ASIIN Seal & EUR-ACE® Label

Accreditation Report

Bachelor's Degree Programme and Master's Degree Programme
Civil Engineering

Provided by
University of Zagreb

Version: 26 September 2025

Table of Content

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]
Sveučilišni prijediplomski studij Građevinarstvo	Bachelor Programme; Undergraduate University Study Programme of Civil Engineering	ASIIN, EUR-ACE® Label	ASIIN 21.03.2013–30.09.2017, 01.10.2017–30.09.2018, 01.10.2018–30.09.2025.	03
Sveučilišni diplomski studij Građevinarstvo	Master Programme; Graduate University Study Programme of Civil Engineering	ASIIN, EUR-ACE® Label	ASIIN 21.03.2013–30.09.2017, 01.10.2017–30.09.2018, 01.10.2018–30.09.2025	03
Date of the contract: 03.09.2024 **Submission of the final version of the Self-Assessment Report:** 10.04.2025 **Date of the onsite visit:** 10./11.07.2025 **at:** University of Zagreb, Faculty of Civil Engineering				
Expert panel: Prof. Dr.-Ing. Dipl. Arch. Hans-Peter Leimer – University of Applied Sciences and Arts Hildesheim Prof. Dr.-Ing. Mike Gralla – Technical University Dortmund				

[1] ASIIN Seal for degree programmes; EUR-ACE® Label: European Label for Engineering Programmes
[2] TC: Technical Committee for the following subject area: TC 03 – Civil Engineering, Geodesy and Architecture

Dr. sc. Filip Anić – Structural Engineer at CroBIM Erika Raimund – University of Rijeka, Faculty of Civil Engineering	
Representative of the ASIIN headquarters: Tamina Renner	
Responsible decision-making committee: Accreditation Commission for Degree Programmes	
Criteria used: European Standards and Guidelines as of May 15, 2015 ASIIN General Criteria, as of March 28, 2023 EUR-ACE® Framework Standards and Guidelines as of November 4, 2021 Subject-Specific Criteria of Technical Committee 03 – Civil Engineering, Geodesy and Architecture as of June 26, 2020	

B Characteristics of the Degree Programmes

a) Name	Final degree (original/English translation)	b) Areas of Specialisation	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
University Undergraduate Study Programme in Civil Engineering	B. Sc.	/	6	Full time	/	6 semesters	180 ECTS	Annually, 2005/2006
University Graduate Study Programme in Civil Engineering	M. Sc.	Geotechnical engineering, construction materials, hydro engineering, structural engineering, construction management, transportation engineering, theory and modelling structures	7	Full time	/	4 semesters	120 ECTS	Annually, 2008/2009

Contextualisation

The University of Zagreb, founded in 1669, is the oldest and largest university in Croatia and South-Eastern Europe. Established as a Jesuit Academy and later reconstituted as a modern university in 1874, it has since developed into a comprehensive public institution covering all scientific fields. Today, it comprises 29 faculties, three art academies and the University Centre for Croatian Studies, enrolling more than 70,000 students and employing nearly 8,000 staff. With its broad spectrum of programmes at undergraduate, graduate and postgraduate level, the University is, according to its website, the flagship educational institution in Croatia. It contributes more than half of the country's total research output and is a central driver of scientific and technological innovation, with a strong focus on master's and doctoral programmes, interdisciplinarity and knowledge transfer.

For the institutional profile of the Faculty of Civil Engineering, the university states on its website:

[3] EQF = The European Qualifications Framework for lifelong learning

"The Faculty of Civil Engineering of the University of Zagreb is the oldest civil engineering faculty in Croatia, with active lectures starting in 1919 under the Technical College. Since then, it continually develops and advances higher education, scientific research activities and overall education, and actively participates in the development of the profession and in implementation of new technologies. It has a valid ASIIN international accreditation and, furthermore, it has an extensive experience in the work on research, educational and networking projects. Our vision is to retain and strengthen the leading position as a civil engineering faculty and scientific research centre in the country; to achieve international recognition by developing a culture of exemplary quality higher education and research work by implementing best European and worldwide practices; and to retain and strengthen cooperation with business sector in high-expertise areas and on development projects, specialised life-long higher education programmes, and in the development of an alumni network for mutually beneficial support and progress."

Summary of the Experts' Assessment

The experts acknowledge the high quality of the two civil engineering programmes offered at the University of Zagreb. They highlighted the university's long-standing tradition and reputation, supported by well-maintained, newly renovated buildings and modern, well-equipped laboratories. The well-established Bachelor's and Master's programmes in Civil Engineering, complemented by motivated teaching staff and excellent industry contacts, were seen as a major strength. The experts noted a significant improvement in cooperation with industry since the last accreditation, which, together with the university's positive learning environment, fosters strong student identification with the institution. Graduates are highly regarded in the professional field, reflecting the quality and relevance of the programmes.

