomes and expenditures.
- Student groups for laboratory training should be adjusted to the laboratory space and equipment.
- Wi-Fi support should be improved in order to facilitate all the students' activities considering the internet access.
- The Institution need a bought the additional amount of certain mandatory library material.
- The library working hours should be reconsidered according to the data gathered from students.
- Teachers having a mandatory literature in English should provide student with some kind of Croatian version of support which is available on the website.
- The panel recommend an independent financial revision to ensure financial sustainability.
- The panel recommended that if Vice-Dean position for finance could not be filled with a faculty member, it must recruit an experienced, specialized expert in this filed with a successful track record in Finance Management to ensure financial sustainability.

### Quality grade

Satisfactory level of quality

## V. Scientific/artistic activity

### Analysis

FFTB is really committed to Science and has a Science Strategy Plan (2014-2020) with clear indicators for evaluating the achievement of goals during that period. Numbers reveal that FFTB has reached those objectives related to the number of research projects, the number and quality of publications, the number of patents, researchers' performance, numbers of awards, and so on. Research excellence is internally awarded by the HEI and has been externally recognized at national and international level.

The panel would like to highlight the strong involvement of researchers, assistants, PhD students and graduates in the research projects, showing great competencies and capabilities in conducting research. All teachers and assistants are involved in research, national or international projects, and simultaneously they are motivating the participation of graduate students in those research projects through the final thesis. The combined system of research and education existing in FFTB is highly valuable, with strong participation of PhD students in the training, education and research activity.

Researchers are pursuing funds from competitive sources, mainly Croatian Agency but the participation in EU funding schemes is still low. FFTB's support for international applications should be increased. Thanks to the already granted international projects, FFTB has updated many facilities and acquired lots of equipments.

Faculties are very engaged in the importance of having publications, and most importantly those in high quality impact journals. Researchers are keeping formal and informal cooperation with other international research groups.

Having in mind the cross-cutting issue of the H2020 "Science for and with Society", the Faculty of Food Technology and Biotechnology meets the general principle of carrying on Responsible Research and Innovation (RRI) involving societal actors (teachers, researchers, students, the Dean and Vice-deans, industry, policy makers, and so on) to ensure public engagement in research and innovation. Alumni and stakeholders are keeping close cooperation with the Faculty through their participation, giving lectures or seminars, training students or co-supervising master or PhD thesis.

Research accomplishments are also communicated to the general public through the media (University channel, TV, radio, and so on), particularly those that have been achieved by awarded researchers. Social engagement is sought through open days, visits of students from primary, secondary and high schools. Researchers are even communicating their activities to children and kids in their own schools.

The peer reviewed scientific journal “Croatian Journal of Food Technology, Biotechnology and Nutrition (Hrvatski časopis za prehrambenu tehnologiju, biotehnologiju i nutricionizam) notably contributes to the scientific visibility of the Faculty at National and international level.

FFTB’s major goals rely on education, research and knowledge transfer to impact on the country’s economy. Currently, the funding sources are rather limited to Croatian Science Foundation followed at great distance by EU calls, with a minor presence of industry involvement in funding research. The resources available now for financing research are insufficient, and some extra effort is required to make research sustainable and contribute to the economic advancement of the country. Currently, spaces and facilities in the HEI are sufficient to meet the goals described in the above quoted Strategic Research Agenda.

### Recommendations for improvement

- Overall, analysis reveals a very high-quality level considering the research achievements, but some recommendations are quoted to keep and enhance the level of excellence.
- Currently, PhD thesis could be written in Croatian or English, depending on the student. To increase international visibility actions should be taken to encourage the use of English in a minimum part of the PhD documents or thesis, including a foreign expert as an external member of the evaluation committee. Those thesis with an important international contribution should have a special recognition as “International PhD”.
- PhD students should be encouraged to have at least one or more peer reviewed international publication before submitting their thesis.
- The participation in different international schemes for obtaining competitive funds should be encouraged. With research being a very important pillar of the FFTB, a clear strategy should be defined showing expected income to be reached in the next period. Therefore, a financial strategy for research is strongly advisable to ensure research sustainability.
- Currently, main research funds are from Croatian Science Foundation, and the last crisis resulted in a funds shortage. Therefore, it is advisable to diversify the funding sources for research to alleviate eventual constraints related to economic crisis.

- International cooperation has been strongly focused on students and faculties mobility, but apart from the training and educational projects, institutional actions are required to improve FFBT participation in competitive calls at EU and Global calls (addressing UN Sustainable Goals).

FFTB should show its commitment with society through “Open Science”. More engagement with that concept should be encouraged through the Faculty repository, which should have open access to all societal actors, to share results for the advance of knowledge in the most accessible and transparent way. Currently, the uploading of thesis and scientific papers are not mandatory and depends on the authorship agreement. Open access should be encouraged, including all the published research documents and thesis. Exemptions could be considered when written results are under any type of confidential agreement.

- FFTB should encourage the knowledge transfer to the productive sector to increase their competitiveness. Currently, private funded projects are related to problem-solving, in addition knowledge transfer should be encouraged. A supporting system for transferring knowledge and technologies is needed. Actions should be taken to promote them, like FFTB-industry workshops for presenting research projects, as well as the FFTB capabilities.
- Considering the number of faculty members, the HE institution should increase the number of Science and Technology projects, particularly at international level with academic and industrial collaborations.
- FFTB should encourage the participation of postgraduates in the Marie Skłodowska-Curie actions within the Excellence Science pillar of the H2020 or the faculty members’ participation in the different funding modalities of the European Research Council (ERC) focused on financing talented and creative individual researchers and their teams.
- Participation in international calls is encouraged, but that should respond to a clear institutional strategy, with the necessary support for looking for potential partners, proposals preparations, managing and so on. FFTB and faculty members should assume their respective responsibilities in making research sustainable.
- Funding sources should be diversified, going to international calls, as well as national, including competitive calls and private funding.

- Technology transfer should be reinforced where excellent research is carried out like FFTB.
- More extended mobility for postdoctoral students in a foreign country is recommended, which will allow them to establish collaborations with other international institutions that can result in joint projects.
- Key Performance Indicators (KPI) related to income and outcome indicators should be clearly established in the Strategic Research plan, with an adequate plan for tracking the performance of research to ensure research sustainability.
- Collaborative research visits for postdoctoral candidates should be recommended to gain international exposure that will reflect in their academic and research practice.

Quality grade

Satisfactory quality level

## **DETAILED ANALYSIS OF EACH STANDARD, RECOMMENDATIONS FOR IMPROVEMENT AND QUALITY GRADE FOR EACH STANDARD**

### **I. Internal quality assurance and the social role of the higher education institution**

#### **1.1. The higher education institution has established a functional internal quality assurance system.**

##### **Analysis:**

Internal quality system is established within the Institution. One of the great advantages of the institution is the quality management office and the competent quality manager. They have well written quality documents, including Quality assurance policy and a Development strategy, which includes an action plan for a period of five years. A report on the implementation of strategic goals is also available. However, a financial plan considering the implementation of strategic plan is not available. The self-evaluation is well written, but the English and Croatian versions of the document should be harmonized. However, students and associated staff were not actually involved in the creation of Quality assurance documents and cannot identify their role within the system. On the other hand, an involvement of other stakeholders was observed, where an Institution gathers data from industrial partners or alumni on their employment, which resulted in the establishment of a new subject. Some data from the students is also gathered, through the survey or on the open student's hour. Some data is analysed, resulting in the changes in the teaching process (overlapping contents between two subjects or changing the examination process), but in some cases the direct input of those analysis was not observed and is still in progress. A great example of data gathering, aside from the student's open hour, is a survey conducted among students considering the total workload and ECTS point comparison, where lots of parameters are taken into consideration and the Faculty should continue with this activity in the future. Also, a data from the University student survey is gathered and analysed. However, for two teachers (a data provided by the Faculty) having a grade below 3.0. But changes were not suggested or implemented. A survey on a student's satisfaction with the teaching is established, but it has not been conducted yet. Therefore, to gather more relevant information on the teaching process it should be conducted continuously and as soon as possible. Teaching is monitored in a peer-review process by other colleagues, which is a good example of quality monitoring, and some teachers gather information from the student at the end of their classes. All teachers should be suggested to include this good practice in their self-evaluation process.

Work performance monitoring is performed continuously, especially for the research work, reports are written within the Departments periodically. According to the data collected, employees are rewarded for their efficiency.

A Merlin system is implemented in the system of learning and is a good example of an excellent and very functional learning system in achieving learning outcomes.

### Recommendations for improvement

- Students should be included more in the implementation and creation of quality management system documents, as well as educated in this field.
- Data gathering is one of the most important activities within the quality management system, and it should be improved, especially in student satisfaction of the teaching process. University survey is not enough for the Institution to gain all the relevant data and not all the teachers are performing their internal survey. Therefore, a suitable data gathering method/s, such as additional survey (which has already been created) should be implemented as soon as possible. All the results should be analysed, changes suggested, and actions taken in accordance. The whole process should be documented.
- It is strongly recommended and mandatory for the Institution to establish a financial plan considering their strategic plan, to show how all their strategic goals will be realized within the financial framework.

