



ASIIN Seal & Euro-Inf[®]

Accreditation Report

Bachelor's Degree Programme
Information and Business Systems

Provided by

**University of Zagreb – Faculty of Organization and In-
formatics (UNIZG FOI)**

Final Version: 15 April 2026

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A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name	Labels applied for ¹	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC) ²
Informacijski i poslovni sustavi	Information and Business Systems	ASIIN, Euro-Inf® Label	Agency for science and higher education, from 15th March 2022	07
<p>Date of the contract: 26.01.2023</p> <p>Submission of the final version of the self-assessment report: 01.09.2025</p> <p>Date of the onsite visit: 02. & 03. 12. 2025</p> <p>at: Varaždin, University of Zagreb Faculty of Organization and Informatics (UNIZG FOI)</p>				
<p>Expert panel:</p> <p>Prof. Dr. Michael Amberg, Friedrich-Alexander-University Erlangen-Nürnberg</p> <p>Prof. Dr. Dirk Frosch-Wilke, University of Applied Sciences Kiel</p> <p>Zorin Radovančević, Escape Digital Agency</p> <p>Mateo Noskov, Student at University of Osijek</p>				
<p>Representative of the ASIIN headquarter: David Witt</p>				
<p>Responsible decision-making committee: Accreditation Commission for Degree Programmes</p>				
<p>Criteria used:</p> <p>European Standards and Guidelines as of May 15, 2015</p>				

¹ASIIN Seal for degree programmes; Euro-Inf®: Label European Label for Informatics

² TC: Technical Committee for the following subject areas: TC 07 – Business Informatics/Information Systems

A About the Accreditation Process

<p>ASIIN General Criteria, as of March 28, 2023</p> <p>Subject-Specific Criteria of Technical Committee 04 – Informatics/Computer Science as of March 29, 2018</p> <p>Subject-Specific Criteria of Technical Committee 07 – Business Informatics/Information Systems as of December 8, 2017</p>	
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B Characteristics of the Degree Programme

a) Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF ³	d) Mode of Study	e) Double/Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Informacijski i poslovni sustavi	Sveučilišni prvostupnik (baccalaureus) informatike, univ.bacc.inf. / University Bachelor of Informatics, univ.bacc.inf.	Development of software systems, Networked systems and computer games, Artificial intelligence in business, Analysis and design of business systems	6	Full time / part time	-/-	6 Semester	180 ECTS	2020/21

The institution has presented the following profile of the University of Zagreb and the Faculty of Organization and Informatics in the self-assessment report:

“The University of Zagreb (UNIZG), established in 1669, is among the oldest and the largest universities in Southeastern Europe. As a comprehensive public educational institution, it spans various academic disciplines, offering a diverse range of courses at all academic levels. With 31 faculties and 3 art academies, it stands as the leading educational institution and best-ranked university in Croatia. With over 7,900 teachers and a student population of around 72,480, UNIZG plays a crucial role in knowledge development and skills acquisition, significantly influencing the academic landscape in Croatia.

UNIZG FOI, established in 1962 and situated in Varaždin, Croatia, has been a constituent unit of the UNIZG since 1974 and is significantly contributing to its reputation.

UNIZG FOI Vision is ‘to lead innovation in higher education, teaching, and research with the aim to develop a sustainable digital society.’

According to its **Mission** ‘University of Zagreb Faculty of Organization and Informatics is a higher education and research institution with international impact in the field of information sciences and STEM interdisciplinary field, as well as in the field of economics in the context of entrepreneurship and innovation.’

³ EQF = The European Qualifications Framework for lifelong learning

Development Strategy of the University of Zagreb Faculty of Organization and Informatics 2025 - 2029 [...] represents the overarching strategic document aimed at ensuring that UNIZG FOI, as a higher education and research institution, continues to foster positive change through its teaching, research, and project activities, and to contribute to the development of (digital) society.

Statute of the University of Zagreb Faculty of Organization and Informatics (see Appendix 1.0.2. UNIZG FOI Statute) is the main document to regulate “the organization, activity and business of the University of Zagreb Faculty of Organization and Informatics, the authority and manner of decision-making of Faculty bodies, the organization and implementation of studies, the status of teachers, associates, scientific and other employees, the status of students and other issues of importance for the Faculty”.

For the performance of registered activities at the UNIZG FOI, there are three types of organizational units: scientific-teaching (organizational) units, professional and support (organizational) units, and library (Library and Documentation Centre). UNIZG FOI bodies include the Dean, the Faculty Council, the Management Board and other bodies established by the general act of the UNIZG FOI. According to the Statute, the Management Board is composed of the Dean, Vice-Deans (up to 4 of them) and the Secretary of the UNIZG FOI. The current Management Board encompasses the Dean, Vice-Dean for Science, Projects and International Cooperation, Vice-Dean for Education and Students, Vice-Dean for Business and Human Resources, Vice-Dean for Study Programmes, and the Faculty Secretary. [...]

UNIZG FOI focuses on education and research in the area of social sciences, in the field of information sciences, as well as in the field of economics and to a lesser extent in other scientific fields, such as computer science, mathematics and educational sciences, which confirms the interdisciplinarity of the UNIZG FOI activities. Interdisciplinary approaches are integrated into every part of each study programme, forming the distinctive strength that gives UNIZG FOI its unique profile. In the academic year 2023/2024 2,643 students were enrolled in its undergraduate, graduate, and postgraduate study programmes. With 155 employees (on 31st March 2025), including 103 academic, 40 administrative staff, and 12 general support staff, UNIZG FOI is actively involved in the academic and scientific community, and in society.”

C Expert Report for the ASIIN Seal⁴

1. The Degree Programme: Concept, Content & Implementation

Criterion 1.1 Objectives and Learning Outcomes of a Degree Programme (Intended Qualifications Profile)

Evidence:

- Diploma Supplement
- Objective-Course-Matrix
- Survey questionnaire
- Self-Assessment Report
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The experts base their assessment of the learning outcomes on the information provided in the module descriptions, on the university's website, in the diploma supplements and in the Self-Assessment report of the Bachelor's degree programme under review. The Faculty of Organization and Informatics of the University of Zagreb (UNIZG FOI) has described Educational Objectives and Learning Outcomes (LO), which are published on the programmes' websites. By means of being published on the websites of the degree programme, these objectives are easily accessible for students as well as other stakeholders. Furthermore, there are regular revision processes in place that take into account feedback by external and internal stakeholders.

The experts refer to the Subject-Specific Criteria (SSC) of the Technical Committee 07 – Business Informatics/Information Systems as well as the SSC of the Technical Committee 04 – Informatics/Computer Science, and the module descriptions as a basis for judging whether the intended learning outcomes as defined by UNIZG FOI correspond with the competences as outlined by the SSC 07, SSC 04 and the Euro-Inf-Criteria.

⁴ This part of the report applies also for the assessment for the European subject-specific labels. After the conclusion of the procedure, the stated requirements and/or recommendations and the deadlines are equally valid for the ASIIN seal as well as for the sought subject-specific label.

The experts note that the LO have been established in a comprehensible and logical manner. The development of LO of the study programmes involves both internal and external stakeholders so that the curricula can be adapted and modified according to the needs of the industry and the graduates on a regular basis. For example, UNIZG FOI regularly conducts surveys, through which the different stakeholders get the chance to assess the programmes and their main objectives and adapt them if necessary. Internal stakeholders include all of UNIZG FOI members (students, teaching staff, and non-academic employees), while the external stakeholders include the industry, alumni, the government, and society.

UNIZG FOI defines the following overarching educational objectives for the Bachelor's degree programme (see Appendix for detailed learning outcomes):

- “To provide a strong foundation in informatics and business systems, preparing students for careers in the digital society.
- To equip students with the knowledge and skills to develop, implement, and manage information systems and applications.
- To develop critical thinking and problem-solving abilities, preparing students for real-world challenges in the IT field.
- To prepare students for immediate entry into the labour market and continued studies at higher levels of education.”

Furthermore, UNIZG FOI describes in its Self-Assessment report, that “[after] the same group of compulsory courses in the first and second year of study, the third-year students are offered new electives, i.e. four new groups of elective courses, aligned with four specializations:

- Development of software systems
- Artificial intelligence in business
- Networked systems and computer games
- Analysis and design of business systems

The knowledge gained provides a solid foundation for entering the labor market, particularly in companies specializing in software development and information technology (IT) services. Given the acquired economic and organizational knowledge, graduates at this level are trained to think business-wise and understand the complementarity of organizational and information systems, which makes the IBS programme multidisciplinary and recognizable in relation to other available studies profiling various types of information technology professionals. The study programme also provides a solid ground for students who intend to continue their education enabling them to successfully meet the challenges of subsequent levels of study.”