In addition to the many strengths of the programmes, the experts also identified several aspects where further development is necessary. They point out that the recognition of credits obtained at other higher education institutions must be regulated in accordance with the Lisbon Recognition Convention, ensuring a transparent and student-friendly procedure. Moreover, all compulsory modules, including physical education and health culture, need to be awarded ECTS credits, and the workload of the Bachelor's programme needs to be organised in a way that allows students to complete their studies within the standard period of time. The final theses at both levels require a clearer academic profile, with greater scientific depth and a stronger link to independent research. The Diploma Supplement needs to be complemented by statistical data on grade distribution to enhance transparency. With regard to the curriculum, the panel considers it important to make modern aspects such as digitalisation, BIM, sustainability, contract management and refurbishment of existing buildings more visible in course titles and module descriptions. They

also underline the importance of integrating practical training more extensively, strengthening the development of soft skills, and offering a broader range of courses in English. Finally, the quality assurance system needs to be implemented more consistently, with regular evaluations of courses, systematic communication of the results to both lecturers and students, and clear evidence that the findings from surveys and tracking are used for the further improvement of the programmes.

Brief Descriptions of the Study Programmes

For the Bachelor's degree programme in Civil Engineering, the university has presented the following profile in the Self-Assessment Report (SAR):

"Teaching in the undergraduate program started in the academic year 2005/2006, while the first generation of students enrolled in the graduate program in the academic year 2008/2009. Following the reaccreditation processes conducted by the Agency for Science and Higher Education, accreditations were renewed in November 2012 and December 2018. […]

The university undergraduate study program lasts for three years (six semesters). Upon completion, students acquire 180 ECTS credits. […] The undergraduate program in Civil Engineering is an integrated program, without specializations. It consists of a fundamental part (natural science, mathematics, and basic technical subjects) and a main part (professionally oriented subjects covering all branches of civil engineering and several courses outside the field of civil engineering, but applicable in civil engineering). Along with fieldwork and a final exam, it provides students with professional and scientific foundations for further education at the graduate level. For those who choose to enter the workforce after completing their undergraduate studies, it offers expertise in managing smaller construction projects, dimensioning smaller construction structures, and participating in the planning, design, construction, and supervision of larger construction projects, as well as in the maintenance of complex buildings.

Graduates of the undergraduate or graduate programs are employed in companies involved in the design, construction, and supervision of hydraulic, geotechnical, and transportation infrastructure projects, as well as in high-rise construction. They can also find employment in state and local government in planning or infrastructure management roles, in commerce in construction-related positions, in project planning, and in management roles in construction-related companies, and similar fields."

For the Master's degree programme in Civil Engineering the university has presented the following profile in the Self-Assessment Report:

“The graduate program lasts for two years (four semesters), and upon its completion, students earn 120 ECTS credits. The graduate program is open to individuals who have completed a university undergraduate program in civil engineering, and under additional conditions (credit transfer courses), to those who have completed a university undergraduate program in related technical sciences or a professional program in civil engineering.

The university graduate program in civil engineering offers seven specializations: geotechnical engineering, hydroscience and engineering, structures, materials, construction management, transportation engineering, and structural theory and modeling.

The aim of the program is to effectively master one of the mentioned civil engineering disciplines, preparing students for advanced professional roles in that field (such as planning, designing, constructing, supervising, and maintaining complex civil structures, projects, and systems) or for development and scientific research in the chosen branch of civil engineering. The curriculum is in line with the latest advancements in civil engineering and is regularly updated. In addition to core mathematical and social-humanistic subjects, students take fundamental and specialized courses to achieve specialization. Besides compulsory courses, students, depending on their interests, enroll in elective courses to broaden their professional knowledge (not only in their chosen field but also in other specialties), as well as in mathematics, physics, and foreign languages (with an emphasis on the profession).

Graduates of the undergraduate or graduate program find employment in companies involved in designing, construction, and supervision in the implementation process of hydraulic, geotechnical, and transportation structures, as well as in high-rise buildings. They can also be employed in government and local administration in planning or infrastructure management roles, in commercial sectors related to construction, in project planning, and in managerial positions in construction-related companies, among others.”

C Expert Report for the ASIIN Seal[4]

1. The Degree Programmes: Concept, Content & Implementation

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

Evidence:

- Self-Assessment Report
- Programme websites (Undergraduate and Graduate)
- Diploma Supplements
- Module handbooks
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The experts refer to the Subject-Specific Criteria (SSC) of Technical Committee 03 – Civil Engineering, Geodesy and Architecture as the basis for assessing whether the intended learning outcomes of the Bachelor's and Master's degree programmes in Civil Engineering at the University of Zagreb correspond to the competences outlined in the respective SSCs.

In general, the experts note that the programme learning outcomes are clearly described and publicly accessible on the programmes' websites and the Diploma Supplements, as well as in the Self-Assessment Report (SAR). They confirm that the intended learning outcomes are transparently formulated, published, and available to students, lecturers, and other interested parties. They also agree that the learning outcomes are described in a clear and concise manner. The learning outcomes are displayed in the appendix.

According to the learning outcomes, graduates of the Ba Civil Engineering acquire a solid foundation in recognising and describing engineering problems, understanding the interplay between design, construction, client requirements, and the societal and environmental impact of civil engineering. They are able to apply knowledge from mathematics,

[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.

science, and technology to prepare and conduct experiments, analyse and interpret results, and use modern computational tools for calculations, simulations, and basic structural design of medium-sized buildings. The programme fosters the capacity to critically evaluate arguments and data to make informed decisions and develop creative solutions. Graduates are equipped to participate in the planning, design, execution, supervision, and maintenance of construction works, communicate effectively with both expert and non-expert audiences, and produce technical documentation using current digital tools. They are prepared for lifelong learning, capable of adapting to technological and methodological advances, and demonstrate a strong ethical commitment in addressing engineering challenges.