### Quality grade

Satisfactory level of quality

## **1.2. The higher education institution implements recommendations for quality improvement from previous evaluations.**

### Analysis:

Based on the recommendations of the previous evaluations, the Institution has established an Action plan and the report on its implementation. Examples of the results based on the previous recommendations are also reported. Also, an Institution has its own internal audit (the last one conducted on 2016) which results in the recommendations for improvement. The recommendations considering the reaccreditation conducted on 2013 are mostly met and the activities are completed. A reaccreditation of postgraduate (doctoral) study Biotechnology and bioprocess engineering, food technology and nutrition also resulted in some recommendations for improvement, which were also met by the Institution. The report from 2018 was positive and all the main concerns were met. However, all stakeholders should be

included and involved in the process of implementation of recommendations from previous reaccreditation.

#### Recommendations for improvement

- Recommendations from the previous evaluations are mostly met, but some were met in part. A good thing is that compliance with those recommendations are still in progress, so the Faculty is strongly encouraged to comply with the recommendations in the future.
- A compliance with recommendations from other accreditations should be discussed and analysed on the Faculty council and all other internal meetings with all the stakeholders involved in the quality management system.

#### Quality grade

Satisfactory level of quality

### **1.3. The higher education institution supports academic integrity and freedom, prevents all types of unethical behaviour, intolerance and discrimination.**

#### Analysis:

Academic integrity and freedom are encouraged by the HEI and ethical standards are well defined and supported. Mechanisms for preventing unethical behaviour, intolerance and discrimination are established. The Faculty established the Code of Ethics which includes a well-defined procedure for detecting and sanctioning unethical actions. A student ombudsperson should be appointed. There are two examples of the unethical behaviour processing that are well established from the beginning to the end includes the data analysis and actions undertaken. Therefore, a system for managing conflicts and resolving irregularities is highly functional. The HEI systematically addresses issues of academic dishonesty. Plagiarism detection tools are utilized for both the journal articles and student thesis.

Equality regarding the gender is very well balanced among the teachers. Currently, the percentage of male and female is 24.9 and 75.1%, respectively.

The work of all stakeholders, employees and student is driven by ethical standards.

#### Recommendations for improvement

#### Quality grade

High level of quality

#### **1.4. The higher education institution ensures the availability of information on important aspects of its activities (teaching, scientific/artistic and social).**

##### **Analysis:**

The information such as study programme, enrolment quotas, learning outcomes are published and available to the stakeholders, although the English version could be improved. All stakeholders are informed on the admission criteria, enrolment quotas, study programmes and all other relevant information. Programmes organized by the Faculty are also published on the web-page. But not all the data are available in both English and Croatian, therefore those two versions of the web-pages are different. Also, the web-page is difficult to go through, thus some information is hard to find. The information about Faculty's activities can also be gained through different popularization programs. The FFTB brochure copies provided in English and Croatian version are very good. Information of the social role of the HEI is available to the stakeholders and data on graduate employment, outcomes of previous evaluations are available on the web, while the data of drop-out rates and pass rate analysis could be elaborated and made more available to the stakeholders.

##### **Recommendations for improvement**

- Information compiled in the website should be presented in Croatian and English, that could contribute to the internationalization of the programs, encouraging foreign students to pursue their academic career or mobility in this Faculty.
- An information package or a brochure for foreign students should be included in the page, providing them with the basic information on the accommodation in the city, transportation and all other relevant information.

##### **Quality grade**

Satisfactory level of quality

#### **1.5. The higher education institution understands and encourages the development of its social role.**

##### **Analysis:**

The HEI contributes to the development of the economy and local community. A collaboration with the economic sector is accomplished through the professional and developmental projects. Faculty members are present in expert bodies and state bodies

and economic sector. They organize consultation sessions, conferences, meetings and participate in the managerial boards of companies and agencies. They promote engineering solutions for food safety and quality, healthy diet, waste water processing. A student organization PROBION is also very active in popularization of biotechnology. Support is also given through Biotechnical Foundation of the Faculty of Food Technology and Biotechnology, Croatian Society of Food Technologists, Biotechnologists and Nutrition Scientist and Croatian Society of Biotechnology. Therefore, the HEI contributes to the foundations of the academic profession and teachers are included in the activities considering the development of the University and the local community. The development of its social role is a part of HEI's mission.

#### Recommendations for improvement

- The Faculty is strongly encouraged to continue with these activities.

#### Quality grade

High level of quality

### **1.6. Lifelong learning programmes delivered by the higher education institution are aligned with the strategic goals and the mission of the higher education institution and social needs.**

**Analysis:** One lifelong learning program is delivered by the Institution, and it is in line with goal and strategy of the Faculty. The general goals of this program are also in line with social needs, since the candidates are usually sent to different industries to be educated in the area of sensory analysis and the syllabi are available on the Faculty webpage. Data is gathered from the consumers at the end of the program, but no report on the analysis of the data and implemented improvements was found, with the probable reason being positive consumers' comments. At the moment, here is only one lifelong learning program, but the Institution was awarded with the project "Development of lifelong learning programmes in the fields of Food Technology, Biotechnology and Nutrition Science by virtue of CROQF principles' application" which includes the development of a new lifelong learning programs in the Institution.

#### Recommendations for improvement

- Due to the existence of only one lifelong learning program, the Faculty is strongly recommended to pursue with the establishment of new programmes.

- Upon data gathering, an analysis of the data should be performed and documented.

### Quality grade

Satisfactory level of quality

## II. Study programmes

### **2.1. The general objectives of all study programmes are in line with the mission and strategic goals of the higher education institution and the needs of the society.**

#### Analysis:

FFTB offers three UG study tracks such as Food Technology, Biotechnology and Nutrition and five graduate study Tracks Food Engineering, Food Safety Management, Nutrition, Molecular Biotechnology and Bioprocess Engineering. PhD studies in Biotechnology, Bioprocess Engineering, Food Technology and Nutrition represent a direct extension of the graduate programmes. It also offers PG specialist vocational studies in Food Quality and safety and Food Management. From the stake holder meeting and we could see some positive impact of FFTB student's involvement in gaining training from the Health Care sector (Nutrition students), Food Industries (Food Technology students) and Biotech companies (Bioprocess Engineering/Biotechnology students). These programmes evidence that general goals of all study programmes are in line with the mission and strategic goals of the institution. Stakeholders stressed out the excellent knowledge of the students from analytical and theoretical point of view. We could see the evidences of academia and industry collaborations encouraging creativity, innovations needed with these collaborative arrangements. The economic impact of this can be identified through knowledge exchange activities. Some of the alumni and stakeholders are actively engaged in these developments. It justifies the socio-economic needs of these programmes.

There is close cooperation between stakeholders and faculties in training and education, that cooperation is mostly based on financing from Croatian Foundation. There are also some problem-solving projects, which allow knowledge transfer to the industry sector. There are evidences from FFTB that produces competitive postgraduates and PhD students for national and international labour markets.

#### Recommendations for improvement:

- Collaborative partnership agreement with local and international industries for contract research or consultancies will enhance the economic impact of the academia and industry partnerships. Employability skills such as enterprise,

presentation, project management, product design, leaderships, marketing, data analytics or even psychology for nutrition-oriented students, could be introduced at UG/PG level (stakeholder's request). Also, mandatory internship could be introduced at UG study level.

### Quality grade

High level of quality

## **2.2. The intended learning outcomes at the level of study programmes delivered by the higher education institution are aligned with the level and profile of qualifications gained.**

### Analysis:

FFTB has clearly defined the learning outcomes of the study programmes, and they are aligned with the mission and goals of the higher education institution. The learning outcomes are aligned with the Croatian Qualification framework and European qualification framework.

The learning outcomes for compulsory and optional courses are very well established and described in all the study programs and all of those are recorded in MOZVAG. It is monitored for ensuring that the learning outcomes at the level of courses are aligned with the learning outcomes at the programme level.

A meeting with students revealed that in some cases learning outcomes were not completely implemented when it came to the grading criteria sometimes, they were unclear how the learning outcomes were measured for grades.

Many innovations have been implemented through different educational projects funded by the European Social Fund, which have great impact on the quality level of the study programmes and the learning outcomes. Most of the learning outcomes achieved in the study programme are aligned with the CroQF and EQF level descriptors

For instance, a more consistent structure of the FFTB study programmes is displayed on the website that also included the data on the syllabi of all compulsory and optional courses. Even working groups were appointed to analyse the conformance of the outcomes with the CROQF level (CROQF 6 and 7).

Commitment of the HEI in enhancing the performance regarding learning outcomes is foreseen in the future, particularly the five years lifelong learning program intended for education and training of the top-notch experts in the fields covered by FFTB. The

intended learning outcomes of the life long learning programme clearly reflect the competencies required for employment, continuing education or other individual/society needs.

#### Recommendations for improvement

FFTB should encourage the faculties to meet the criteria and indicators reported in the syllabus, regarding grading criteria, lab hours and so on.

#### Quality grade

High level of quality

### **2.3. The higher education institution provides evidence of the achievement of intended learning outcomes of the study programmes it delivers.**

#### Analysis:

The FFTB provides evidence of all the achievements of the intended learning outcomes. Meetings with the different involved actors (students UG and PG, researchers, assistants, alumni, market stakeholders) evidenced the level of education and training of the students. Even when the market demanded specific training or education, the institution has implemented in the study program. In addition, the Economic Advisory Committee in its last meeting revised the study programs, to ensure that they meet the market demands.

Syllabi clearly identify the study program, the ECTS allocated to each one, the theoretical and practical parts and the assessments of those to achieve the learning outcome. The Merlin system seems to be working great and the teachers are highly recommended to continue this practice.

Learning outcome of individual course syllabi are made public at the course website and are also included in the course elements in the Merlin system and the operational tuition delivery plans for each study programmes.