In the experts' opinion, the intended learning outcomes of the Bachelor's degree programme are clear, plausible and allow students to take up an occupation, which corresponds to their qualification. They learn that the graduates of UNIZG FOI are much sought after in the labor market. The representatives of industry emphasize the high quality of the graduates and students as well as graduates are satisfied with and well aware of their good job perspectives.

During the on-site visit, the experts are presented with written examinations and final theses to verify the achievement of the learning objectives and the intended learning outcomes, which they consider to correspond to EQF-6.

In summary, the experts confirm that the Bachelor's degree programme Information and Business Systems adequately reflect level 6 of the European Qualification Framework (EQF). They aim at the acquisition of specific competences and are well-anchored, binding and easily accessible to all stakeholders. To confirm compliance with the SSC 07, the experts are asking UNIZG FOI to submit documentation (e.g. a table) mapping the individual courses offered in the curriculum to the four areas of Business Informatics (Business Fundamentals, Business Informatics, Informatics fundamentals, other fundamentals).

Criterion 1.2 Name of the Degree Programme

Evidence:

- Self-Assessment Report
- Diploma Supplement
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The experts confirm that the English translation (Bachelor's programme in Information and Business Systems) and the original Croatian name (Informacijski i poslovni sustavi) correspond with the intended aims and learning outcomes as well as the main course language of the programme.

Criterion 1.3 Curriculum

Evidence:

- Self-Assessment Report
- Study plan of the degree programme
- Module descriptions
- Objective-Course-Matrix
- Discussions during the audit

Preliminary assessment and analysis of the experts:

Curriculum

The curriculum of the Bachelor's degree Information and Business Systems is reviewed by the experts in order to identify whether the described programme objectives and learning outcomes can be achieved by the available modules. Course descriptions as well as overviews and competence-subject matrices matching the general learning objectives and the module contents were provided for a thorough analysis. In the Self-Assessment Report as well as in further supporting evidence (Objective-Course-Matrix), the university gives a detailed overview of how the competences acquired with the curricula presented correspond to the learning outcomes of SSC 07 & SSC 04. The curriculum is designed to comply with the programme objectives and learning outcomes and it is subject to constant revision processes.

The curriculum is structured for six semesters and 180 ECTS need to be achieved by the students (see Appendix for detailed curricular overview). The main teaching language is Croatian. In its Self-Assessment Report, UNIZG FOI describes the approach of the curriculum as follows: "The IBS study programme structure [...] enables students to gain knowledge and skills in basic foundations of informatics and business, as well as other foundations in the first two years of their study and then to broaden their knowledge and skills according to their interests both with selection of specialization and elective courses. In that way students gradually gain knowledge and skills required for a competence profile. Students that are enrolled in specific specialization must take, beside compulsory specialization courses, one elective in 5th and 6th semester that belongs to their specialization, and two electives in 5th semester and one in 6th semester that belong to any specialization [...]. Selection of electives from various specializations enables students that are enrolled into more business specialization to gain more informatics skills, and students that are enrolled in more informatics specializations to gain more business skills. IBS Objective-Course Matrix [...] shows which courses contribute towards which learning outcomes and information about course goals and their learning outcomes can be found in IBS Course

Handbook. [...] The completion of undergraduate study includes passing all exams, fulfilling all other study requirements, preparing bachelor thesis and successfully defending it. The required component is also internship in 6th semester, which is performed in the form of job shadowing for a total of 40 hours, or 5 days, which do not need to be consecutive. Students have Fridays in 6th semester free of classes to be able to participate in internship. In that way students can easily incorporate internship in their schedule. Students are awarded 2 ECTS credits after successful completion of internship, which includes an internship diary that must be approved by a mentor in the organization and head of internship for respective study at UNIZG FOI. Heads of internship for each study programme are UNIZG FOI teachers that are appointed by the Faculty Council. During internship students have the opportunity to try out work in a real work environment, see business processes, work positions and tasks. Students also can, if it is offered, work on the practical part of their bachelor thesis with employers. Internship can also be performed in one of UNIZG FOI laboratories. There is also the possibility for students to carry out the internship through the Erasmus exchange programme. [...] UNIZG FOI has cooperation agreements with more than 400 companies, including UNIZG FOI academic departments [...]. Before internship, students have to attend a career workshop, and they also attend one additional professional workshop that [the Student Support and Career Development Centre (CPSRK)] organizes in collaboration with employers. All steps of the internship are performed in a dedicated system for internship [...] that is developed during the Study4Career project. Students can find companies for their internship, as well as future employers in the CPSRK App, the system for matching students and employers.”

The expert group is very convinced of the structuring of the submitted curriculum and the corresponding content level of the Bachelor’s degree programme Information and Business Systems. They note that, whilst the programme at UNIZG FOI places a significantly greater emphasis on the IT/computer science field than on the business field, this is in line with the intended learning objectives. Furthermore, university representatives explain that there is a high demand for professionals in the ICT sector, particularly in the local area, which is why the focus is placed here. This is also confirmed by alumni and industry representatives. The latter, in particular, highlight the skills of IBS programme graduates in a positive light and note that these graduates are quite distinct from “traditional” computer scientists and can be effectively deployed in relevant interfaces between IT and business. Consequently, the experts are also satisfied with the chosen curricular approach.

However, the experts discuss the reasons for potential delays in completing studies with programme coordinators, students and teaching staff (see in particular Criterion 1.5) and gain the impression that this is largely due to binding requirements attached to a relatively

large number of modules. As UNIZG FOI itself describes in its Self-Assessment report, “[all] courses in the second, third, and fourth semesters have prerequisite courses that are scheduled in earlier semesters. This structure ensures that students acquire the necessary knowledge and skills to successfully meet the requirements of subsequent courses.”

Whilst the experts understand that prerequisites are set and that there may well be compulsory prerequisites where modules build directly on one another in terms of subject matter, they question whether all modules in the first two years of study really build on one another to such an extent that so many compulsory prerequisites are actually necessary. For example, the experts suggest that one might question whether Mathematics 2 really needs to be defined as a mandatory prerequisite for the module Data Structures and Algorithms. Overall, the programme should be re-evaluated in light of the defined prerequisites. The experts therefore recommend reducing the number of compulsory prerequisites and, where appropriate, working with recommended prerequisites instead. This is primarily intended to prevent students from having to extend their studies immediately at the start of their degree due to failing individual exams, as a result of binding prerequisites that may not be technically necessary.

Furthermore, the experts discuss the length of the internship with the different stakeholders. The internship is currently limited to 40 hours at a company and is completed over a few days. As a related report must also be written, a total of 60 hours and two ECTS credits are allocated for the internship. The experts consider this to be relatively little. They do acknowledge, however, that UNIZG FOI is already playing a pioneering role with the current internship, as internships in similar subjects are rather unusual at universities in Croatia. The introduction of the internship has been well received by both students and industry representatives, and both groups would like to see it expanded. They see it as a great opportunity for students to gain initial practical experience that they would not otherwise acquire during their studies. Furthermore, it is noted that an increasing number of students are leaving university after their Bachelor’s degree and entering the labour market. For these students, it would be even more beneficial if they could gain longer practical experience during their bachelor's degree. According to university officials, the experience with the internship has been positive overall, and they could imagine expanding it further. However, such an expansion would also necessitate a reduction or elimination of other courses to ensure that the total remains at 180 ECTS credits. The experts understand that expanding the internship would mean cutting or reducing other courses. However, they recognise that both students and industry would be interested in such an expansion, and they themselves are convinced that longer internships can provide students with valuable insights that they would not otherwise gain during their regular studies. Therefore, the experts recommended to expand the internship regarding length and the assigned ECTS-points.

Summing up, the experts gained a very positive impression of UNIZG FOI and the programme under review and are of the opinion that the curriculum is adequately structured to achieve the intended learning objectives. Furthermore, they can confirm that regular revisions and adjustments are made to adapt the curriculum to the latest developments in science and industry requirements. All relevant stakeholders are involved in this process. However, they recommend to reduce the number of binding prerequisites within the curriculum and to expand the length and the assigned ECTS-points of the internship.

Mobility

In its Self-assessment report, UNIZG FOI describes its international orientation and mobility offers as follows: “International Relations Office (UMS) is responsible for providing coordination, information, and guidance related to student and staff mobility. UNIZG FOI continually increases the number of cooperation agreements with foreign universities and currently has more than 30 bilateral agreements with European and American universities. The numbers of outgoing and incoming mobilities are varying, and efforts are made to answer this challenge. To promote international cooperation and mobility of both teachers and students, UNIZG FOI annually organizes FOI International Days. All relevant information about Erasmus+ student mobility can be found at the dedicated web page.”