For graduates of the Ma Civil Engineering, the intended learning outcomes state that they demonstrate a comprehensive understanding of phenomena and problems within their chosen specialisation and possess advanced professional knowledge and skills in the field. They are capable of planning, designing, constructing, supervising, and maintaining complex structures, with particular attention to stability, safety, usability, environmental protection, and cost efficiency. The programme develops their ability to analyse and solve complex engineering problems, adopt an analytical and research-based approach, and manage professional, developmental, and research projects. Graduates can assess the social context of construction projects, contribute to innovation, and guide the development of the profession in line with advances in related disciplines. They communicate effectively with colleagues, find solutions to technical and interpersonal challenges, make informed high-level decisions, and operate successfully in international and multicultural settings. Committed to lifelong learning, they continually update their professional expertise, accept responsibility for their decisions, and engage in interdisciplinary collaboration.

Based on the documentation provided, the experts confirm that the objectives and intended learning outcomes adequately reflect EQF levels 6 (Bachelor) and 7 (Master) and meet the ASIIN Subject-Specific Criteria of Technical Committee 03. Overall, the reviewers consider that the targeted skill profiles of the two programmes enable graduates to pursue appropriate professional opportunities both within Croatia and internationally, a view that was likewise confirmed by the industry representatives.

Furthermore, since the University of Zagreb applied for the EUR-ACE® label for both programmes, the experts verify that the learning outcomes align with the EUR-ACE® Framework Standards and Guidelines (EAFSG) for engineering programmes, covering all seven competence areas: Knowledge and Understanding, Engineering Analysis, Engineering Design, Investigations, Engineering Practice, Making Judgements, Communication and Teamworking, and Lifelong Learning. The SAR and the module handbook illustrate that the degree programmes under review cover all the required competence areas, such as

engineering analysis, design, and practice, as well as communication and team-working skills. The experts are convinced that the mentioned competences are conveyed in the respective courses. They conclude that the intended learning outcomes of both programmes are aligned with the EAFSG.

The positive impression formed by the expert panel is also shared by the industry representatives involved in the audit. They confirm that the learning outcomes are well aligned with labour market requirements and that graduates of the University of Zagreb's Civil Engineering programmes are in high demand. The reviewers commend the university's mechanisms for incorporating feedback from internal and external stakeholders into the regular review and development of the intended learning outcomes, particularly noting the strengthened cooperation with industry as a clear improvement since the last accreditation and as evidence of the successful implementation of previous review recommendations. This closer collaboration not only ensures that the programmes remain relevant to current professional practice, but also provides students with valuable opportunities for practical engagement and exposure to real-world projects.

The university explains in the SAR that the reformed undergraduate study in civil engineering focuses on the scientific foundations of the discipline while also covering essential professional knowledge for students who may enter the labour market after graduation. The panel questioned whether graduates could successfully start a career without a Master's degree. The university responded that, according to the Chamber of Civil Engineering, membership—and thus full professional recognition—requires a Master's degree, and that the Bachelor's programme is intended to provide fundamental knowledge which is then further developed and specialised in the Master's. The university explains that while most students continue directly to a Master's degree, many are already employed by the end of their bachelor's studies. Discussions with industry representatives confirmed a higher demand for Master's graduates, but also some positions in which a Bachelor's degree is sufficient. The panel is satisfied with this approach, noting that it remains important for both programmes to be independent and provide professional qualifications, and that the university is making appropriate efforts in this regard.

In conclusion, the experts find that the objectives and intended learning outcomes of both programmes are briefly and concisely described, transparently published, and aligned with the relevant academic and professional standards. They effectively prepare graduates for

professional roles at the respective qualification levels, and their continued relevance to labour market is ensured through regular review processes involving key stakeholders.

Criterion 1.2 Name of the Degree Programmes

Evidence:

- Self-Assessment Report
- Diploma Supplements

Preliminary assessment and analysis of the experts:
In the SAR, the university explains that the Faculty Council of the University of Zagreb, Faculty of Civil Engineering, decided at its 236th regular session on 8 February 2023 to align the names of its study programmes and the corresponding academic titles with the current Law on Higher Education and Scientific Research. As a result, the undergraduate programme is now titled *University Undergraduate Study Programme in Civil Engineering* (academic title: *University Bachelor of Science in Civil Engineering*, abbreviation: univ. bacc. ing. aedif.), and the graduate programme is titled *University Graduate Study Programme in Civil Engineering* (academic title: *University Master of Science in Civil Engineering*, abbreviation: univ. mag. ing. aedif.).

The expert panel confirms that the official Croatian and English names of the two degree programmes correspond to the intended aims, the defined learning outcomes, and the academic content of each programme. They are used consistently across all relevant documents and online resources.

The programme names reflect terminology commonly used within the international engineering community and are thus easily recognisable to both academic and professional stakeholders. The core curricula and elective modules clearly align with the subject areas indicated in the respective degree names, ensuring that graduates possess the competence profiles implied by the titles. No evidence was found of misunderstandings among students, employers, or other stakeholders regarding the scope or content of the programmes.