Students' Scientific research were also dealt with publicly announced topics, preparation of the student authored contributions Rector's award, national competitions in creating eco-innovative food products Ecotrphelia Hravatska and several student's congress and festivals encourages student's active participation in Science. Students association 'Probion' plays a vital role in these scientific and social interactions.

Several faculty members at FFTB were involved in a summer school 'Clinical Nutrition and Diet Therapy' delivered in English and some ECTS credits should be allocated and

similar summer school programmes can be rolled out in other departments to encourage internationalisation.

**Recommendations for improvement:**

N/A

**Quality grade**

High level of quality

**2.4. The HEI uses feedback from students, employers, professional organisations and alumni in the procedures of planning, proposing and approving new programmes, and revising or closing the existing programmes.**

**Analysis:**

2016 – The Quality Management Board of the UoZ notified the FFTB of amendments to the curriculum of undergraduate studies in Biotechnology, Food Technology, Nutrition, Food Engineering and Bioprocess Engineering and all the above amendments are adopted after the approval of Faculty Council sessions and being viewed upon as minor revisions. Student opinions could be monitored more carefully. PhD Students have the option to change supervisor and topic. All relevant forms related to monitoring and progression of the PhD study can be found on-line (<http://www.unizg.hr/istrazivanje/doktorski-studiji/doktorski-studiji/obrasci-dr-sc-dr-art/scientific-areas-dr-sc/>). The HE institution publishes up-to-date versions of study programmes.

The proposal for amendments in the curricula of graduate studies in Molecular Biotechnology, Nutrition and Food Safety Management, these amendments were adopted and documented by the Quality Management Board of the University of Zagreb, pursuant to the Faculty Council decision. The higher education institution records the changes to study programmes and analyses their fitness for purpose.

Further revisions of study programmes proposed by working groups such as undergraduate studies in Food Technology and graduate studies in Food Engineering and UG studies in Nutrition Science, graduate studies in Food Safety Management and undergraduate studies in Biotechnology were made through Study Council meetings convened regularly. The HE institution records the changes to study programmes and analyses their fitness for purpose.

### Recommendations for improvement:

In those study programs where a basic subject is followed by the advanced one (quoted as I and II), FFTB should consider to allocate these subjects (basic and advanced) in different year courses, thus it will allow the students to enrol without overlapping the exam period of the I with the enrolment period of the II.

### Quality grade:

High level of quality

## **2.5. The higher education institution ensures that ECTS allocation is adequate.**

### Analysis:

As mentioned in 2.3, syllabi clearly defined the ECTS allocated to each subject - the theoretical and practical parts. ECTS points accredited to each subject were revised according to the students' survey conducted on 2018/19. The objective was to evaluate the balance between ECTS and workload. Resulting data has been analysed and currently actions are to be implemented for the amendments required. This survey of the compliance of ECTS points with the total workload in each subject is a great example of how all stakeholders can contribute to the quality of one of the Institutions' main processes.

FFTB programs ensure strong background of the students with the actual ECTS, but some additional practical training (professional or research) would be advisable to improve their soft skills, as well as, independent thinking facing real problems. FFTB supports students' involvement in research work, as extracurricular research work and students are not awarded any ECTS points, despite the workload involved. Some exceptions were described in the meetings in which a student got ECTS based on the amount of time spent on research.

FFTB promotes gaining international experience through different mobility programs, but the allocation of ECTS in foreign universities is not clear. A list of available universities with similar studies to validate the ECTS should be placed in the website. In the same direction, the procedure to validate ECTS for mobility programs carried out in institutions with different study programs should be clearly stated.

### Recommendations for improvement

- Practicum or internship in industry or research centres should be established in undergraduate and graduate programs, and a right assignment of ECTS to that activity should be established, considering the workload involved.

- A clear system for assigning ECTS regarding extracurricular activities should be established.
- Recommendation is to publish a list of similar programs abroad and number of ECTS rewarded after completion.

### Quality grade

Satisfactory level of quality

## **2.6. Student practice is an integral part of study programmes (where applicable).**

### Analysis

Student lab practices are very well defined in the study programs and present in all those subjects that required them. Practices are present in the undergraduate and graduate programs, and internship or practices in the industry or research centre are mandatory for Food Biotechnology graduate students. In the other programs those external practices are optional. Nevertheless, internships in different stakeholders are encouraged in all the study programs, which is really welcomed by students and teachers consider it an important part of the education and training.

### Recommendations for improvement

Curricular or extracurricular practices in the industry or research centres should be encouraged and included within the studies programs with the specific allocation of ECTS. Those could help students to understand better the market needs, to decide how to pursue a professional career and could help industry to identify potential employees in any recruitment process.

### Quality grade

Minimum level of quality

### III. Teaching process and student support

#### **3.1. Admission criteria or criteria for the continuation of studies are in line with the requirements of the study programme, clearly defined, published and consistently applied.**

##### **Analysis**

The number of student applications received by the Faculty in the three undergraduate programs confirms that they are highly demanded, always filling the quotas. Faculty requires to pass the State Matura to all applicants, as-a-way to increase excellence. Faculty has publicly available material that show criteria for enrolment of bachelor, graduate and postgraduate studies.

Enrolment of bachelor studies functions through web platform “Postani student” and all main criteria and forms are available on the web-page of faculty, and they are consistently applied by HEI. Bridge exams for enrolling into FFTB graduate studies after finishing bachelor studies at other institutions are defined and available online, although they should be extended to cover all the potential incoming bachelors. Currently, a Faculty board is in charge to define the specific bridge exams that should be passed to confirm if their knowledge is enough to allow their enrolment in the graduate program. The criteria defined by HEI ensure the selection of the candidates with enough knowledge to follow those studies and they are aligned with the requirements of the study program. For instance, Bachelor students from Faculty of Chemistry and Technology in Split wanted to enrol a graduate study in FFTB and they did not know which bridge exams they should pass, how much money they need to pay and lastly if they could even enrol with their bachelor title. In that specific case, they enrolled eventually, but got the information in August, little over a month before the study starts.

Since “Postani student” platform is used to determine who can enrol to bachelor study and it is moderated by AZVO, everything is transparent and clear. Concerning the number of applications for the graduate programs, they are receiving higher number of applications than the enrolment quota with exception of Nutrition Program, where the number of applications is lower than the enrolment quota. Enrolment to graduate studies (if there are more registered students than the quota) is determined with average grade from bachelor study and number of years that were required to finish the bachelor study.

##### **Recommendations for improvement**

- The drop-out of the students should be carefully addressed to reduce it. Although those numbers have been kept constant in the last years, the outcome from the survey analysis should be considered for implementing correct measures.

- Recommendation is to standardize the procedure of enrolling bachelors from different faculties. To determine exactly which bachelors can or cannot enroll for graduate studies at the faculty and which bridge exams should be passed. That criteria should be made publicly available.

### Quality grade

Satisfactory level of quality

## **3.2. The higher education institution gathers and analyses information on student progress and uses it to ensure the continuity and completion of study.**

### Analysis

FFBT has procedures for monitoring student progress and data are available. Information on student progress is gathered regularly and analyzed to improve the performance of the studies by taking appropriate corrective actions whenever needed.

The Faculty implemented the mentoring systems many years ago, but from 2014 it was re-installed working in two ways, teacher-student and student-student, and in the former, students who have met the requirements for admission to the next year can participate in the mentoring program.

FFBT gathers a lot of information, which confirms its engagement for improving education. The most important information is available in the website in Croatian, but only part of that is included in English.

A student survey addressing their difficulties and the reasons for a high dropout rate was conducted and the results were partially analyzed, but no actions were taken to address their needs.

### Recommendations for improvement

A survey should be implemented in the syllabus for evaluating the performance of teachers after completion of each subject. It should clearly include the most important indicators for tuition, teaching competences, supporting material and so on. Scores and comments should be considered for improving the studies program.

### Quality grade

High level of quality

### **3.3. The higher education institution ensures student-centred learning.**

#### **Analysis**

Expectations and methods of evaluation of knowledge are available publicly on the web-page of faculty and are clear and established for every subject.

Faculty performs teaching in different ways: through lectures, seminars, laboratory work, field work and research work, and all of those are aligned to reach the program outcomes. Professors even offer students the possibility to carry out extracurricular research work, although for that, in general, they are not awarded any ECTS points, despite the workload involved. In this point, some exceptions were detected (a student got ECTS based on the amount of time spent on research), thus a more consistent system for assigning ECTS regarding extracurricular activities should be established. Students report that they must attend to a lot of field work, which is a good practice, but likely part of those should be included as a practical case study or project assignment.

The evaluation procedure of teachers is appropriate to ensure the programs quality. The usual practice is for students to fill out a survey to grade the professors in individual subjects. Every student takes the survey after finishing Bachelor and Graduate programs, therefore data are collected every year. Even better practice would be for students to take the survey every year.

FFTB introduces the Merlin platform, an outstanding system for e-learning, including webinars, in which students could also give exam results; this is a very good example for using new technologies in teaching process. The repository, database for collecting student papers (final, graduate, postgraduate) and making them publicly available within the institution's web-site is a good strategy to increase the dissemination of the students' research work. Positive example of using a new technology in lectures is the use of quizzes that allow students solving tests on their mobile phones. Currently, they are using that technology in a few subjects, but it should be extended to other ones. The vast majority of teaching staff is devoted to their jobs and eager to transfer as much knowledge as they possibly can (include students in their work, do some real-world assignments, modernise their teaching), although a minority of students have reported to not getting enough help with the curriculum when needed. From students' response, it seems that some professors and assistants are not capable of doing their job because they didn't know or didn't want to answer student questions regarding certain tasks.