Regarding the different mobility opportunities within the programme under review, UNIZG FOI further explains, that “[students] usually participate in mobility in the last year of their studies, because of flexibility due to elective courses and less courses in 6th semester. Continual challenge is recognition of courses that students take abroad, because every faculty has its specificities. Teachers are encouraged to recognize in full each course that adheres to at least 70% of learning outcomes of corresponding course at UNIZG FOI. Another challenge are UNIZG FOI compulsory courses for which no corresponding course at the receiving university can be found and students have to pass those courses at UNIZG FOI. In those cases, students have difficulties with continuous monitoring and assessment of their work during the semester, especially if they cannot travel to Croatia often. Those issues are resolved with the possibility of performing tasks and exams online, but it is dependent on course teachers. Another possibility is that students take a full exam when they return. Also, ECTS coordinator is active in helping students to fit courses abroad with their courses at UNIZG FOI and advises students which institutions and courses and in which semester to choose before applying to mobility. For foreign students on exchange UNIZG FOI organizes Welcome Week, helps with documentation and learning Croatian language and offers support through UNIZG FOI Student Buddy programme during their stay in Croatia. Due to the

effort of UMS and teachers, students usually do not have problems with prolonging their study because of mobility. Students are also offered a possibility of virtual mobility. For example, through implementation of the UNIC VIP Fund for Virtual and International Educational Projects, supporting the integration of virtual international educational collaborative activities into the teaching/learning process. [...] Students can also participate in horizontal mobility, which means that they can attend one course per semester at another faculty that is a member of UNIZG. The course can be attended instead of an elective course and must be approved by the ECTS coordinator. This means that horizontal mobility is possible only for courses at third year. [...] An interesting mobility option for UNIZG FOI students in the last few years is Erasmus+ Blended Intensive Programme (BIP), because it usually lasts one week. During their mobility students attend workshops and solve real-world problems for which they acquire additional ECTS credits. Those ECTS credits are not calculated into credits needed to finish their studies, but they show acquisition of additional skills and improve student employability. UNIZG FOI also develops and actively participates in the organization of BIPs.”

UNIZG FOI provides the following mobility statistics within its Self-Assessment report:

Year	Type of mobility	Outgoing	Incoming	Total outgoing per year
2021/2022	Erasmus+ semestral exchange	17	20	28
	Erasmus+ internship	1		
	Erasmus+ BIP	5		
	Virtual mobility	0		
	Other (summer schools, study visits...)	5		
2022/2023	Erasmus+ semestral exchange	5	20	8
	Erasmus+ internship	0		
	Erasmus+ BIP	3		
	Virtual mobility	0		
	Other	0		
2023/2024	Erasmus+ semestral exchange	7	18	24
	Erasmus+ internship	1		
	Erasmus+ BIP	5		
	Virtual mobility	0		
	Other	11	19	

The experts recognise that the university offers a wide range of mobility opportunities and provides students with adequate support. Moreover, the curriculum is designed in such a way that study periods abroad can be easily integrated. In addition, the university has adequate regulations for recognising external achievements. During the audit discussions, the students state that it is very easy to go abroad if they are interested and that they receive very good support from the university, especially from the International Office. It is also easy to have external achievements recognised. For example, they mention that there is also an internal database listing all the universities where students have previously spent a

semester abroad, and that this database shows which courses have been recognised for their own degree programmes and how. In addition, the students also positively highlight the Erasmus+ Blended Intensive Programme (BIP).

The experts therefore come to the conclusion that UNIZG FOI provides adequate conditions to enable international mobility for students and teachers.

Periodic Review of the Curriculum

Regarding the further development of the programme and the organisation of each academic year, UNIZG FOI further explains that “minor revisions of the study programme are done each year in the summer in a frame of preparing a study programme implementation plan for the next academic year. The study programme implementation plan for each academic year defines the teachers and associates who will conduct teaching, places of teaching, the beginning and the end of teaching, as well as the teaching schedule, forms of teaching, and method of examination (examination periods, exam criteria). Each study programme is performed according to the study programme implementation plan adopted by the Faculty Council before the beginning of each academic year. Before the Faculty Council, academic departments must also adopt changes in syllabus for the courses they are responsible for.”

The experts confirm that the curriculum is reviewed regularly and commented on by students and teachers as well as by external stakeholders such as alumni or partners from government and the private sector. Regular changes are made to ensure that the curricula are up to modern standards.

Criterion 1.4 Admission Requirements

Evidence:

- Decision on admission criteria for undergraduate studies in the academic year 2024/2025
- Decision on enrolment quotas for undergraduate studies for the academic year 2024/2025
- Regulations on the Recognition of Prior Non-Formal and Informal Learning
- Self-Assessment Report
- Discussions during the audit

Preliminary assessment and analysis of the experts:

As stated in the Self-Assessment report, “[general] admission requirements for higher education in Croatia are regulated by national legislation; however, universities, and faculties

have some autonomy in defining additional selection criteria. All applicants for undergraduate studies must take a national examination in three subjects: Croatian language (or their native language if they are international applicants), Mathematics, and a foreign language (typically English or another language). Faculties may determine the required level of Mathematics (basic or advanced), as well as the weight assigned to national exam scores, secondary school academic performance, and individual course grades in the calculation of admission points. They may also award additional points for participation in competitions or other relevant achievements and may grant direct admission in exceptional cases—such as securing first place in a mathematics olympiad. For instance, UNIZG FOI offers direct admission to candidates who have participated in international Olympiads in Informatics, Mathematics, Physics, or Chemistry.”

The specific admission criteria as well as the enrolment quotas for each academic year are discussed and decided upon by the Faculty Council each year. For the 2024/2025 academic year, the following specific criteria have been defined for the Bachelor’s degree Information and Business Systems:

„Applicants who have completed a four-year secondary school are eligible to apply. The ranking list of candidates for enrolment in the study program (FULL-TIME and PART-TIME STUDY) is determined based on the following scoring system:

- Points based on secondary school grades: 35%
- Points based on state matura exam results:
 - Croatian language (B level before 2022): 15%
 - Mathematics (A level): 35%
 - Informatics (not mandatory): 15%

Special ability tests are not conducted, and no points are awarded for them.

Direct admission with 100% points is granted to applicants who:

- Have won one of the top three places in the national competition in Croatia in Informatics, Mathematics, Physics, or Chemistry.
- Have participated in an international Olympiad in Informatics, Mathematics, Physics, or Chemistry.
- Have been recommended by a Croatian secondary school that has been granted the right by the Faculty Council of FOI to nominate top students.“

Following the “decision on enrolment quotas for undergraduate studies for the academic year 2024/2025”, the Bachelor’s programme under review has an intake capacity of 301 students, “of which 285 for full-time students, 10 for part-time students, 5 for international

students (who can attend classes in the Croatian language) and 1 for full-time student that is a member of the Croatian national minority and the Croatian diaspora.”

In their assessment, the experts find the admission rules and criteria for the degree programme under review to be binding, transparent, and based on UNIZG FOI's and university-wide written regulations as well as state regulations. They confirm that the admission requirements support the students in achieving the intended learning outcomes.

Criterion 1.5 Workload and Credits

Evidence:

- Module descriptions
- Curricular overview
- Statistics on average grade and duration of studies, on students' success, and on distribution of female and male students
- Statistics on course pass rates
- Document „Compliance of ECTS Credits with actual Workload according to Student Survey”
- Evaluation survey questionnaires
- Self-Assessment Report
- Discussions during the audit

Preliminary assessment and analysis of the experts:

All programmes at UNIZG FOI follow the ECTS system, where one credit equals 25-30 of total workload including contact hours as well as self-study time. For the Bachelor's degree Information and Business Systems one ECTS is stipulated to equal 30 hours of work. 60 ECTS are expected to be acquired in one academic year, which, according to the programme coordinators as well as the students, is manageable. In total, students have to achieve 180 ECTS credits until graduation. Courses are awarded between two and eight credit points and each course lasts only one semester. In the module descriptions, students can find the total workload of each course. During discussions with the students, the experts found that students are generally satisfied with the workload, which is transparent to them and does not present any systematic obstacles.

The workload and crediting of the programme is regularly monitored and analysed. Changes to the programme are made when it becomes evident during analysis that students are struggling. The experts find the monitoring to be proactive and satisfactory.

Overall, the credit system appears to the experts to be well-structured with appropriate weightings given to the various modules.

However, during the audit, the experts discuss the reasons for potential extensions to the duration of study. The study statistics provided suggest that around 45% of students drop out between the first and second academic years, respectively have to repeat an academic year. For example, in 2020/21, 291 students enrolled in the programme; of these, only 168 progressed to the second year and subsequently only 91 to the third year; in 2021/22, 287 students enrolled in the programme; of these, only 146 progressed to the second year and subsequently 106 to the third year. It should be noted that not all students who have 'dropped out' here have necessarily quit their studies, but may have to repeat a year due to failing exams. As described previously (see 1.3), all courses between the second and fourth semesters have fixed prerequisites that must be met. This can then lead to a semester or year having to be repeated in part before studies can continue as normal. UNIZG FOI itself states that around one-third of a cohort completes their studies within the standard period of study, whilst the majority complete their studies within four years (eight semesters).