Criterion 1.3 Curriculum

Evidence:

- Self-Assessment Report

- Programme handbook (University Undergraduate and Graduate Study in Civil Engineering. Study Programmes with Learning Outcomes)
- Objectives-module matrices
- Module handbooks
- Development Strategy 2024–2029
- Rulebook on International Mobility
- The Rulebook on the System of Quality Assurance
- Discussions during the audit

Preliminary assessment and analysis of the experts:
Content and Structure of the Programmes

The Ba Civil Engineering is designed as a three-year full-time programme (six semesters, 180 ECTS). It combines a broad foundation in mathematics and natural sciences (e.g. mathematics, descriptive geometry, physics, statistics, information science) with core engineering disciplines (mechanics, statics, material science, strength of materials, fluid mechanics) and professionally oriented courses covering all branches of civil engineering (e.g. concrete and masonry structures, roads, railroads, hydrology, construction organisation, metal, timber and light structures, bridges, hydraulic constructions). This structure ensures, according to the SAR, that students acquire both the scientific fundamentals for continuation at graduate level and professional knowledge for immediate employability.

The programme does not include a predefined specialisation track. Instead, students are offered a broad range of elective courses which allow for individual academic profiling. These options include not only technical electives in different subfields of civil engineering, but also language courses such as *English in Civil Engineering* or *German in Civil Engineering*. In addition, students are required to complete four modules in *Physical Education and Health Culture* (1–4) during their studies.

Practical training is integrated in the sixth semester through the compulsory course *Education on Construction Site* (3 ECTS). The course combines laboratory and construction exercises with extensive field practice amounting to 36 hours on active building sites. Students become acquainted with technologies, techniques, organisational structures and work processes across various branches of construction, such as high-rise buildings, hydraulic structures and traffic infrastructure. They are required to document their experiences in a seminar paper, thereby linking hands-on practice with academic reflection.

The Ma Civil Engineering lasts two years (four semesters, 120 ECTS) and offers seven specialisations: geotechnical engineering, construction materials, hydraulic engineering,

structures, construction management, transportation engineering, and theory and modelling structures. It aims to enable students to master one of these disciplines and qualify for complex professional tasks, independent engineering practice, and/or further scientific advancement. In addition to compulsory courses, students can enrol in elective courses according to their interests in order to broaden their professional knowledge, both within and beyond their chosen field of specialisation, as well as in mathematics, physics, and foreign languages. In the first semester, students are furthermore introduced to academic working techniques through a compulsory course in *Research Methods.*

Within the Master's programme, the specialisation *Construction Organisation* includes the compulsory course *Construction Site Practice* (6 ECTS) in the fourth semester. Students spend more than 54 hours on a selected construction site where they take responsibility for organising works, procuring materials, planning execution and coordinating staff. This advanced practical component ensures that students can manage real-life projects and apply their acquired knowledge in practice. The module concludes with a seminar paper and presentation of the processes observed, and it is also open as an elective for students of other specialisations.

A graphical overview of the curricula for Bachelor's and Master's programmes can be found in the Appendix.

According to the university, the alignment of the curriculum with the intended learning outcomes has been ensured through a comprehensive matrix of learning outcomes, which verifies the contribution of each course to the overall programme outcomes. In this way, as the experts confirm, the content and structure of the curricula of both programmes systematically prepare students to achieve the intended learning outcomes at both study levels. Each module forms a coherent unit of teaching and learning, with transparent specification of the knowledge, skills, and competences to be acquired. The order of modules ensures that the learning outcomes can be achieved.

The experts consider the curricula to represent rather classical and traditional Civil Engineering study programmes, a profile that is in line with the prestigious standing and long academic tradition of the university. However, they note that certain important topics are not sufficiently visible, namely digitalisation/data management/BIM, sustainability and certification, contract management and new forms of civil contracts, as well as refurbishment of existing buildings, including historical buildings and monuments. In discussions with programme coordinators and teaching staff, the university confirmed that these aspects are regarded as important and are indeed covered in the curriculum but admitted that this is sometimes not evident from the course titles and module descriptions. While smaller updates to the content are made, these are not consistently documented in the written

module descriptions. The panel believes that it would be beneficial to make the modern aspects of the study programmes more explicit, especially since sustainability and digitalisation are key trends that might otherwise be overlooked and could even discourage prospective students. In this context, the experts also note that the module titles could be more closely aligned with international terminology and practices. The university also acknowledged that adapting course titles could help in this regard. Therefore, the experts recommend that the names of the courses and the module descriptions should adequately reflect their content.

The experts also inquired about the integration of soft skills into the curricula. Students explained that optional courses are available but expressed the wish for these to become a compulsory part of their studies. Representatives of the business community likewise emphasised the need for graduates to further develop such competences. In light of this feedback, the panel recommends to offer more and mandatory courses on soft skills.