As it says in the standard, an institution should encourage independence and responsibility of a student. General opinion is that it is best achieved by letting student to do some practical work alone (with supervision). Reportedly, students have laboratory

work in big groups in some subjects, and up to five of them do one exercise. That way you cannot achieve independence, and there is room to improve.

### Recommendations for improvement

- Professor should encourage excellent students to do some research.
- Improvements could be made by including case studies or project assignments in practice.
- Better practice would be for student to take the survey to grade teaching staff every year. It would result in more data and more accurate results from which better actions could be conducted.
- Recommendation is to strive to implement as much new technologies into the curriculum, so students would be more interested. Mobile phone quizzes are a great example.
- It should never happen that a teacher cannot explain an assignment he is allegedly lecturing.
- Organising laboratory work in smaller groups, so each student could conduct an exercise for himself and try everything for himself. That teaches independence and responsibility.

### Quality grade

Satisfactory level of quality

### **3.4. The higher education institution ensures adequate student support.**

#### Analysis

Institution introduced mentor system based on professors mentoring freshmen students and older students mentoring younger students. Although leadership of the faculty thinks that professor-student mentor program is working fine, students report that the efficiency of this mentoring is strongly based on the professors. In some cases, they merely had one meeting with their professor mentor and that the whole system is not working so great because of student's fear to address their problems directly to a professor. Example of good practice is student-student mentorship program in which senior students help freshmen (or second year students) and that system is shown to be very good, according to students' output. In self-analysis document there is a very low grade for career guidance and counselling. Students and alumni said that they do not or did not

have support from FFBT, in the form of a faculty staff to address their possible questions (except in some cases to a student group PROBION).

Faculty provides guidance for students, although some protocols are not well described. For instance, professional routing of students is conducted, but through student group – PROBION and/or Croatian Society for Biotechnology.

HEI has well described protocols for adjusting the curriculum for students with disabilities and vulnerable groups. Faculty is acting on that protocols, and current students with any disability has been approached and made the proper adjustments to allow their integration in the HEI programs.

Laboratory Practical session is not established yet in all the programs, but FFBT is working to initiate it in the graduate programs, because students asked for it and teachers recognize the importance of it. An EU project has been submitted to motivate and to activate this initiative, response is expected. Lab facilities have been improved in the last few years; equipment and facilities have been updated, allowing students to get an advance training. Regarding the number of students in the labs, for 1 and 2-yr undergraduate students is adequate, but for upper level students, labs seem too crowded, limiting the student access to all the materials.

Students demands are properly considered by the corresponding vice-dean and solutions applied whenever possible. An evidence of this is the acquisition of a microscope for the microbiology lab, which was demanded by students.

Students can enrol to outgoing mobilities via Erasmus, Ceepus, bilateral projects etc. But they have encountered some problems with the staff coordinating those mobilities. HEI is annually organizing seminars to inform about the mobility possibilities abroad, and students that have already participated in those programs are sharing their experiences. Nevertheless, currently, to have the whole picture of the procedure students must contact ECTS coordinator, Vice-Dean for International Cooperation and the Head of the mobility office, which is not efficient. Based on students opinion, it would be recommended to appoint one person for the whole process of outgoing mobility, either Erasmus or any other mobility scheme, because they found that “coordinators” cannot answer all of their questions and only advise them to get them from university coordinator. Eventually, some students got scholarships, but did not achieve mobility because of administrative issues.

Student service is functioning very well and that is a good thing.

According to students, library support seems insufficient, regarding the hard-copies of the supporting compulsory material and the functioning hours. Students pointed out that faculty library should work until later hours (works until 5 p.m.), because students have classes in the afternoon, and the literature could be available to students till end of lecturing hours. Faculty is covered with Eduroam WiFi but access is rather limited and it was reported that it often crashes.

Teachers provide supporting teaching information through the website, and some other digital sources or online books. Web-page is available in Croatian and English, but some things are missing in English version. Also teaching on how to use scientific databases are taught at graduate study, when some students have used it earlier in their studies.

Student support is tailored to a diverse student population and general conclusion is that institution employs adequate number of non-teaching and technical staff, except for the Erasmus or mobility coordinator.

### Recommendations for improvement

- Teachers should encourage an active participation of the students in the professors mentoring system, putting more effort to attract students to come to meetings with their mentoring professors.
- Additional student support for career development is recommended. For instance, by arranging meetings of alumni and students where they could discuss career paths, opportunities and future real work problems. All those actions for providing guidance and professional routing for students must be officially established by the Faculty.
- A unique contact point with extended knowledge about mobility procedure should be established by FFTB, in which one well-informed person could address and answer all students' questions and concerns about Erasmus outgoing mobility (Erasmus coordinator).
- HEI should ensure the availability of enough hard-copies of compulsory literature and prolongs the working hours of the library. HEI should encourage the participation of teachers in providing e-learning materials that could be easily accessible to all students; this action will have additional benefits.
- WiFi should be faster and available throughout the facility.

- Faculty should improve the support to foreign students because website is not completely translated in English.
- Tuition about how to use scientific databases should be provided at undergraduate level.

### Quality grade

Satisfactory level of quality

## **3.5. The higher education institution ensures support to students from vulnerable and under-represented groups.**

### Analysis

Faculty is considering needs of students from vulnerable and under-represented groups. For students that have certain disabilities corresponding protocols are established, written and conducted if necessary.

All the data is publicly available at faculty web-page. For instance, students that suffer from heavy visual impairment have a right to have doubled time limit when writing exams. Also, they are provided with font enlargement.

There is a co-ordinator for students with disabilities in the faculty. Moreover, faculty provides possibility for a decreased tuition fee for students with disabilities if they fail the year. Elevator is available at faculty that can securely transport students with disabilities to higher floors.

Corresponding student service for students with disabilities is available at university level, documents containing the disabilities support services are public and declared at the web-page of the university.

### Recommendations for improvement

No

### Quality grade

High level of quality

### **3.6. The higher education institution allows students to gain international experience.**

#### **Analysis**

Most of the students want to pursue a professional career in Croatia. FFTB is committed with the internationalization of the education, although the supporting services should be improved, and the activity intensified. A list of English courses is available in the program, which are the result of teachers' engagement, although that effort is not recognized in their workload. In those courses, students can be more familiar with English language. Lecturers from foreign countries are participating in the programs giving lectures or seminars. The Erasmus+ or the CEEPUS network, besides bilateral agreements or EU projects with FFTB participation are mostly funding the lecturers incoming.

The interest in gaining international experience is enhanced as the education level increased, mainly encourage by research leaders that used their scientific connections abroad for promoting mobility of their postgraduate students.

ECTS Coordinator and the Vice-Dean for international relations provide support for the students' mobility and the institutional relationships with foreign universities. There is a long tradition of cooperation with Orleans University (France) that allows the mobility of graduate students from Molecular Biotechnology. Recently, the FFTB already signed an agreement to intensify cooperation with the University of South Korea, but that activity should be intensified allowing mobility to extend the list of institutions. Students are open minded and motivated to gain international experience through the Erasmus programs. FFTB acknowledges ECTS points acquired on the international institution, but reportedly only for elective courses. Information about the ECTS points for the mobility programmes should be improved.

Student Association through IAESTE provides support in finding training opportunities in companies and institutions. In addition, students' association participates in the events where Erasmus+ students after returning, share their experience with their colleagues to motivate the international mobility.

FFTB also promoted the participation of students in international competitions like Ecotrophelia.

#### **Recommendations for improvement**

- The Erasmus+ is attracting many students to gain international experience, but FFTB should implement better information system. A list of available universities with similar studies to validate the ECTs should be placed in the website with

enough information about how to apply and the selection system, through a unique contact point.

- FFBT should increase the list of cooperation agreements with other European Universities to facilitate the students' mobility.

### Quality grade

Minimum level of quality

### **3.7. The higher education institution ensures adequate study conditions for foreign students.**

#### Analysis

FFBT is committed to increase its internationalization. Students' mobility and hosting foreign students are the two most important instruments for doing that. However, although the FFBT website gives some information about the opportunities for foreign students' enrolment but not all the information is translated to English. Faculty facilities are not prepared for foreign students, since all the information points and advertisement through FFBT facilities are written in Croatian, which makes it rather difficult for a foreign student or lecturer to manage within the institution facilities. The support of the FFBT to foreign students in enrolment and study is rather limited. There is no specific system to receive the feedback on satisfaction and needs of foreign students.

FFBT has a list of English courses that provides tuition to foreign students, coming through the Erasmus+. Those English courses are organized by faculty members, which give their lectures in English, despite no recognition, neither counted towards working or teaching hours, due to this activity. Foreign students have the opportunity to attend to Croatian languages courses. The cooperation with Orleans University and the agreements signed with other universities promote the exchange of international students, which will result in enhancing the networking of the Faculty.

#### Recommendations for improvement

Additional efforts are required to attract foreign students and for that, apart from the institutional actions with other Universities, the FFBT should provide the support and assistance to all of them, including teaching syllabus, university life and accommodation. Particularly important is that the website should include all information for supporting students in English, currently only part of the information is available. Also, the information signals and laboratory names should appear in Croatian and English to facilitate directions.

Teachers that provide English courses should receive recognition and those working hours should be included in the workload. Although the panel knows that this recommendation is out of the Faculty control, we strongly recommend elevating this recommendation to the responsible policy makers.