Although the experts acknowledge that students describe both the workload and the course as a whole as manageable, and that the university also carries out detailed workload analyses, they do see a clear need for action given such high rates of extended study periods. As already described, the experts see the many mandatory prerequisites in semesters two to four as the main reasons for study duration extensions. For example, the mathematics courses are fixed prerequisites for later courses (e.g. Mathematics 2 is a prerequisite for Data Structures and Algorithms). As these subjects are typically the courses in many degree programmes where a relatively large number of students struggle and may need more than one attempt to pass, this can lead to delays early on in their studies. Students in the audit also state that mathematics courses in particular have relatively high failure rates, which can lead to an extension of the study duration. In this context, students identify the format and grading scheme of the corresponding examinations as a possible factor contributing to delays in study progression between the first and second year (see criterion 2 for further details). This is supported by the available statistics, which show, for example, that in the 2023/24 academic year only 44% passed the Mathematics 2 course. Whilst the experts fully understand that there are indeed reasonable fixed prerequisites and that not all mandatory requirements should be removed, the defined requirements should nevertheless be re-evaluated to determine whether they are truly essential for further study or whether it might be possible to work with recommendations instead. Furthermore, the experts believe that a possible solution could be to define more general credit thresholds: in

other words, to specify what percentage of the credits available to date must be achieved by a certain stage in order to progress to the next semester, so as not to make academic progress too dependent on individual modules.

Overall, the experts have come to the conclusion that UNIZG FOI should explicitly evaluate and analyse this issue once again. They therefore argue that the university should identify potential bottlenecks within the first two study years that could lead to an extension of the duration of study, and develop a strategy to re-solve them.

Criterion 1.6 Didactic and Teaching Methodology
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Evidence:

- Module descriptions
- Survey questionnaires
- Self-Assessment Report
- Discussions during the audit

Preliminary assessment and analysis of the experts:

Various teaching and learning methods are used within the Bachelor's degree programme under review. As described in the Self-Assessment report and displayed in the individual module descriptions, the following methods are applied: "lectures (classic and video-conference), presentations, simulations, demonstrations, case analyses, critical analyses, reviews, essays, problem-based learning, work-based learning, project-based learning, creativity tasks, research projects, flipped classroom, answering questions, quizzes, tests, e-learning tests, and autonomous finding and analysing of information from various sources." The assignments and exercises should help students to develop their abilities with respect to critical thinking, written/oral communication, problem solving, and presentations.

Regarding group sizes of the different kind of classes, UNIZG FOI states in its Self-Assessment report, that "[groups] for lectures have 150 students, for seminars 30, for language or physical exercises 50 and for computer exercises 15, which is in Croatia the prescribed standard size of those groups. A smaller number of students in practical parts of the curriculum, especially computer exercises (which are part of a large number of courses), enables teachers to individually work with students even in a group setting. In this way, students can get more help with the assignments and be more successful in developing required skills."

Furthermore, UNIZG FOI enables students to take part in national and international conferences and supports them in presenting first research works at such events. As described in its Self-Assessment report, "UNIZG FOI annually organizes the Central European

Conference on Information and Intelligent Systems (CECIIS), which has had a Student Section (which is open also to other authors from this year) since 2010. Students are encouraged to present posters of some of their work they had done at courses or for bachelor thesis at Student Section, and those more ambitious can independently, or with their bachelor thesis mentors as coauthors, prepare a regular paper for CECIIS. UNIZG FOI also co-organizes and hosts the International Scientific Conference - CRODMA, where students are also welcomed to participate. Student Research Symposium has been organised each year since 2010 in collaboration with USA universities. Every other year the Symposium is organised in the USA and at UNIZG FOI. The most ambitious students can send a paper to UNIZG FOI Journal of Information and Organizational Sciences (JIOS).”

In summary, the experts can confirm that a variety of learning methods are used and that they are aligned with the intended learning outcomes. In the discussions with students, the experts learn that they are generally satisfied with the quality of teaching and learning in the programmes under review. Gathering systematic feedback on the quality of teaching and learning can be achieved through the course evaluation survey conducted at the end of each semester, which serves as a valuable source of information.

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 1:

Criterion 1.1

In their statement on the underlying accreditation report, UNIZG FOI provides a document containing a table that maps the individual courses to the four areas of Business Informatics (Business Fundamentals, Business Informatics, Informatics Fundamentals, Other Fundamentals). UNIZG FOI states that the mapping of courses to different areas of Business Informatics is done according to comparison of course contents with information provided in "Framework Recommendation for the Training in Business Informatics at Universities" of the German Informatics Society (GI) that SSC 07 follows.

The experts express their appreciation for the document provided and confirm that the mapping of the individual courses is appropriate and thus consistent with the SSC 07. Therefore, the experts can confirm that the programme learning outcomes are consistent with the respective ASIIN SSC, and also with the criteria for the Euro-Inf-label.

Criterion 1.3 & 1.5:

The experts agree on the following requirement:

A 1. (ASIIN 1.3, 1.5, 2) Identify potential bottlenecks within the first two study years that could lead to an extension of the duration of study, and develop a strategy to re-solve them.

The experts agree on the following recommendations:

E 1. (ASIIN 1.3) It is recommended to expand the internship regarding length and the assigned ECTS-points.

E 2. (ASIIN. 1.3) It is recommended to reduce the number of binding prerequisites within the programme.

The experts consider criterion 1 not to be completely fulfilled.

2. Exams: System, Concept and Organisation

Criterion 2 Exams: System, Concept and Organisation

Evidence:

- Module descriptions
- Regulations on Studying at the Undergraduate University Study in Information and Business Systems
- Exemplary examinations & final theses
- Statistics on course pass rates
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:

The “Regulations on Studying at the Undergraduate University Study in Information and Business Systems” set out all the rules, regulations and procedures concerning examinations, other forms of assessment and grading. UNIZG FOI uses a grading scheme from 1 to 5, where 5 is the best grade (“Excellent”) and 1 is the worst grade (“Insufficient”). Students must at least achieve a grade 2 (“Sufficient”) to pass a course. The grade 3 is defined as “Good” and grade 4 as “Very Good”. In all courses, the maximum number of points to achieve is 100, and students need at least 50 points to pass a course. The results of the final exam must be communicated to students within one week following the exam.

The assessment methods are clearly outlined in the (online) course descriptions, providing transparency regarding the relationship between module learning outcomes, programme learning outcomes, module content, lesson plans, assessment components, and methods. The final grade of each module is calculated based on the score of these individual kinds of assessment. At the first meeting of a course, the students are informed about what exactly is required to pass the module and about how the final grade is determined. When

implementing ongoing assessments, care is taken to ensure that part-time students are given different tasks or arrangements to take account of their workload and capabilities. As explained in the Self-Assessment report, “[there] are also two extraordinary examination periods in November and April for part-time students that mostly work, and their exam cannot be held before 16:00 hours.”

As described in the Self-Assessment report, “[the] basic forms of knowledge assessment described by continuous monitoring models are attendance, written exams, oral exams, midterm exams, individual short tests, individual project tasks, seminars or essays, group/team project tasks or joint presentations of certain problems, solutions to tasks or projects, homework and computer exercises tasks. Study programme requires students to gain various skills and knowledge and teachers consider that including various practical assignments will help students to achieve learning outcomes. Most courses have two midterm exams, and several have three, during the semester. For each study year, students can have midterm exams in a maximum of three courses per week and only one midterm exam per day. This allows students to better prepare for exams.”

During the audit discussions, the experts ask the students how satisfied they are with the structure of the examinations. Although they generally give a positive assessment of the programme and the examination formats used, they mention that they do not always consider the weighting of the individual examination components to be appropriate. In this regard, the students refer in particular to the Mathematics courses as a possible factor contributing to delays in study progression between the first and second year. According to the university, a module is generally passed once at least 50 out of 100 points have been achieved. For example, in Mathematics 1, however, students can acquire up to 90 points during the semester, while the final oral examination accounts for only 10 points. At the same time, the students reported that the final oral examination must be passed in any case, even where the minimum total number of points required to pass the module has already been achieved beforehand. In the experts’ view, if confirmed, such an arrangement appears problematic, since it may place disproportionate weight on a comparatively small examination component and may effectively nullify points already earned during the semester. The students further stated that failure in the oral examination may occur if the expected answer is not given in the exact form required. The experts therefore consider it necessary that the university investigate these statements carefully and review whether the examination design in this module is appropriate, transparent and proportionate. If the students’ statements are confirmed, the examination format should be revised accordingly in order to avoid undue hardship and to ensure that the assessment system supports fair study progression. Overall, students see bottlenecks in the Mathematics courses that can

delay their progress in their studies, and they attribute this partly to the type of assessment methods chosen.