When discussing the use of English in the study programmes, the panel asked the teaching staff present during the audit how many of them are currently offering courses in English. Some lecturers expressed the wish that the university should increase such opportunities, noting that Croatian students are also interested in attending classes in English. It was further explained that, when Erasmus students are present, modules can be prepared in English on demand; however, this is not formally recognised in the lecturers' workload. In some cases, English teaching material is used while the classes are held in Croatian and only the final presentation is delivered in English, a gradual approach that received very positive feedback. In the on-site student survey, 46% of students indicated satisfaction with the current extent of English in their programme, while 38% expressed the wish for more. Industry representatives likewise highlighted the importance of foreign languages and, in particular, technical English. The experts share this view, stressing the relevance of English in light of numerous international partnerships, and therefore recommend expanding the number of courses offered in English.

The experts also took a particular interest in the practical training opportunities offered to students. At the Bachelor's level, the mandatory component is the compulsory course *Education on Construction Site*. However, students expressed dissatisfaction with this element during the discussions. They explained that the course comprises only a few days of visits to various construction sites, which they considered a useful introduction but not equivalent to a genuine internship. Students expressed the wish for more extensive mandatory practical training, a demand that was likewise welcomed by the industry representatives. According to the SAR, the faculty is aware of the need to introduce mandatory student internships at both undergraduate and graduate level and has included respective measures in its Development Strategy 2024–2029. The experts welcome this

acknowledgement of a need for action. They also emphasise that practical experience is of particular importance for future civil engineers, as the discipline cannot be learned exclusively in the classroom. Therefore, the experts recommend integrating compulsory practical components into the curriculum on a broader scale.

In conclusion, the experts find that the Bachelor's and Master's programmes in Civil Engineering are well-structured, coherent and rooted in a strong academic tradition. At the same time, they recommend making modern aspects such as digitalisation, sustainability, contract management and refurbishment more visible in the curriculum, strengthening the integration of soft skills, expanding the offer of courses taught in English, and broadening the scope of mandatory practical training.

Student Mobility

The university explains in the SAR that the Faculty of Civil Engineering enables and actively encourages semester mobility of both its outgoing and incoming students through the Erasmus programme. International student mobility is regulated by specific agreements between higher education institutions and by the Rulebook on International Mobility. The recognition of study periods spent at another institution is conducted by a dedicated committee appointed by the Faculty Council.

In the SAR, the university further states that international cooperation at the faculty is directed towards fostering relations with partner institutions worldwide, promoting mobility, and encouraging participation in international programmes and projects in the field of higher education. The Office for International Relations and Cooperation provides support to students as well as teaching and non-teaching staff in all mobility-related activities. Four priority areas of international cooperation have been defined: student and staff mobility, international scientific research and technological projects, professional projects and EU programmes, as well as cooperation at the level of faculty management and departments. In line with the University's strategy, the faculty engages in agreements with partner institutions across the EU and third countries in the fields of education, training, lifelong learning, mobility, research, innovation, technology transfer, and capacity building. These activities are implemented through national and EU programmes, such as Academic Mobility of the University of Zagreb, Bilateral University Exchange, and ERASMUS+, among others.

From the SAR, the panel learned that the total number of students participating in mobility programmes in the past five academic years amounted to 43 outgoing and 25 incoming students. Most of these exchanges lasted for more than three months. The experts asked the university whether there are specific obstacles that prevent more students from participating in mobility programmes. The programme coordinators explained that mobility numbers had never been very high, but they dropped even further after the COVID-19

pandemic. In their view, students show only limited interest in mobility opportunities. Nevertheless, the faculty reported that it is working to improve the framework conditions and has already prepared some steps, such as strengthening recognition procedures and offering additional financial support.

At the same time, the experts received feedback from students that recognition of credits obtained abroad remains difficult in practice, which significantly reduces motivation to study abroad. Although the institution states in the SAR and in the Rulebook on International Mobility that rules and procedures for recognition are in place, they do not seem to function effectively in practice. The panel considers this a significant disadvantage for students and concludes that the system is not yet sufficiently developed. The programme coordinators themselves acknowledged this problem and admitted that further effort is required. The experts conclude that it is necessary to define the rules for the recognition of credits acquired at other higher education institutions in accordance with the Lisbon Recognition Convention.

When asked about incoming mobility, the programme coordinators explained that efforts are made to encourage teachers to offer more courses in English. However, they pointed out that they cannot oblige staff to do so, and that the main language of instruction remains Croatian. This finding reinforced the experts' recommendation to expand the number of courses offered in English in order to make the programme more accessible for international students and to better prepare domestic students for the international labour market.

Overall, the panel acknowledges the faculty's commitment to fostering international mobility and cooperation. However, the number of outgoing and incoming students remain low as practical obstacles to the recognition of credits acquired abroad significantly hinder student participation. The experts consider it necessary for the university to implement transparent and effective recognition procedures in line with the Lisbon Recognition Convention. In addition, the limited offer of courses in English might be one reason that constrains incoming mobility. The panel therefore sees substantial room for improvement in both the recognition system and the provision of English-taught courses as measures to foster international student mobility.

Periodic Review of the Curriculum

The SAR states that the curriculum of the Bachelor's and Master's programmes in Civil Engineering is subject to periodic review. Since their initial accreditation, the study programmes have undergone four rounds of revision. In 2011, amendments were made to both the Bachelor's and the Master's curriculum; in 2012, the undergraduate curriculum was modified with regard to the ECTS points allocated to the final examination; and in 2021,

all seven master's specialisations were revised, including the introduction of new elective courses and changes to the contents and timing of compulsory modules. Examples include the introduction of courses on Building Information Modelling (BIM) and on structural design in seismically active areas in response to recent earthquakes. The most recent amendments to the study programme, implementation plan and course connections are documented and published in the 2024 volume "Study Programs with Learning Outcomes".