#### Quality grade

Minimum level of quality

### **3.8. The higher education institution ensures an objective and consistent evaluation and assessment of student achievements.**

#### Analysis

Faculty publicly provides criteria and methods for evaluation and grading of students before beginning of the course. All the criteria correlate with the teaching methods used. Students are not evaluated in any way unfamiliar to them. Institution organises workshops and seminars for teaching staff to help them in testing students and teaching assessment methods. Students reported that the grading is not very good and that in some subjects, criteria is not established. Official document in which a protocol for evaluating of grading was not delivered and that would significantly improve the institution internal quality. Procedures for vulnerable students and students with disabilities are established and well described. Changes in teaching programs and examination could be conducted, if necessary, to help these students achieve intended learning outcomes. Institution is conducting evaluation of students' satisfaction with the teaching and examining process as well as satisfaction with equipment. A case is recorded when faculty changed the number of ECTS points, changed examination procedure and bought books based on the student input.

#### Recommendations for improvement

- Recommendation is to establish the criteria for grading every subject
- Evaluation of grading should be conducted to improve the internal quality of the institution

#### Quality grade

Satisfactory level of quality

### **3.9. The higher education institution issues diplomas and Diploma Supplements in accordance with the relevant regulations.**

#### **Analysis**

When students complete the studies (undergraduate, graduate, postgraduate) they are issued a diploma and Diploma Supplement. Copies of the documents were reviewed, and they meet all regulation prescribed by the Croatian ministry of education.

From the talk with the students and alumni it was concluded that faculty issues diplomas and diploma supplements both in Croatian and English language, completely free of charge.

#### **Recommendations for improvement**

No

#### **Quality grade**

High level of quality

### **3.10. The higher education institution is committed to the employability of graduates.**

#### **Analysis**

FFTB is committed to foster the professional or academy career of the students, involving stakeholders and alumni in the education and training. Professionals and incoming foreign lecturers have given lectures about potential jobs in the industry or opportunities in other institutions or universities. It is recommended to establish this in a more routine way.

FFTB is recording the employability of the students in the last three years, to evaluate the performance of the study programs.

Stakeholders and alumni are very committed with the FFTB, cooperating with the Faculty through industry visits, co-supervising graduate students in their thesis or accepting them for internships.

In addition, the Faculty tries to be aligned with the market demands about competences acquired by the students. In doing so, the Economic Advisory committee meets every three years to revise the study programs and make the required amendments whenever needed.

Other opportunities to know the market are provided through the FFTB Open doors and student association, the former initiative happens once a year and includes industry representatives and they advertise the event on the website and in Merlin system.

#### Recommendations for improvement

- Internship as extra-curricular or curricular activities could cover the existing gap between academy and professional market. Currently, it is mandatory in one program and optional in the others, FFTB should encourage it and provide the required support, likely it could be a general University service for facilitating the access of the students to the labour market in the different disciplines. Cooperation agreements with the different industries should be promoted.
- FFTB should encourage the creation of alumni association to strength networking, which could increase the professional opportunities of all students.

#### Quality grade

Satisfactory level of quality

### IV. Teaching and institutional capacities

#### 4.1. The higher education institution ensures adequate teaching capacities.

##### Analysis

All the teachers delivering lectures and different courses, as well as research work, are very qualified for the intended purposes. The number of full-time teachers or lecturers is adequate - 113. The ratio of students and full-time teachers is 1:8, more than appropriate to ensure the high-quality study, given the fact that the criteria is 1:30. The Institution employs more than 15 researchers, more than 5 being elected in the field of biotechnology. But, the information of the teacher workload reveals an unequal distribution of workload. Given the fact that the total amount of working hours is governed nationally, such great variations in the workload are not acceptable.

##### Recommendations for improvement

- Despite the great qualifications of the teachers and more than good student: teacher ratio, overworked teachers can influence both the quality of teaching and research. Therefore, the Faculty is strongly recommended to find an appropriate tools and methods to overcome this huge problem.

### Quality grade

Satisfactory level of quality

#### **4.2. Teacher recruitment, advancement and re-appointment is based on objective and transparent procedures which include the evaluation of excellence.**

### Analysis

Teacher appointment procedure is prescribed by internal acts and is aligned with the legislation and developmental goals, while all the vacancies are properly advertised. For the teachers' selection, an evaluation is performed taking into account their overall contribution in teaching, research activity and student surveys, the final decisions are made by the expert body. There are adequate methods for selecting the best candidates for each position and minimum requirements are prescribed by the national legislation. The institution promotes the excellence in teaching and research and the new ordinance was established taking into consideration the additional activities for potential promotion into higher grade. The excellence is highly promoted by HEI, therefore when teachers are elected into higher grade all important achievements are taken into consideration, which is specially promoted by the new ordinance for promotions. Both their scientific and professional work is taken into consideration while being promoted, with the addition of special criteria.

### Recommendations for improvement

- The new ordinance is established, and the panel strongly supports its application in all future promotions and recruitments.

### Quality grade

High level of quality

#### **4.3. The higher education institution provides support to teachers in their professional development.**

### Analysis

Professional development of teachers is strongly supported by the Institution, although establishment of a professional development plan is recommended. Teachers have the opportunity to improve their competencies by participating in different workshops and seminars. Teaching competencies are assessed in peer-reviewed process conducted by their colleagues. However, student assessment of their teaching competencies is monitored solely based on the university survey. An additional survey on the teaching competencies is strongly recommended. As already mentioned, this survey has already been created, and the Institution must implement it. The excellence in teaching, as well

as the participation in international mobility program, scientific productivity, and participation in international research competitions should be encouraged through rewarding programs. A facility infrastructure capacity is adequate for research activity.

#### Recommendations for improvement

- The Institution strongly encourages all the teaching and scientific activities, it is recommended that the Institution install an additional student survey on teaching competencies of the teachers.

#### Quality grade

High level of quality

**4.4. The space, equipment and the entire infrastructure (laboratories, IT services, work facilities etc.) are appropriate for the delivery of study programmes, ensuring the achievement of the intended learning outcomes and the implementation of scientific/artistic activity.**

#### Analysis

Institutional strategic goals include the plans and improvements of the infrastructure development for improving the delivery of study programmes. However, the financial plan supporting this strategic goal is missing. Equipment and infrastructure could be improved to ensure that the learning outcomes of study programmes delivered by HEI are achieved. A laboratory training group should be formed according to the available space and equipment. However, the Institution is very active in the project applications, so the laboratories are very well equipped for the implementation of research and professional work. Wi-Fi signal must be improved to provide access from all the facilities.

#### Recommendations for improvement

- Student groups for laboratory training should be adjusted to the laboratory space and equipment.
- The wi-fi support should be improved in order to facilitate all the students' activities considering the internet access.
- A financial plan supporting the strategic plan is strongly encouraged, with clearly established key performance indicators for income and expenditures.

#### Quality grade

Satisfactory level of quality

#### **4.5. The library and library equipment, including the access to additional resources, ensure the availability of literature and other resources necessary for a high-quality study, research and teaching.**

##### **Analysis**

Library contains large number of hard-copy books and access to e-electronic journals provided by the University. Nevertheless, students were not completely satisfied with the amount of mandatory literature in the library, the site visit and the available data revealed that certain number of books have been supplied on students' request. All the mandatory literature should be available in Croatian language or the teachers should have a Croatian version of supporting literature available to students. The publication activity of the Food technology and biotechnology journal is greatly acknowledged.

##### **Recommendations for improvement**

- The Institution has bought a certain amount of library material and is strongly recommended to continue with this activity.
- The library working hours should be reconsidered according to the data gathered from the students.
- Teachers having a mandatory literature in English should provide student with Croatian version of support which is available on the website.

##### **Quality grade**

Satisfactory level of quality

#### **4.6. The higher education institution rationally manages its financial resources.**

##### **Analysis**

Currently, the HEI does not have an appointed Vice-Dean for Management and Finance. Dean indicated that nobody accepted that position.

The Institution has provided to the expert panel with the financial report and answered all the questions related to that report. Nevertheless, the details of the revenues and expenditures were not readily understandable and it was difficult to follow and understand the allocation of the revenues and expenditure from the financial evaluation tables. The self-evaluation financing report does not reflect the sustainability of the HEI. There is an evidence that the negative financial balance has been increasing from -2.5M Kn in 2017 to -4.2M Kn in 2018, thus immediate actions should be taken into consideration to analyse the possible constraints for this situation and prepare an action

plan to revert the situation and apply the necessary corrective measures for a healthy balance. A financial plan for supporting the institutional strategy for teaching and researching is also missing. A negative balance of income and expenses are not in accordance with the sustainability and rational management of the financial resources.

The panel proposes to share the financial report showing the income and expenses with the Faculty Council to make everybody aware of the HEI economic situation and take necessary actions to mitigate potential impact on the sustainability of HEI. An Annual budget with clear plans for a positive trajectory should be presented for the approval of Faculty Council.

Considering the National and International relevance of the HEI, the engagement of the teachers and students and the excellence of the research, the financial situation of the HEI must be intimated to the University and support sought. It should be carefully evaluated to prevent any risk that may jeopardise the sustainability of the education and science.

#### Recommendations for improvement

- Members of the panel are not expert in finances; therefore, an independent financial body is strongly suggested to ensure sustainability of HEI.
- Financial management of the HEI is a strong pillar of a public institution, thus a specific Vice-Dean must be appointed to be in-charge of these duties. It is recommended that if Vice-Dean position could not be filled with a faculty member, it must recruit an experienced, specialized expert in this field with a successful track record in Finance Management.