The lecturers explain during the on-site visit that all assessments within a module must be passed in order to pass the entire course. In other words, even if you go into the final exam with over 50 points, you must still pass this final exam to pass the entire module. Furthermore, the lecturers explain that in Mathematics, the mid-term assessments primarily involve solving assignments and also serve as a sort of filter for the final exam. In the final oral examination, the aim is primarily to test theoretical knowledge, which, in the lecturers' view, is also required for further studies. Furthermore, students who have passed all previous examinations and have been admitted to the final examination have the opportunity to retake the final oral examination a total of three times within an academic year in order to pass the course.

The experts can appreciate the arguments put forward by both the students and the lecturers. They understand the students' view that a relatively high level of effort is required to pass the final exam, even though this exam accounts for no more than 10% of the total points to be achieved. However, they also understand the lecturers' approach that, on the one hand, all partial exams must be passed as such, and they acknowledge that students have a total of three chances to retake the final exam. Nevertheless, the experts want to recommend that the university review the approach chosen here. Although the Mathematics courses were explicitly mentioned by the students, this approach is, in principle, also followed in other modules. Particularly in view of the discussion of the reasons for extended study periods (see 1.3 & 1.5), UNIZG FOI should also reconsider this practice to determine whether it results in systematic extensions of study periods.

Overall, the experts recommend increasing the weighting of the final oral examination so that the number of points to be achieved reflects the workload that students report they need to pass. By giving the final examination a greater weighting in the overall grade, students might be more motivated to prepare for it accordingly.

In summary, the experts note that the examination system at UNIZG FOI is well-structured and transparent. The assessment methods align with intended learning outcomes, and the workload appears to be appropriately distributed. The university's policies for academic misconduct are clearly defined. Furthermore, UNIZG FOI has policies in place for students who miss examinations due to illness, emergencies, or official university activities. The university also facilitates examinations for students with disabilities. Overall, the examination and assessment processes at UNIZG FOI seem to support the academic goals of the programmes while maintaining fairness and accountability. However, the experts recommend

to increase the weighting of the final oral exam where it is especially used to test the students' theoretical knowledge, for instance in the Mathematics courses.

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 2:

The experts agree on the following recommendation:

E 3. (ASIIN 2) It is recommended to increase the weighting of the final oral exam where it is especially used to test the students' theoretical knowledge.

The experts consider criterion 2 to be fulfilled.

3. Resources

Criterion 3.1 Staff and Development

Evidence:

- IBS Staff handbook & list of UNIZG FOI employees
- Discussion during the audit
- Self-assessment report

Preliminary assessment and analysis of the experts:

HR Resources

UNIZG FOI presents its human resources within its Self-Assessment report as follows: "In the study programme IBS currently participate 103 teachers, of which 57 on scientific-teaching positions (assistant professor, associate professor, full professor and full professor with tenure), 14 on teaching positions (lecturer and senior lecturer) and 32 on associate positions (assistant and senior assistant). Faculty management processes include procedures for recruitment, workload allocation, performance appraisal, and professional development. UNIZG FOI prepares a five-year Human Resources Management Plan with a projection of the required new jobs, a projection of planned promotions and retirements. The Staff Recruitment and Promotion Plan is regularly updated once a year for the following academic year. Assistants have to be enrolled in a doctoral programme, and they must defend their doctoral thesis within six years. They can remain on a position of higher assistant for four more years. [...] Lecturers and senior lecturers also have prescribed conditions for employment and advancement at national level, as well as employees in scientific-teaching positions. The procedures for selection of teachers and advancement to higher position are prescribed in the Higher Education and Scientific Activity Act. [...] Workload allocation

considers the balance between teaching (45%), research (45%), and administration and institutional responsibilities (10%) and is regulated by the Collective Agreement for Science and Higher Education on the national level. Possible deviations from these percentages are also prescribed. The actual workload allocation is discussed at the academic departments before the start of each academic year. [...] Small groups for computer exercises with 15 students mean that on some courses, especially in the first year, there are 20 or more groups. This makes the number of teaching hours very high and it is also demanding for one or two teachers to have a large number of groups per week. Also, it is important that students acquire practical skills. For both reasons, UNIZG FOI has external associates that deliver a certain number of computer exercises or seminars. Most of them are employed in IT companies, while some teach informatics in secondary schools. Also, many of them are former UNIZG FOI students. UNIZG FOI has recommendations for selection of external associates brought by the Quality Assurance Committee (POK) that should ensure their quality. [...] External associates are proposed by teachers responsible for the course. They must be approved, first by the academic department to which the course belongs and then by the Faculty Council. They are evaluated by students every two years with the same questionnaire that is used for evaluation of teachers.”

Overall, the experts are satisfied with the available staff resources and the relevant regulations, and consider teaching to be adequately covered by suitably qualified staff. This also applies to the use of external lecturers. The experts thus confirm that appropriate regulations have been put in place for their deployment and that responsibility for teaching ultimately always lies with a member of staff at the UNIZG FOI. During the review of the accreditation documents and the on-site discussions, it emerged that there are no dedicated programme coordinators at the university who bear primary responsibility for the individual programmes. Instead, all programmes are discussed and planned jointly within the various committees, and ultimately the responsibility lies with the relevant decision-making bodies and/or the respective (vice-)deans. Although this system appears to function in principle and the UNIZG FOI is a well-established institution with sufficient experience, the experts would recommend that dedicated programme coordinators be appointed for the individual degree programmes in future, in order to manage them even more effectively.

In summary, the experts conclude that the teaching staff's composition, scientific orientation and qualifications, as specified in the Staff Handbook, are suitable for successfully implementing and sustaining the degree programme under review. However, they recommend to introduce a dedicated programme coordinator.

HR Development

UNIZG FOI encourages the training of its academic staff to improve their didactic abilities and teaching methods. As stated in the Self-Assessment report, “UNIZG FOI supports teachers to improve their teaching competencies by organizing workshops to develop skills that will help them in their work. Workshops are organized for assistants at the beginning of their carriers but also for all teachers. In addition to that, UNIZG FOI periodically organizes two-day workshops ‘Improving teacher skills for teaching other subjects in English’ with the aim of educating teachers to teach (foreign) students in English. Attendance of UNIZG FOI teachers at conferences, workshops, and involvement in association activities contribute to professional development and their relevance. UNIZG FOI teachers participate in the organizational and programme committees of reputable international scientific conferences in Croatia and abroad. They also take part in the editorial boards of renowned scientific journals referenced in databases such as Scopus, as well as databases that are an integral part of Web of Science (WoS). Support for scientific and professional project applications is provided through the Centre for International Projects (CMP). Additionally, the Centre for Application Support and Development (CZRPP) and the Centre for Informatics Support (CIP) offer assistance with technological and application-related matters. [...] UNIZG FOI members participate in relevant professional associations. UNIZG FOI teachers and associates have been members of numerous university bodies and commissions, they have worked at the state level, as well as in the County Assembly and the City Council. In addition to scientific and professional activity, they are founders, but also active participants, of civil associations; thus, promoting the role and importance of social activity.”

The experts discuss the various opportunities available for personal skill development with the teaching staff members. The teachers express their satisfaction with the internal qualification programme and willingness to improve their didactic skills. Additionally, they confirm that they are able to attend conferences, workshops, and seminars (abroad).

All interviewed staff demonstrate high motivation and attachment to the institution. In the opinion of the experts, UNIZG FOI offers sufficient support mechanisms and opportunities for teaching staff members who wish to strengthen their professional and teaching skills.

Criterion 3.2 Student Support and Student Services

Evidence:

- Website of the Faculty
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:

The student services at UNIZG FOI are supposed to help students throughout their study pathway by providing individual and group guidance on issues such as degree structure, study counselling, personal study plans and career advice. As described in its Self-Assessment report, the “[main] support regarding studies and regulations is offered by the Office for Student Affairs (hrv. Referada) where two employees are working with university undergraduate and graduate studies in informatics and this is a central place where students can obtain the necessary information and advice about their studies. As already described, many processes are digitized, which makes their work easier. The Office provides support for enrolments in the first and higher years and semesters [...] and participates in the process of resolving various student requests in ‘FOI Forms’ [...]. It also manages the procedure for applying and defending bachelor theses in ‘FOI Radovi’. The Office is available to students during all working hours from Monday to Friday via e-mail and telephone, and students may visit the Office every working day from 9:00 to 13:00.”