According to the SAR, the processes for developing new programmes and continuously improving existing ones are clearly defined and systematically implemented. They involve both internal and external stakeholders and are documented in the Rulebook on the System of Quality Assurance. Informal and formal feedback from employers, alumni and students is used to align learning outcomes with labour market needs. This includes a survey on employability among alumni, as well as reviews of student surveys on the performance of graduate and undergraduate studies.

In discussions, the university explained that regular curricular changes of up to 20 % are possible at any time. In such cases, the names of courses and the module descriptions may remain unchanged, but module contents are regularly updated on a smaller scale.

The experts are pleased to note that the Faculty of Civil Engineering systematically considers feedback from a range of stakeholders when reviewing its programmes and that it maintains close links with industry. Overall, the panel concludes that a structured process for the regular review and continuous improvement of the curriculum is in place. At the same time, the experts emphasise that all programme documents, in particular the module descriptions, should be updated consistently to ensure that curricular changes are clearly visible (see Criterion 1.3 Content and Structure of the Programmes).

Summarising, the experts consider the periodic review of the curriculum to be adequate, but see room for improvement in the transparent documentation of the implemented changes.

Criterion 1.4 Admission Requirements

Evidence:

- Self-Assessment Report
- Statute of the University of Zagreb
- Statute of the University of Zagreb Faculty of Civil Engineering

- Ordinance on Studying on the Undergraduate and Graduate Studies on the University of Zagreb Faculty of Civil Engineering
- The Rulebook on the System of Quality Assurance
- Website of the study programmes
- Website of the National Information System for Applications to Higher Education Institutions
- Discussions during the audit

Preliminary assessment and analysis of the experts:
Enrolment in undergraduate and graduate studies at the Faculty of Civil Engineering takes place through a competition procedure in line with the criteria published by the university. The admission process is explained in detail on the university's official website and the website of the National Information System for Applications to Higher Education Institutions. Admission to undergraduate studies is based on the results of the state graduation exam and a defined scoring system that includes high school performance and exam results, with direct admission possible for candidates achieving top results in national competitions in mathematics, physics, or civil engineering technology.

Admission to the graduate programme is granted to candidates holding a Bachelor's degree in Civil Engineering. Graduates of related technical sciences or of professional programmes in civil engineering may also be admitted, provided they complete additional credit transfer courses.

Enrolment quotas for undergraduate and graduate studies are determined by the Faculty Council and confirmed by the University Senate. Special quotas exist for Croatian nationals outside Croatia and, in recent years, for citizens of Ukraine under temporary protection. In line with national regulations, students with disabilities may enrol outside the quota, and individual adaptations to teaching and examinations are provided where necessary without compromising academic standards. Progression within the programme is regulated by the Statute of the University of Zagreb, which defines conditions for advancement, prerequisites, and the enrolment process.

The intake capacity per annual cohort is set at a maximum of 240 students for the Bachelor's and 203 students for the Master's programme. In recent years, the average size of the entering cohorts has been around 239 students in the Bachelor's and 172 students in the Master's programme. On average, 110 students graduate from the Bachelor's and 162 from the Master's programme per cohort.

In the discussion, the university representatives explained that interest in civil engineering has significantly increased in recent years, particularly after the 2020 earthquake, which

highlighted the importance of the profession. Civil engineering has since become the fourth most demanded study programme in Croatia, following only electrical engineering, medicine, and economics. This indicates a comparatively high drop-out rate at the Bachelor's level. Students reported that they perceive the programme as particularly demanding, which they identified as one of the main reasons for discontinuation. Further aspects of this issue are discussed under Criterion 1.5 Workload and Credits.

The experts note with satisfaction that the admission requirements and procedures at the Faculty of Civil Engineering are clearly defined, transparent, and binding. The system of admission through a central competition procedure ensures equal treatment of applicants, and the criteria published by the university guarantee that students possess the necessary prior knowledge to complete their studies successfully. The experts commend the faculty for ensuring that students with disabilities are supported through individual adaptations, thereby safeguarding equal opportunities without compromising academic standards.

Overall, the experts are convinced that the admission regulations at the Faculty of Civil Engineering are appropriate and provide a solid foundation for students to successfully progress and graduate from their chosen programme.

Criterion 1.5 Workload and Credits

Evidence:

- Self-Assessment Report
- Analytical supplement to the SAR
- Module handbook
- Programme websites (Undergraduate and Graduate)
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The university explains in the SAR that the workload is calculated in line with the Croatian *Act on Higher Education and Scientific Activity*, which stipulates that one ECTS credit corresponds to 30 hours of student work.

The Bachelor's programme comprises a total of 180 ECTS credits, corresponding to 5,400 hours of student workload, of which 2,160 hours are scheduled instruction and 3,240 hours are allocated to independent study. The Master's programme comprises 120 ECTS credits, corresponding to 3,600 hours, with 1,200 hours of direct instruction and 2,400 hours of

independent study. Students achieve a total of 300 ECTS credits by the time a Master's degree is awarded.