#### Quality grade

Unsatisfactory level of quality

### V. Scientific/artistic activity

**5.1. Teachers and associates employed at the higher education institution are committed to the achievement of high quality and quantity of scientific research.**

#### Analysis

FFTB is really committed to Science, as reflected by the existence of a Vice-Dean for Science in the management team. FFBT has a Science Strategy Plan (2014-2020) with clear indicators for evaluating the goals achieved during that period. Numbers reveal that

FFTB has reached those objectives related to number of research projects, number and quality of publications, number of patents, researchers' performance, numbers of awards, and so on.

Teachers and associates are strongly committed with research, which allows keeping tuition at the highest standard. This activity has been encouraged after the decision to increase the minimal requirement as compared to those stipulated under *Article 105 paragraph 4 sub-paragraph 1 of the Scientific Activity and Higher Education Act (Official Gazette No 123/03, 105/04 & 174/04)* and *Article 5 paragraph 2 of the Standing Orders of the Rector's Council*, which was passed by the Faculty Council, taken on the academic year 2006/2007. Therefore, a more stringent requirement should be met by scientists promoted into science and science-lecturing positions in FFTB than those required by ordinary regulations.

Although it is not officially written, faculty members dedicate their efforts to teaching and researching in equal time proportion, and according to research leaders that is working fine, mainly due to the support of all the research assistants and students' involvement in research projects. Panel would like to highlight the strong involvement of researchers, assistants, PhD students and graduates in the research projects, showing great competencies and capabilities in conducting research. Assistants are really motivated in research and their research activity is supported through the Pilot Project that provides them with room, computer and access to all the facilities to carry out the research projects.

In doing the research, they are pursuing funds from competitive sources like Croatian Agency and the EU funding schemes securing 55% of the research funding in 2018, although the participation in EU funding schemes is still low. Researchers attend workshops and events organized to train them in proposals preparation and submission to EU. Apart from having the support of the National Contact Point, FFTB is trying to encourage the participation in EU proposals. Currently there is an Academic mobility office that offers administrative help in the proposal preparation but without having a strategic role in the process, which results insufficient progress. For some international proposals, FFTB has hired the support of private consultants. Nowadays, FFTB has opened a process for recruiting an EU manager that could help in the preparation process and even writing proposals. Regarding public funds obtained from Croatian competitive calls, the FFTB researchers are very active in submitting project proposals, and the success rate is close to 70%, which is two times higher than the average rate for Croatian institutions. Apart from those funds, researchers apply to Zagreb University calls, which allow them to continue their research activity.

It should be also stressed that in the last years, FFTB has updated many equipments and facilities (for instance, Laboratory for Genetics) that provides the require infrastructure to run very competitive research. On top of that, internationally funded projects have contributed towards updating facilities and aquisition of many equipments.

The number of scientific manuscripts in the peer-reviewed journals is high. Faculties are very engaged in the importance of having publications, and most importantly those in high quality impact journals. From the last period, 2/3 of the publications belong to Q1 and Q2. Citations have been exponentially increasing from 2004 and particularly since 2014. In fact, in the period 2014-2017, 12 papers are listed within the most highly cited in their respective disciplines at international level. In addition, the minimum requirement of publishing one scientific manuscript during the timeframe of a PhD thesis has contributed to this level of excellence in research. Researchers are keeping formal and informal cooperation with other international research groups. International cooperation is evidenced through the co-authoring of publications, showing great cooperation with Spain, France, Germany, Serbia and UK, followed closely by the rest of the EU countries.

In addition, FFTB is encouraging research activity providing awards to those faculties who excel in their scientific indicators like scientific publications. The FFTB also nominates those researchers to be recognized at Parliament level. Their level of excellence is recognized by the different awards and nominations that they receive from Annual Science Award, the University Lecturers Award, the Award of the Croatian Academy of Technical Sciences (“Rikard Podhorsky” & “Vera Johanide”), the “Zoran Zgaga” Award presented by the Croatian Genetics Society, among others.

### Recommendations for improvement

- Overall analysis reveals very high-quality of research achievements, but some recommendations are quoted to keep and enhance the level of excellence.
- Currently, PhD thesis could be written in Croatian or English depending on the student, but they do not get a different treatment regarding the final recognition. To increase international visibility actions should be taken to encourage the use of English in a minimum part of the PhD documents or thesis, including a foreign expert as external member of the evaluation committee. Those thesis with an important international contribution should have a special recognition as “International PhD”.

- The participation in different international schemes for obtaining competitive funds should be encouraged. Research being a very important pillar of the FFBT, a clear strategy should be defined showing expected income to be reached in the next period. Therefore, a financial strategy for research is strongly advisable to ensure research sustainability.
- Currently, main research funds are from Croatian Science Foundation, and the past economic constraints resulted in funding shortages. Therefore, it is advisable to diversify the funding sources for research to alleviate eventual constraints related to economic crisis.
- International cooperation has been strongly focused on students and faculties mobility, but apart from the training and educational projects, institutional actions are required to improve FFBT participation in competitive calls at EU and Global research competitions.

### Quality grade

High level of quality.

## **5.2. The higher education institution provides evidence for the social relevance of its scientific / artistic / professional research and transfer of knowledge.**

### Analysis

Having in mind the cross-cutting issue of the Horizon 2020 “Science for and with Society”, the Faculty of Food Technology and Biotechnology meets the general principle of carrying on Responsible Research and Innovation (RRI) involving societal actors (teachers, researchers, students, Dean and Vice-deans, industry, policy makers, and so on) to ensure public engagement in research and innovation.

Alumni and stakeholders are keeping a close cooperation with the Faculty, through their participation giving guest lectures or seminars, training students, co-supervising graduate and PhD thesis.

All the outcomes of the scientific contributions are recorded in the Annual Performance Reports and the Annual Report on Implementation of the FFBT Strategic Research Agenda. They are also publicly disseminated through the Croatian Scientific Bibliography (CROSBI) websites and in the *in-house* output database that was designed in 2017 following the proposal of the Science Committee.

Researchers commitment with dissemination is also evidenced with the number of participants in international and national meetings and events, giving lectures or organizing them. Research accomplishments are also communicated to general public through the media (University channel, TV, radio, and so on), particularly those that has been achieved by awarded researchers. In addition, there is clear engagement of the researchers in different committees at national and international level supporting policy makers related to Food Technology, Biotechnology and Nutrition.

Social engagement is sought through open days, visits of students from primary, secondary and high schools. Researchers are even communicating their activities to children and kids in their own schools.

Industry cooperation is mainly based on student employment, co-supervision, lecturers, company visits, and so on. In addition, some companies are supporting faculty by purchasing some research equipments. Private funding for research is mainly obtained by the Food Control Center (40% of the total funding), whereas only 4% of the funds come from industrial projects with FFTB. It is highly valuable the activity of the accredited FFTB Food Control Centre, the spin off company, which is very active giving technological support to the industry. To promote knowledge transfer, an agreement with a private company was signed through Entrepreneur incubator “Red Biotech”, which is expected to be helpful motivating the participation of students. In addition, FFTB education is committed to this entrepreneurship activity including management lectures and business course in the study program. FFTB is expecting some impact in the Employment statistics.

### Recommendations for improvement

- FFTB should show its commitment with society through “Open Science”. More engagement with that concept should be encouraged through the Faculty repository, which should have open access to all societal actors, as-a-way to share results for the advance of knowledge in the most accessible and transparent way. Currently, the uploading of thesis and scientific papers are not mandatory and depends on the authorship agreement. Thesis carried out in the Faculty should be also made available in the repository, unless they are subjected to any type of agreement for the intellectual property.
- FFTB should encourage the knowledge transfer to increase their competitiveness. Currently, private funded projects are related to problem-solving, but effective knowledge transfer to industries should be encouraged. A supporting system for transferring knowledge and technologies is needed. Actions should be taken to

promote them – example, FFTB-industry workshops for presenting research projects.

### Quality grade

Satisfactory level of quality

### **5.3. Scientific/artistic and professional achievements of the higher education institution are recognized in the regional, national and international context.**

#### Analysis

FFTB faculty members are disseminating the research results at regional, national and international level, through their participation as attendees, invited speakers, conference organizers, and so on. In addition, the participation of early career researchers is promoted, but for the other students the University can cover the attendance fee.

FFTB faculties represent in many different Scientific committees and associations at national and international level, having active roles in them. Particularly important is the participation of the researchers in advisory committees for supporting policy makers.

The peer reviewed scientific journal “Croatian Journal of Food Technology, Biotechnology and Nutrition (Hrvatski časopis zaprehrambenu tehnologiju, biotehnologiju i nutricionizam) launched by the Croatian Society of Food Technology, Biotechnology and Nutrition Science, and hosted by FFTB contributes to the scientific visibility of the Faculty at National level, and also it is a way to disseminate the scientific activity, since 50% of the submitted manuscripts are from Croatian research institutions.

In addition, a great number of faculties are members of different Editorial Boards of indexed journals.

The level of excellence of FFTB faculty members have been recognized through three State-level Science awards given by the Republic of Croatia.

The high number of national projects funded by Croatian Science Foundation and those funded by the European Union evidenced the level of scientific achievements. FFTB is pursuing faculty members participation in EU calls, supporting them in proposal preparation through the International Collaboration and Academic Mobility Office, and also an EU project manager is going to be recruited to help in this task.