For support regarding career advises, the already mentioned Student Support and Career Development Centre (CPSRK) provides students with career counselling, and mentorship programmes. CPSRK is responsible for connecting and cooperating with industry; it supports students, for example, with regard to internships and also organizes a Career Week, where potential future employers and students can meet.

UNIZG FOI provides further services with own offices regarding international relations (UMS), Informatics Support (CIP), application support (CZRPP), and students with disabilities (USSI), whereas USSI also provides psychological counselling. In addition, “[the] Centre for Volunteering and Humanitarian Work (CZVHR) has been operating at UNIZG FOI for 12 years with the aim of involving students in various activities that enable informal learning, i.e. acquiring additional competencies through volunteering, and also connecting students with other volunteering organizers. It also conducts student education on the Volunteering Act and the Volunteer Code of Ethics. CZVHR organizes or helps at various events, for example at national volunteering manifestation ‘Croatia Volunteers!’, The City of Varaždin humanitarian race, collecting donations for Social Supermarket or presentation of Varaždin County Red Cross Society activities.”

What is more, “UNIZG FOI Student Council also provides support for students and their members are also representatives of students in the Faculty Council. One of the members is elected as Student Ombudsman that helps students with their rights. UNIZG FOI also elects one student (after public call) as Student Adviser that helps students to understand study regulations and other issues and is not a member of Student Council. Call for elections for UNIZG Student Council and student councils of faculties is made by UNIZG every two years. Student Council also initiates various student projects and activities, such as Days of mental health, Days of sustainable development or Voluntary blood donation action.”

During the audit, the students describe the services at UNIZG FOI as very supportive and sufficient for their needs. The atmosphere at the university among the students and with the teachers appears familiar. Furthermore, there is also a very good relationship between UNIZG FOI and its Alumni.

In summary, the experts find the student services to be smooth and convenient for the students and highlight the scope and depth of the support available. Enough resources are available to provide individual assistance, advice and support for all students. The support system helps the students to achieve the intended learning outcomes and complete their studies successfully. The students, in general, have access to sufficient information about their programme and are well-informed about the services available. The comprehensive support and advisory system is one of the strengths of UNIZG FOI.

Criterion 3.3 Funds and equipment

Evidence:

- Regulations on the Distribution of own Revenues and Revenues for Special Purposes of the Faculty of Organization and Informatics
- List of available buildings and rooms
- List of computer laboratories equipment
- Self-assessment report
- Tour of the facilities
- Discussion during the audit

Preliminary assessment and analysis of the experts:

UNIZG FOI is a state-funded institution. Each year, a financial plan is updated, setting out a budget for the next three years. With regard to financial resources, UNIZG FOI further states in its Self-Assessment report that “[the] largest part of the financial resources to UNIZG FOI comes from the subsidy of the participation of tuition fees by [Ministry of Science, Education and Youth (MZOM)], as well as tuition fees paid by part-time students. In

addition, UNIZG FOI receives financial resources from the co-financing of science (based on the indicators from program contracts), and also through the implementation of scientific research and professional projects, from market activities (economic projects), implementation of specialist and doctoral studies, lifelong learning and various sponsorships and donations. UNIZG FOI generates about 2/3 of annual revenues from the MZOM, while the remaining 1/3 of total revenues are additional sources of financing. [...] UNIZG FOI uses additional funding sources for its institutional development and improvement of its core business. UNIZG FOI does not rely only on budget funds for material costs, but through cooperation with various stakeholders and donations and sponsorships, it generates additional income invested in infrastructure and the development of teaching and scientific processes.”

Teaching and research at the UNIZG FOI take place mainly in three buildings, which are equipped with lecture halls of various sizes and modern facilities, as well as laboratories and offices for teaching staff and the administration. In addition, the UNIZG FOI campus also houses its own library, which also offers an extensive range of online resources. Also, students at UNIZG FOI are provided with a very modern student dormitory. UNIZG FOI describes in its Self-Assessment report, that “[the] dormitory is managed by the Varaždin Student Centre (UNIZG SCVZ), an institution within the UNIZG.” Furthermore, in the audit, it turned out that the construction of a newly planned building had recently been given final approval. According to the UNIZG FOI itself, this construction is essential for sustainability and the long-term achievement of its strategic goals.

In addition, UNIZG FOI has plans to build a so-called Pre-Incubation Centre in Smart Industry. In its Self-Assessment report, UNIZG FOI explains that “[this] 6-million-euro project is designed to provide a supportive environment for early-stage startups and innovative projects, particularly those focused on smart industry technologies, with key aspects including specialization in smart technologies, support for early-stage ventures, facilitation of collaboration and networking, provision of educational and mentoring programs, development of state-of-the-art facilities, and the promotion of regional development through local points in partner cities and municipalities in 1200 square meters. The project includes strong collaboration of UNIZG FOI with the IT industry, as well as the involvement of three cities and two municipalities in the region. Within the project, strong cooperation has been established with local self-government units and the IT community. Construction will begin at the end of this year, 2025, and within Centre, Smart Living Labs and the Croatian Smart Factory will be established, while education and mentoring programs will be conducted for potential entrepreneurs with entrepreneurial ideas in the early stages of development.”

During the audit, the experts were shown different lecture halls, learning facilities, the library as well as advanced research laboratories with modern equipment. These

laboratories are supported by technicians and are available for use by research staff and graduate students. In the on-site discussions, students confirm that they are satisfied with the resources and laboratories available and believe that these are used beneficially in the various courses.

The experts confirm that the teaching and office facilities, libraries and computer labs are adequate for all students and staff. In summary, the experts are convinced that current funding allows standards to be maintained and additional instrumentation to be purchased if required, that UNIZG FOI generally has sufficient workspace and laboratories, and that all laboratories are equipped with modern and sophisticated instrumentation. This is supported in particular by the planned and already approved new building. Furthermore, the experts view the UNIZG FOI's plans to set up an incubator centre very favourably.

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 3:

The experts agree on the following recommendation:

E 4. (ASIIN 3.1) It is recommended to introduce a dedicated programme coordinator.

The experts consider criterion 3 to be fulfilled.

4. Transparency and Documentation

Criterion 4.1 Module Descriptions
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Evidence:

- Module descriptions
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:

UNIZG FOI provides module descriptions following the ASIIN template that provide information on the module coordinators, teaching methods, workload, credit points awarded, intended learning outcomes, content coverage, applicability, admission and examination requirements, as well as assessment methods and a comprehensive explanation of how the final grade is calculated.

In addition, during the audit, the experts are shown the Moodle learning management system, called 'ELF' (e-Learning at FOI), which is used by lecturers and students in their day-to-day academic life. There, students have access to detailed information on all relevant

modules. The experts highlight positively how the learning management system is used to make extensive information easily available to students. During the audit, students who have already spent a semester abroad explicitly point out that, once they returned to UNIZG FOI, they realised how good and sophisticated the learning management system at UNIZG FOI is.

Criterion 4.2 Diploma and Diploma Supplement

Evidence:

- Exemplary diploma supplement and Transcripts of Records

Preliminary assessment and analysis of the experts:

The experts confirm that the students are awarded a Diploma and a Diploma Supplement upon graduation. The Diploma consists of a Diploma Certificate and a Transcript of Records. The Transcript of Records lists all the courses that the graduate has completed, the achieved credits, grades, and cumulative GPA. The Diploma Supplement contains all required information about the degree programme including information on the programmes' objectives and intended learning outcomes.

Criterion 4.3 Relevant Rules

Evidence:

- University regulations
- Degree regulations
- Website of the Faculty
- Website of the University
- Self-assessment report

Preliminary assessment and analysis of the experts:

The experts confirm that the rights and duties of both UNIZG FOI and the students are clearly defined and binding. All rules and regulations are published on the faculty's website and hence available to all stakeholders. In addition, the students receive all relevant course material at the beginning of each semester.

The experts appreciate that the websites of the programmes include sufficient information about the intended learning outcomes, study plans, and academic guidelines and are made available to all relevant stakeholder

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 4:

The experts consider criterion 4 to be fulfilled.

5. Quality management: quality assessment and development

Criterion 5 Quality management: quality assessment and development

Evidence:

- Rulebook on Quality Assurance System
- Evaluation survey questionnaires
- Self-Assessment Report
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The quality management system covers the university's core operations, i.e. academic education, scientific research, societal interaction and support services. The main document regarding the internal quality management at UNIZG FOI is the so-called Rulebook on Quality Assurance System. The programme and each course undergo regular evaluation cycles in which all levels of the programme are evaluated and analysed. This includes surveying stakeholders, among them students and teachers, as well as evaluating statistical data of the students (assessment grades, number of graduates, etc.). The statistical data and their interpretation show that feedback is taken seriously and that the university strives toward a smoother studying process for all people involved. The students, teachers and industry representatives confirm this assumption during the audit saying that they are involved with in the ongoing development of the curriculum. Furthermore, UNIZG FOI and the programme under review regularly go through external quality evaluations and accreditations from the national body.