Full-time students normally enrol in 25 to 35 ECTS credits per semester, depending on their progress within the programme. Credits are awarded only upon the fulfilment of all course requirements and successful completion of assessments. All mandatory parts of the programme carry credits, with the exception of *Physical Education and Health Culture* 1–4.

The experts expressed concern that there are compulsory modules which do not carry ECTS credits. In the discussions with the programme coordinators, they learned that the university allows faculties to decide whether or not to assign credits to these modules. Since these modules nevertheless create workload for students and the accreditation criteria stipulate that credits must be awarded for every module based on the respective workload, the panel was not satisfied with the current practice. The experts therefore require the university to ensure that all compulsory modules, including physical education and health culture, are awarded ECTS credits.

The workload in the Bachelor's programme is evenly distributed across the six semesters. Students complete 30 ECTS credits in each of the first four semesters, 29 ECTS in the fifth semester, and 31 ECTS in the final semester. In the Master's programme, the allocation of ECTS credits per semester varies slightly between the seven specialisations; the detailed distribution is presented in the table below.

Module (Specialisation) - ECTS	Semester				
	1	2	3	4	Total
Geotechnics	30	Min 27	Min 33	30	120
Hydro engineering	30	30	30	30	120
Structural engineering	30	30	30	30	120
Construction materials	30	30	30	30	120
Construction management	30	30	28.5	31.5	120
Transportation engineering	30	30	30	30	120
Theory and modelling of structures	30	30	30	30	120

It was noted that in the Geotechnics specialisation the workload in the third semester is comparatively high, with at least 33 ECTS credits. Although no complaints have been raised by students in this regard, the panel encourages the university to consider a more balanced distribution of workload across semesters.

In the discussions, the students confirmed that the Master's programme is very well manageable, whereas the Bachelor's programme is considered particularly demanding. This impression is supported by statistics, which show that very few students complete the Bachelor's degree within the standard period of study; most require about two additional

semesters. In addition, the drop-out rate in the Bachelor's programme is notably high. The panel raised this issue with the programme coordinators, asking how the students should be able to cope with the extensive amount of content within the standard period of study. The coordinators acknowledged that the programme is demanding but still manageable, noting that the problem is common to all technical programmes at the University of Zagreb. They explained that measures have already been taken, for instance by reducing the number of examinations and revising course connections to facilitate enrolment. Nevertheless, the experts emphasise that it must be ensured that the workload required for the Bachelor's degree is feasible within the standard period of study, and they note that the effectiveness of the measures taken so far remains to be demonstrated.

According to the SAR, the Faculty of Civil Engineering has only recently introduced systematic workload surveys to ensure that the allocation of ECTS credits corresponds to the actual student workload. The first survey was conducted in the summer semester 2023/2024 and covered modules from the previous winter semester of the undergraduate programme. Students who had attended these courses were asked to provide feedback on the workload. The same procedure was repeated in the following winter semester for modules of the summer term. A comprehensive analysis was prepared by the Vice-Dean for Education and the President of the Committee for Quality Assurance and Improvement, while individual analyses were forwarded to the respective course lecturers. On the basis of these results, the faculty intends to adjust the allocation of ECTS credits where necessary in order to ensure alignment between workload and credit points.

The experts welcome the introduction of these workload surveys and regard them as an important step towards ensuring the adequacy of the credit allocation. In particular, they consider this measure necessary to monitor whether the workload in the Bachelor's programme may be too demanding and to identify where adjustments are required. The surveys provide a valuable tool to verify the current allocation of workload and, where necessary, to rebalance it in a more realistic way.

In conclusion, the experts confirm that the ECTS system based on student workload is properly implemented. They stress, however, that although the overall credit and workload structure complies with national regulations, the Bachelor's programme appears overly demanding and still includes compulsory courses without ECTS credits. The university must therefore ensure that all mandatory courses are awarded credits and that the workload is realistically manageable within the standard period of study. In this regard, a systematic workload evaluation is crucial and the panel welcomes the recent introduction of workload surveys as an important step towards better monitoring and adjustment.

Criterion 1.6 Didactic and Teaching Methodology

Evidence:

- Self-Assessment Report
- Module handbook
- ASIIN student survey
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The Faculty of Civil Engineering pursues a didactic concept that balances instructor-led teaching with student-centred learning. The approach is designed to ensure the achievement of programme objectives, the attainment of intended learning outcomes, and the acquisition of the planned level of competences.

A wide variety of teaching and learning methods are employed, including lectures, exercises, seminars, project work, laboratory classes, field trips, and research paper instruction, culminating in the Bachelor's and Master's theses. Lectures provide scientifically based knowledge, complemented by specialised methods, while exercises are designed to familiarise students with professional practices and problem-solving. Exercises are differentiated into auditory exercises (up to 50 students), design exercises (10 students), and construction exercises (8 students). Seminars, design seminars, and laboratory classes strengthen research skills and independent work. Field trips to ongoing construction projects, funded by the faculty, serve to connect theoretical content with professional practice. Practical competences are further developed through laboratory training and work in computer classrooms, where students use specialised software for engineering applications.