### Recommendations for improvement

- Considering the number of faculty members, the HE institution should increase the number of Science and Technology projects, particularly at international level with academic and industry collaborations.
- FFTB should encourage the participation of postgraduates in the Marie Skłodowska-Curie actions within the Excellence Science pillar of the H2020 or the faculty members participation in the different funding modalities of the European Research Council (ERC) focused on financing talented and creative researchers and their teams.

### Quality grade

Satisfactory level of quality

## **5.4. The scientific / artistic activity of the higher education institution is both sustainable and developmental.**

### Analysis

Research strategy is aligned with the vision of HE institution defined in their General Strategy for the next period.

The FFTB has a Strategic Research Agenda for the period 2014-2020, which clearly defines the actions needed for reaching research goals, but specific revenues goals are required to ensure research sustainability.

FFTB major goals rely on education, research and knowledge transfer to impact on the country's economy. Currently, the funding sources are rather limited to Croatian Science Foundation followed at great distance by the EU calls and a minor presence of industry involvement in funding research. The resources available now for financing research are insufficient, and some extra effort is required to make research sustainable and contribute to the economical advancement of the country. Current, spaces and facilities in the HEI are sufficient to meet the goals described in the above quoted Strategic Research Agenda.

HE institution recognizes and rewards the scientific activity of the staff based on objective indicators clearly defined.

In the last years, FFTB has been improving the quality and amount of resources for running the scientific activities, including facilities update, and human resources managements directly related to research projects.

## Recommendations for improvement

Strong efforts are required to make research sustainable, and in doing so the following recommendations should be taken into account:

- Participation in international calls is encouraged, but there should be a clear institutional strategy with the necessary support to identify potential partners, proposals preparations, managing and so on. FFTB and faculty members should assume their respective responsibilities in making research sustainable.
- Funding sources should be diversified, going to international calls, as well as national, including competitive calls and private funding.
- Technology transfer should be reinforced where excellent research is carried out like FFTB.
- Mobility for postdoctoral students in foreign countries is recommended. This will help them to acquire international academic and research experience and also to build strong relationships with the host institutions leading to joint projects.
- Key Performance Indicators (KPI) related to income and outcome indicators should be clearly established in the Strategic Research plan with an adequate plan for tracking the performance of research and sustainability.

## Quality grade

Minimum level of quality

### **5.5. Scientific/artistic and professional activities and achievements of the higher education institution improve the teaching process.**

#### Analysis

All teachers and assistants are involved in national or international research projects, and simultaneously they are motivating the participation of graduate students in those research projects through the final thesis. The combined system of research and education existing in FFTB, with strong participation of PhD students in the training, education and research activity is highly valuable. This system is enrolling students in very early stages of their career to carry out research projects with the direct mentoring of a senior researcher, involving them in the planning, execution, discussion and writing of the scientific manuscripts. Workshops are conducted to encourage students to write project proposals. Thus, the education system is providing them with the needed skills

for facing fundamental and applied problems, as well as enhancing the knowledge in different disciplines. In addition, research projects have allowed the acquisition of the most advance equipments for analysis, which are accessible to undergraduate and graduate students making their research up-to-date.

#### Recommendations for improvement

- A postdoctoral stay abroad should be recommended to gain international academic and research expertise.

#### Quality grade

High level of quality

## APPENDICES

### 1. Quality assessment summary - tables

<i>Quality grade by assessment area</i>				
<i>Assessment area</i>	Unsatisfactory level of quality	Minimum level of quality	Satisfactory level of quality	High level of quality
<i>I. Internal quality assurance and the social role of the higher education institution</i>			X	
<i>II. Study programmes</i>			X	
<i>III. Teaching process and student support</i>			X	
<i>IV. Teaching and institutional capacities</i>			X	
<i>V. Scientific/artistic activity</i>			X	

<i>Quality grade by standard</i>				
<i>I. Internal quality assurance and the social role of the higher education institution</i>	<i>Unsatisfactory level of quality</i>	<i>Minimum level of quality</i>	<i>Satisfactory level of quality</i>	<i>High level of quality</i>
1.1. The higher education institution has established a functional internal quality assurance system.			X	
1.2. The higher education institution implements recommendations for quality improvement from previous evaluations.			X	
1.3. The higher education institution supports academic integrity and freedom, prevents all types of unethical behaviour, intolerance and discrimination.				X
1.4. The higher education institution ensures the availability of information on important aspects of its activities (teaching, scientific/artistic and social).			X	
1.5. The higher education institution understands and encourages the development of its social role.				X
1.6. Lifelong learning programmes delivered by the higher education institution are aligned with the strategic goals and the mission of the higher education institution, and social needs.			X	

<i>Quality grade by standard</i>				
<i>II. Study programmes</i>	<i>Unsatisfactory level of quality</i>	<i>Minimum level of quality</i>	<i>Satisfactory level of quality</i>	<i>High level of quality</i>
2.1. The general objectives of all study programmes are in line with the mission and strategic goals of the higher education institution and the needs of the society.				X
2.2. The intended learning outcomes at the level of study programmes delivered by the higher education institution are aligned with the level and profile of qualifications gained.				X
2.3. The higher education institution provides evidence of the achievement of intended learning outcomes of the study programmes it delivers.				X
2.4. The HEI uses feedback from students, employers, professional organisations and alumni in the procedures of planning, proposing and approving new programmes, and revising or closing the existing programmes.				X
2.5. The higher education institution ensures that ECTS allocation is adequate.			X	
2.6. Student practice is an integral part of study programmes (where applicable).		X		

<i>Quality grade by standard</i>				
<i>III. Teaching process and student support</i>	<i>Unsatisfactory level of quality</i>	<i>Minimum level of quality</i>	<i>Satisfactory level of quality</i>	<i>High level of quality</i>
3.1. Admission criteria or criteria for the continuation of studies are in line with the requirements of the study programme, clearly defined, published and consistently applied.			X	
3.2. The higher education institution gathers and analyses information on student progress and uses it to ensure the continuity and completion of study.				X
3.3. The higher education institution ensures student-centred learning.			X	
3.4. The higher education institution ensures adequate student support.			X	
3.5. The higher education institution ensures support to students from vulnerable and under-represented groups.				X
3.6. The higher education institution allows students to gain international experience.		X		
3.7. The higher education institution ensures adequate study conditions for foreign students.		X		
3.8. The higher education institution ensures an objective and consistent evaluation and assessment of student achievements.			X	
3.9. The higher education institution issues diplomas and Diploma Supplements in accordance with the relevant regulations.				X

3.10. The higher education institution is committed to the employability of graduates.			X	
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<i>Quality grade by standard</i>				
<i>IV. Teaching and institutional capacities</i>	<i>Unsatisfactory level of quality</i>	<i>Minimum level of quality</i>	<i>Satisfactory level of quality</i>	<i>High level of quality</i>
4.1. The higher education institution ensures adequate teaching capacities.			X	
4.2. Teacher recruitment, advancement and re-appointment is based on objective and transparent procedures which include the evaluation of excellence.				X
4.3. The higher education institution provides support to teachers in their professional development.				X
4.4. The space, equipment and the entire infrastructure (laboratories, IT services, work facilities etc.) are appropriate for the delivery of study programmes, ensuring the achievement of the intended learning outcomes and the implementation of scientific/artistic activity.			X	
4.5. The library and library equipment, including the access to additional resources, ensure the availability of literature and other resources necessary for a high-quality study, research and teaching.			X	
4.6. The higher education institution rationally manages its financial resources.	X			

### *Quality grade by standard*

<i>V. Scientific/artistic activity</i>	<i>Unsatisfactory level of quality</i>	<i>Minimum level of quality</i>	<i>Satisfactory level of quality</i>	<i>High level of quality</i>
5.1. Teachers and associates employed at the higher education institution are committed to the achievement of high quality and quantity of scientific research.				<b>X</b>
5.2. The higher education institution provides evidence for the social relevance of its scientific / artistic / professional research and transfer of knowledge.			<b>X</b>	
5.3. Scientific/artistic and professional achievements of the higher education institution are recognized in the regional, national and international context.			<b>X</b>	
5.4. The scientific / artistic activity of the higher education institution is both sustainable and developmental.		<b>X</b>		
5.5. Scientific/artistic and professional activities and achievements of the higher education institution improve the teaching process.				<b>X</b>

## 2. Site visit protocol

**Reakreditacija  
Prehrambeno-biotehnološkog fakulteta  
Sveučilišta u Zagrebu**

**Re-accreditation of the  
Faculty of Food Technology and  
Biotechnology  
University of Zagreb**

***Edukacija Stručnog  
povjerenstva***

***Training of Panel  
members***

*Mjesto događanja:*

*Venue:*

***Agencija za znanost i visoko obrazovanje***

***Agency for Science and Higher Education***

*Donje Svetice 38/V, 10000 Zagreb*

*Donje Svetice 38/V, 10000 Zagreb*

	<b>Ponedjeljak, 10. lipnja 2019.</b>	<b>Monday, 10<sup>th</sup> June 2019</b>
<b>11:00- 13:00</b>	Edukacija članova stručnog povjerenstva – kratko predstavljanje Agencije, upoznavanje sa sustavom visokog obrazovanja u Republici Hrvatskoj	Training for the expert panel members – short presentation of ASHE, introduction to the higher education system in Croatia
<b>13:00- 13:45</b>	<i>Ručak</i>	<i>Lunch</i>
<b>13:45- 17:00</b>	Priprema povjerenstva za posjet (rad na Samoanalizi i Standardima za vrednovanje kvalitete)	Preparation of the expert panel members for the site visit (working on the Self-evaluation and Standards for evaluation of quality)