As described in its Self-Assessment report, UNIZG FOI has established a "Quality Assurance Committee (POK), as an advisory and expert body of the Faculty Council and the Dean, tasked with planning, coordinating, implementing, monitoring, and evaluating measures and activities within the quality assurance system at UNIZG FOI, consists of six (6) representatives of employees in scientific-teaching, teaching, and associate positions (with the condition that at least one is in an associate position), one (1) student representative, one (1) representative of the administrative and technical staff, and one (1) representative of external stakeholders (alumni, employer, etc.). [...] Committee meetings are held regularly

throughout the year, and in its work, the Committee uses an internal, protected network location and a document repository.”

Furthermore, during the audit discussions, the programme coordinators, teaching staff and students provide a comprehensive explanation of how quality management works within the programme and in general at UNIZG FOI. They confirm that all course evaluations are conducted anonymously through online surveys, which are typically available during the last week of lectures. The results of these evaluations are discussed twice a year in academic departments meetings, and the Faculty Council and Management Board must be informed of these discussions. However, during the audit, it emerged that, until recently, students had not been systematically informed of the results of these course evaluations. Whilst there is a constant informal exchange between students and lecturers, and students are certainly able to provide feedback, the results of the teaching evaluations were previously used only for internal discussions. Nevertheless, both students and lecturers report that a new evaluation system has been in place since fall 2025, which officially stipulates that, in future, lecturers must reflect on the results of previous evaluations during their lectures at the start of the new semester. The aim is therefore to make it clearer to students how their feedback has influenced further developments. This is viewed positively by all parties, and the experts also regard it as a positive step forward. As they acknowledge that this policy is already in place at the time of the audit and recognise that there is, in general, a good relationship between students and the university, they have decided not to issue any corresponding requirement or recommendation.

In summary, the experts are of the opinion that UNIZG FOI’s quality management system, guided by internal and external feedback loops, involves students, alumni and industry stakeholders and ensures a comprehensive and continuous approach to programme improvement.

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 5:

The experts consider criterion 5 to be fulfilled.

D Additional Documents

1. Table mapping the different courses to the different parts of Business Informatics: Business Fundamentals, Business Informatics, Informatics fundamentals, other fundamentals.

E Comment of the Higher Education Institution

- UNIZG FOI provides a table mapping the different courses to the different parts of Business Informatics. The HEI states that the “Mapping of courses to different areas of Business Informatics is done according to comparison of course contents with information provided in ‘Framework Recommendation for the Training in Business Informatics at Universities’ of the German Informatics Society (GI) that SSC 07 follows – courses are put in area to which, in our opinion, most part of their content belongs.”
- Furthermore, UNIZG FOI states in its comment that “[they] are aware of the challenges related to student progression within [their] study programme and are committed to addressing them as a priority. In this regard, [they] plan to conduct a comprehensive analysis aimed at identifying potential bottlenecks within the first two years of study. According to analysis results, measures how to resolve identified bottlenecks will be developed by February 2027. The results of this analysis will also serve as a foundation for the forthcoming revision of the study programme Information and Business Systems.”
- UNIZG FOI also notes that the information regarding the dormitory (page 29) was initially not entirely accurate, as it stated that UNIZG FOI was the owner of the dormitory. This was not entirely correct and has been corrected in the report accordingly.
- In addition, UNIZG FOI notes that the figures regarding student progress listed first on page 18 of the report were taken from the wrong set of statistics. For example, the report cited statistics that also included students who repeated a year. The university has therefore referred to a different set of statistics in which the progression of a single cohort can be better tracked. The figures in the report have been adjusted accordingly (see criterion 1.6).

F Summary: Expert recommendations

The experts summarize their analysis and **final assessment** for the award of the seals as follows:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Information and Business Systems	With requirements for one year	30.09.2031	Euro-Inf®	30.09.2031

Requirements

- A 1. (ASIIN 1.3, 1.5, 2) Identify potential bottlenecks within the first two study years that could lead to an extension of the duration of study, and develop a strategy to resolve them.

Recommendations

- E 1. (ASIIN 1.3) It is recommended to expand the internship regarding length and the assigned ECTS-points.
- E 2. (ASIIN. 1.3) It is recommended to reduce the number of binding pre-requisites within the programme.
- E 3. (ASIIN 2) It is recommended to increase the weighting of the final oral exam where it is especially used to test the students' theoretical knowledge.
- E 4. (ASIIN 3.1) It is recommended to introduce a dedicated programme coordinator.

G Comment of the Technical Committee 07 – Business Informatics/Information Systems

Assessment and analysis for the award of the ASIIN seal:

The TC discusses the procedure and follows the experts' assessment without any changes.

Assessment and analysis for the award of the Euro-Inf® Label:

The Technical Committee deems that the intended learning outcomes of the degree programme do comply with the Subject-Specific Criteria of the Technical Committee 04 – Informatics/Computer Science.

The Technical Committee 07 – Business Informatics/Information Systems recommends the award of the seals as follows:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Information and Business Systems	With requirements for one year	30.09.2031	Euro-Inf®	30.09.2031

H Decision of the Accreditation Commission

Assessment and analysis for the award of the subject-specific ASIIN seal:

The Accreditation Commission discusses the procedure and follows the assessment of the experts as well as the Technical Committee without any changes.

Assessment and analysis for the award of the Euro-Inf® Label:

The Accreditation Commission deems that the intended learning outcomes of the degree programme do comply with the Subject-Specific Criteria of the Technical Committee 04 – Informatics/Computer Science.

The Accreditation Commission decides to award the following seals:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation*
Ba Information and Business Systems	With requirements for one year	30.09.2031	Euro-Inf®	30.09.2031

Requirements

- A 1. (ASIIN 1.3, 1.5, 2) Identify potential bottlenecks within the first two study years that could lead to an extension of the duration of study, and develop a strategy to resolve them.

Recommendations

- E 1. (ASIIN 1.3) It is recommended to expand the internship regarding length and the assigned ECTS-points.
- E 2. (ASIIN. 1.3) It is recommended to reduce the number of binding pre-requisites within the programme.
- E 3. (ASIIN 2) It is recommended to increase the weighting of the final oral exam where it is especially used to test the students' theoretical knowledge.
- E 4. (ASIIN 3.1) It is recommended to introduce a dedicated programme coordinator.

Appendix: Programme Learning Outcomes and Curricula

According to the Diploma Supplement the following **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Information and Business Systems:

1. “Understand the state and trends in the development of contemporary information and communication technologies (ICT), understand their impact on the individual, organization and society, and assess their applicability in a given context.
2. Understand and apply key aspects of information technology (programming, algorithms, data structures, data and knowledge bases).
3. Understand and apply contemporary technical concepts and practices in information technologies (computer architecture, operating systems, computer networks).
4. Understand and apply appropriate mathematical methods, models and techniques to solving problems in the information and business systems field.
5. Understand relevant factors that affect the business operation of an organization and individuals, and apply basic methods and concepts of business planning, management and accounting.
6. Analyze the state, identify opportunities and define problems faced by organizations and individuals in implementing ICT, and formulate solutions with the use of ICT.
7. Understand the key vertical fields of ICT implementation (industry, healthcare, traffic, tourism, state, etc.) and its horizontal applications (office systems, DSS, CRM, ERP, DMS, etc.).
8. Understand and apply contemporary methodological approaches to developing organizational and information systems, and designing organizations and organizational structures.
9. Understand contemporary organizational concepts and manage organizational culture.
10. Model business processes and data in organizations, and apply models in the development organizational and information systems.
11. Understand and apply methods and techniques of information and software systems development in contemporary development environments.