**Reakreditacija**  
**Prehrambeno-biotehnološkog fakulteta**  
**Sveučilišta u Zagrebu**

**Re-accreditation of the**  
**Faculty of Food Technology and**  
**Biotechnology**  
**University of Zagreb**

**PROTOKOL POSJETA**

**Utorak, 11. lipnja 2019.**

*Mjesto događanja:*

*Pierottijeva 6, 10000 Zagreb*

**VISIT PROTOCOL**

**Tuesday, June 11<sup>th</sup> 2019**

*Venue:*

*Pierottijeva 6, 10000 Zagreb*

	<b>Utorak, 11. lipnja 2019.</b>	<b>Tuesday, 11<sup>th</sup> June 2019</b>
<b>9:00 – 10:00</b>	Sastanak s dekanom i prodekanima	Meeting with the Dean and Vice-Deans
<b>10:00 – 10:15</b>	<i>Interni sastanak članova Stručnog povjerenstva</i>	<i>Internal meeting of the panel members</i>
<b>10:15 – 11:00</b>	Sastanak s radnom grupom koja je priredila Samoanalizu i Uredom za upravljanje kvalitetom	Meeting with the working group that compiled the Self-evaluation and Quality Management Office
<b>11:10 – 12:10</b>	Sastanak sa studentima (otvoren sastanak za sve studente)	Meeting with Students (open meeting)
<b>12:15 – 13:15</b>	Sastanak s Alumnima	Meeting with Alumni
<b>13:30 – 14:30</b>	<i>Radni ručak Stručnog povjerenstva</i>	<i>Working lunch of the panel members</i>
<b>14:30 – 15:30</b>	<i>Sastanak članova Stručnog povjerenstva (Analiza dokumenata)</i>	<i>Internal meeting of the panel members (Document analysis)</i>
<b>15:30 – 16:15</b>	Sastanak s vanjskim dionicima - predstavnicima strukovnih i profesionalnih udruženja, poslovna zajednica, poslodavci, stručnjaci iz prakse, organizacijama civilnog društva, vanjski predavači	Meeting with external Stakeholders - representatives of professional organisations, business sector/industry sector, professional experts, non-governmental organisations, external lecturers
<b>16:15 – 16:45</b>	Organizacija dodatnog sastanka o otvorenim pitanjima, prema potrebi	Organisation of additional meeting on open questions, if needed

**Hotel International / Miramarska 24, Zagreb**

<b>17:30 – 20:00</b>	Sastanak Stručnog povjerenstva – refleksija o viđenom i priprema za idući dan posjeta	Joint meeting of the expert panel members – reflection on the day and preparation for the second day of the site visit
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	<b>Srijeda, 12. lipnja 2019.</b>	<b>Wednesday, 12<sup>th</sup> June 2019</b>
<b>9:00 – 10:00</b>	Sastanak s nastavnicima (u stalnom radnom odnosu, osim onih na rukovodećim mjestima)	Meeting with full-time employed Teachers (open meeting)
<b>10:00– 10:10</b>	<i>Interni sastanak članova Stručnog povjerenstva</i>	<i>Internal meeting of the panel members</i>
<b>10:10 – 11:00</b>	Sastanak s prodekanom za nastavu	Meeting with the Vice-Dean for Education
<b>11:00 – 12:00</b>	Sastanak s asistentima	Meeting with Teaching Assistants
<b>12:00 – 13:00</b>	<i>Sastanak članova Stručnog povjerenstva (Analiza dokumenata)</i>	<i>Internal meeting of the panel members (Document analysis)</i>
<b>13:00 – 14:15</b>	<i>Radni ručak Stručnog povjerenstva</i>	<i>Working lunch of the panel members</i>
<b>14:15 – 16:00</b>	Obilazak Fakulteta (knjižnica, uredi studentskih službi, Ured za međunarodnu suradnju i akademsku mobilnost, nastavni laboratoriji/praktikumi, radilišta, informatičke učionice, znanstveni laboratoriji, prostorije za studente, učionice) i prisustvovanje nastavi	Tour of the Faculty (library, student services, International relations and Academic Mobility Office, teaching laboratories/practicums, worksites, computer classrooms, scientific laboratories, rooms for student activities, classrooms) and participation in teaching classes
<b>16:00 - 16:15</b>	<i>Interni sastanak članova Stručnog povjerenstva</i>	<i>Internal meeting of the panel members</i>
<b>16:15 - 16:45</b>	Organizacija dodatnog sastanka o otvorenim pitanjima, prema potrebi	Organisation of additional meeting on open questions, if needed

### **Hotel International / Miramarska 24, 10 000 Zagreb**

<b>17:30 – 20:00</b>	Sastanak Stručnog povjerenstva – refleksija o viđenom i priprema za idući dan posjeta	Joint meeting of the expert panel members – reflection on the day and preparation for the second day of the site visit
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	Četvrtak, 13. lipnja 2019.	Thursday, 13 <sup>th</sup> June 2019
<b>9:00 – 09:45</b>	Sastanak s voditeljima znanstvenih projekata	Meeting with the Heads of research projects
<b>10:00 – 10:45</b>	Sastanak s predstojnicima zavoda	Meeting with the Heads of departments
<b>10:45 – 11:00</b>	<i>Interni sastanak članova Stručnog povjerenstva</i>	<i>Internal meeting of the panel members</i>
<b>11:00 – 11:45</b>	Sastanak s prodekanom za znanost, prodekanom za međunarodnu suradnju i Uredom za međunarodnu suradnju i akademsku mobilnost	Meeting with the Vice-Dean for Science, Vice-Dean for International Relations and International Relations and Academic Mobility Office
<b>11:45 – 12:45</b>	<i>Sastanak članova Stručnog povjerenstva (Analiza dokumenata)</i>	<i>Internal meeting of the panel members (Document analysis)</i>
<b>12:45 – 13:15</b>	Organizacija dodatnog sastanka o otvorenim pitanjima, prema potrebi	Organisation of additional meeting on open questions, if needed
<b>13:15 – 14:15</b>	<i>Radni ručak Stručnog povjerenstva</i>	<i>Working lunch of the panel members</i>
<b>14:15 – 14:45</b>	<i>Interni sastanak članova Stručnog povjerenstva</i>	<i>Internal meeting of the panel members</i>
<b>14:45 – 15:00</b>	Završni sastanak s dekanom i prodekanima	Exit meeting with the Dean and Vice-Deans

### Hotel International / Miramarska 24, 10 000 Zagreb

<b>16:00 – 20:00</b>	Sastanak Stručnog povjerenstva – Izrada nacрта završnog izvješća i rad na dokumentu Standardi za vrednovanje kvalitete	Joint meeting of the expert panel members – Drafting the final report and working on the document Standards for the evaluation of quality
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## Hotel International / Miramarska 24, 10 000 Zagreb

	Petak, 14. lipnja 2019.	Friday, 14 <sup>th</sup> June 2019
<b>9:00 – 12:00</b>	Sastanak Stručnog povjerenstva – Izrada nacrtu završnog izvješća	Drafting the final report
<b>12:00 – 13:00</b>	Ručak	Lunch
<b>13:00 – 16:00</b>	Izrada nacrtu završnog izvješća	Drafting the final report

### Odlazak recenzenata iz Zagreba / Departure of Panel Members from Zagreb

## SUMMARY

This report is prepared after reviewing the self-evaluation and analysis document(s) submitted by the Faculty of Food Technology and Biotechnology (FFTB, University of Zagreb) and the Agency for Science and Higher education organised meetings with the Faculty Management, Full-time staff, Research Professors, the Heads of Departments, Teachers, Research Assistants, Students, Alumni and stakeholders. We have also visited the lecture rooms, lab practical sessions, facilities etc. The management has provided the necessary documents/proofs requested by the panel during the review process. A quality assurance system is established, and its documents are well organized. Over the years, the FFTB has provided education for many generations of Food Technologists, Biotechnologists and Nutrition Scientists that worked and still working in the food, fermentation and pharmaceutical industry, and occupy various public sector positions. Many of these former students have continued their academic and scientific career in Croatia and abroad and followed the career progression offered by the FFTB and the FFTB has an international recognition. The mission and vision of the Institution is in line with the needs of the society and its social role is encouraged. The panel is pleased about FFTB's achievements in the following areas (i) establishing ISO 9001:2015 (ii) Certificate for data protection (iii) Conducting a lifelong learning programme (iv) Very close cooperation between the teachers and students (v) An outstanding Alumni and Stakeholders network and (vi) An international peer reviewed journal supported by the Institution itself.

- The Merlin system seems to be working great and the teachers are highly recommended to continue this practice.
- Students could achieve international mobility via Erasmus, Ceepus or bilateral projects. Faculty should improve the support to foreign students because the website is not completely translated in English.
- 'Rector's award', and 'Ecotrphelia Hravatska' and 'Probion' are great examples for students' interactions and participations in scientific networks.
- It is strongly recommended and mandatory for the Institution to establish a financial plan considering their strategic role to show how all their goals are to be realized within the financial framework.
- The economic impact of this can be identified through knowledge exchange activities. Some of the alumni and stakeholders are actively engaged in these developments.
- Overall analysis reveals a very high-quality level considering the research achievements, but some recommendations are quoted to keep and enhance the level of excellence.