12. Understand and apply processes, methods and technologies pertaining to IT services and resources management, and provisioning and support of different ICT related services.
13. Understand and apply ethical principles, legislative regulation and norms that are applied in the professional field of discipline.
14. Understand the basic principles and methods of organizational management and have the ability to successfully work in a team
15. Successfully communicate with clients, users and colleagues in speaking and writing using appropriate terminology, including the ability to communicate about one's professional field of discipline in a foreign language.
16. Keep track of professional literature in Croatian and English, prepare and independently deliver presentations in Croatian and English to professional and general public, and critically evaluate a presented professional topic.
17. Understand and apply study skills needed for lifelong learning and continuation of education at the graduate level.
18. Understand and apply basic principles of planning and development of a career in one's professional field of discipline and of one's own entrepreneurial ventures”

The following **curriculum** is presented:

1st semester:

COURSE STATUS	COURSE CODE	COURSE NAME	Semester 1	TOTAL HOURS				ECTS
				L	S	E	F	
required	214444	Information and Computer Systems	1	60	0	30		8
	214445	Mathematics 1	1	30	30	0		5
	214446	Organization	1	30	30	0		5
	214447	English for Information Technology	1	30	0	15		3
	214448	Business Communication	1	30	30	0		3
	214449	Computer Programming 1	1	30	0	30		6
	214450	Physical Education 1	1	0	0	30		0
Required courses TOTAL:				210	90	105		30
elective								
	Elective courses TOTAL:							0
Semester 1 ECTS TOTAL:								30

2nd semester:

COURSE STATUS	COURSE CODE	COURSE NAME	Semester 2	TOTAL HOURS				ECTS
				L	S	E	F	
required	214451	Databases 1	2	30	15	15		6
	214452	Mathematics 2	2	30	30	0		6
	214453	Principles of Economics for IT Specialists	2	30	30	0		5

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	214454	Operations Management	2	30	30	0		4
	214455	Business Decision Making	2	30	30	0		4
	214456	Programming 2	2	30	0	30		5
	214457	Physical Education 2	2	0	0	30		0
	Required courses TOTAL:				180	135	75	
elective								
	Elective courses TOTAL:							0
Semester 2 ECTS TOTAL:								30

3rd semester:

COURSE STATUS	COURSE CODE	COURSE NAME	Semester 3	TOTAL HOURS				ECTS
				L	S	E	F	
required	214458	Mathematical Methods for Informatics	3	45	30	0		7
	214459	Business Process Modeling	3	30	15	15		5
	214460	Operating Systems	3	30	0	30		5
	214461	Information Systems Development	3	30	15	15		7
	214462	Data Structures and Algorithms	3	30	0	30		6
	214463	Physical Education 3	3	0	0	30		0
	Required courses TOTAL:				165	60	120	
elective								
	Elective courses TOTAL:							0
Semester 3 ECTS TOTAL:								30

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4th semester:

COURSE STATUS	COURSE CODE	COURSE NAME	Semester 4	TOTAL HOURS				ECTS
				L	S	E	F	
required	214464	Computer Network	4	30	15	15		6
	214465	Operations Research	4	30	0	30		4
	214466	Introduction to Web Technologies	4	30	0	30		5
	214467	Software Engineering	4	30	0	30		6
	214468	Statistics and Probability	4	30	16	14		5
	214469	Informatics Services Management	4	30	0	30		4
	214470	Physical Education 4	4	0	0	30		0
Required courses TOTAL:				180	31	179		30
elective								
	Elective courses TOTAL:							0
Semester 4 ECTS TOTAL:								30

5th semester:

COURSE STATUS	COURSE CODE	COURSE NAME	Semester 5	TOTAL HOURS				ECTS
				L	S	E	F	
	Required courses TOTAL:							0
elective								
		Module 1: Development of software systems						
	214471	Development of Applications for Mobile and Smart Devices	5	15	15	30		6
	214472	Software Development	5	30	0	30		6

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	214473	Web Application Development	5	30	0	30		6
		1. elective course from Module 1		30	0	15		4
		2. elective course from Module 1, 2, 3, or 4		15-30	0-30	0-30		4
		3. Elective course from Module 1, 2, 3, or 4		15-30	0-30	0-30		4
		Module 1 TOTAL:		135-165	15-75	120-150		30
		<u>Elective courses for Module 1:</u>						
	214486	Software Products User Interfaces	5	30	0	15		4
	214487	Privacy and Personal Data	5	30	0	15		4
	214488	Process Oriented Applications	5	30	0	15		4
		Module 2: Networked systems and computer games						
	214474	Computer Games Development	5	30	0	30		6
	214475	Smart Organizations	5	30	15	15		6
	214476	Internet of Things Systems Development	5	30	15	15		6
		1. elective course from Module 2		15-30	0	15-30		4
		2. elective course from Module 1, 2, 3, or 4		15-30	0-30	0-30		4
		3. Elective course from Module 1, 2, 3, or 4		15-30	0-30	0-30		4
		Module 2 TOTAL:		135-180	30-90	75-150		30
		<u>Elective courses for Module 2:</u>						
	214489	Advanced Multimedia Technologies and Applications	5	30	0	15		4
	214490	Embedded Systems Development	5	15	0	30		4
	214491	Advanced Data Structures and Aglorithm Design Methods	5	30	0	15		4
		Module 3: Artificial intelligence in business						
	214477	Programming for Data Analytics	5	15	0	30		6

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	214478	Introduction to Knowledge Modelling	5	30	0	30		6
	214479	Introduction to Artificial Intelligence	5	30	0	30		6
		1. elective course from Module 3		15-30	0-15	15		4
		2. elective course from Module 1, 2, 3, ili 4		15-30	0-30	0-30		4
		3. Elective course from Module 1, 2, 3, ili 4		15-30	0-30	0-30		4
		Module 3 TOTAL:		120-165	0-75	75-165		30
		<u>Elective courses for Module 3:</u>						
	214492	Exploratory Data Analysis and Visualization	5	15	15	15		4
	214493	Databases 2	5	30	0	15		4
	214494	Knowledge Management	5	30	0	15		4
		Module 4: Analysis and design of business systems						
	214480	Introductory Business Analytics	5	15	30	15		6
	214481	IT Entrepreneurship	5	30	30	0		6
	214482	Design Thinking in Digital Transformation	5	30	30	0		6
		1. elective course from Module 4		15-30	15-30	0		4
		2. elective course from Module 1, 2, 3, ili 4		15-30	0-30	0-30		4
		3. Elective course from Module 1, 2, 3, ili 4		15-30	0-30	0-30		4
		Module 4 TOTAL:		120-165	105-180	15-75		30
		<u>Elective courses for Module 4:</u>						
	214495	Digital Marketing	5	30	15	0		4
	214496	Financial Mathematics	5	15	30	0		4
	214497	Logistic Management	5	30	15	0		4
	Elective courses TOTAL:			120-180	0-180	15-165		30
	Semester 5 ECTS TOTAL:							30

6th semester:

COURSE STATUS	COURSE CODE	COURSE NAME	6. semester	TOTAL HOURS				ECTS
				L	S	E	F	
required	214514	Internship	6	0	0	0		2
	214515	Bachelor Thesis	6	0	0	0		8
	Required courses TOTAL:				0	0	0	
elective		Module 1: Development of software systems						
	214498	Testing and Quality of Software Products	6	30	0	30		6
	214499	Information Systems Security	6	30	0	30		6
		1. elective course from Module 1		30	0	15		4
		2. elective course from Module 1, 2, 3, or 4		15-30	0-30	0-30		4
		Module 1 TOTAL:		75-165	0-30	75-105		20
		<u>Elective courses for Module 1:</u>						
	214506	Advanced Programming Concepts	6	30	0	15		4
	214507	Managing the Application of IT in Business	6	30	0	15		4
		Module 2: Networked systems and computer games						
	214500	User Interface Design	6	30	0	30		6
	214501	Interactive Systems Development	6	30	0	30		6
		1. elective course from Module 2		15-30	0	15-30		4
		2. elective course from Module 1, 2, 3, or 4		15-30	0-30	0-30		4
		Module 2 TOTAL:		60-120	0-30	75-120		20

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	<u>Elective courses for Module 2:</u>						
214508	Internet of Things Services	6	30	0	15		4
214509	Computer Game Development Platforms	6	15	0	30		4
	Module 3: Artificial intelligence in business						
214502	Artificial Intelligence for Business Applications	6	30	0	30		6
214503	Knowledge Discovery in Data	6	30	0	30		6
	1. elective course from Module 3		30	0	15		4
	2. elective course from Module 1, 2, 3, or 4		15-30	0-30	0-30		4
	Module 3 TOTAL:		105-120	0-30	75-105		20
	<u>Elective courses for Module 3:</u>						
214510	Intelligent Interactive Systems	6	30	0	15		4
214511	Parallel Programming	6	30	0	15		4
	Module 4: Analysis and design of business systems						
214504	Fundamentals of Financial Reporting and Business Plan	6	30	30	0		6
214505	Design of Modern Organizations	6	30	30	0		6
	1. elective course from Module 4		30	0-15	0-15		4
	2. elective course from Module 1, 2, 3, or 4		15-30	0-30	0-30		4
	Module 4 TOTAL:		105-120	60-105	0-45		20
	<u>Elective courses for Module 4:</u>						
214512	Communication and Virtual Teams in Organizations	6	30	15	0		4
214513	Customer Relationship Management in Digital Environment	6	30	0	15		4

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	Elective courses TOTAL:		60-165	0-105	0-120		20
	Semester 6 ECTS TOTAL:						30
	Study Programme TOTAL:						180