Staff development is an integral element of the didactic strategy. Faculty members regularly attend workshops on teaching competences organised by the university itself or institutions such as Srce, the Computing Centre, and the Career Centre. In 2024, for example, a workshop on the "flipped classroom" method was held. These initiatives are complemented by the faculty's participation in the e-Universities project, which promotes hybrid teaching and the use of modern digital tools.

The faculty has an established evaluation system, which also includes regular analyses of teaching performance. According to the ASIIN student survey, 77% of students rated their teachers with the highest or second-highest grade for teaching skills, confirming the overall effectiveness of the didactic concept.

In the discussions, the teaching staff confirmed that they are able to apply didactical instruments and methods they consider most effective, including project-based learning and service-based learning (bringing students on site). While more extensive use of project-based learning would be desirable, the faculty explained that this is limited by available resources, though efforts are underway to expand such approaches. The teachers also described their use of online teaching formats, in particular the reversed classroom principle, where students prepare at home with online material and then discuss results in class; however, exclusive online courses are not permitted.

The experts confirm that a variety of teaching methods and didactic means are in use and that there is an adequate balance between contact hours and self-study time. They also welcome the integration of online support, the reflective engagement of staff with teaching methodology, and the ongoing efforts to further develop didactic practice.

In conclusion, the panel commends the variety and appropriateness of the teaching methods applied, notes the high level of student satisfaction, and finds no shortcomings in this regard. The experts confirm that the approach is suitably designed to secure the achievement of the intended learning outcomes.

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

In response to the experts‘ criticism that the recognition of credits obtained at other higher education institutions must be designed as a transparent and student-friendly procedure, the university states that the recognition of ECTS credits is already carried out in line with the Lisbon Recognition Convention. It acknowledges, however, the challenges associated with credit recognition, particularly due to partial differences in course content between its institution and other universities. To address this issue, the university is currently in the process of adopting regulations aimed at facilitating and streamlining recognition procedures. The experts welcome these efforts and see the institution on a good path, but since the implementation of a fully transparent and student-friendly process has not yet been completed, they maintain the requirement.

In response to the experts’ criticism that modern aspects such as digitalisation, BIM, sustainability, contract management, and the refurbishment of existing buildings should be made more visible in course titles and module descriptions, the university explains that these aspects are already incorporated into several courses and further detailed in two supplementary documents (D1 and D2) addressing Building Information Modeling (BIM) and sustainability. Additional relevant topics, including digitalisation, contract management, and the refurbishment of existing buildings, are also integrated into the curriculum.

Faculty members continuously introduce new topics into their lectures to ensure alignment with contemporary developments in the field. The experts welcome the fact that these important topics are embedded in the curriculum and that their integration is further demonstrated in the supplementary documents on BIM and sustainability. However, they maintain their view that the visibility of these aspects is not sufficiently reflected externally. In their opinion, this is not a substantive issue but rather a matter of presentation in the naming of modules. They therefore uphold their recommendation that module titles be revised to adequately reflect their content.

2. Exams: System, Concept and Organisation

Criterion 2 Exams: System, Concept and Organisation

Evidence:

- Self-Assessment Report
- Statute of the University of Zagreb
- Statute of the University of Zagreb Faculty of Civil Engineering
- Ordinance on Examination Regulations for Bachelor's and Master's Thesis
- The Ordinance on the Amendments to the Ordinance on Examination Regulations for Bachelor's and Master's Thesis
- Module descriptions
- Sample exams and theses
- Discussions during the audit

Preliminary assessment and analysis of the experts:

According to the SAR, the examination system at the Faculty of Civil Engineering is based on the continuous assessment of students' competences and learning outcomes. Written examinations constitute the dominant form, but in some modules oral components are added to ensure the quality of evaluation. Additional methods, such as seminar papers, laboratory exercises, design projects or field work, complement the written exams but are of more limited scope. Continuous assessment is ensured through preliminary exams during the semester, allowing students to complete part of the course requirements before the final exam. The different examination components, their formats and weighting are outlined in the module handbooks. Only students with duly signed modules in their digital student records are entitled to sit end-of-semester examinations.

The academic year is structured into three examination periods (winter, summer, and fall), with two exam dates per course offered in each period. Students also have the opportunity to pass modules through pre-exams during the semester. Attendance is compulsory: students must attend at least 75% of lectures and 100% of exercises. Examination and teaching implementation plans are adopted each semester by the Faculty Council on the basis of the Act on Higher Education, the Statutes of the University and Faculty, and are publicly available on the faculty website. After publication of exam results, inspection dates are set, allowing students to review their assignments and receive feedback and, where needed, guidance for further learning.

In the discussions, students confirmed that examinations can be retaken without a limit on the number of attempts, provided the degree is completed within the maximum study duration (six years for the Bachelor's programme and four years for the Master's). Each winter and summer exam period offers two dates, providing four opportunities in total for each module per year. The students considered this system to be fair and transparent. In addition, the SAR describes that specific adjustments are made for students with disabilities, ensuring equal access to examinations without compromising academic standards. In case of disputes or appeals related to examinations, students may lodge a complaint to the Faculty's Appeals Committee.

Final examinations and theses are regulated in detail by the Ordinance on Examination Regulations for Bachelor's and Master's Theses, as well as subsequent amendments. The Bachelor's final exam carries 6 ECTS credits and corresponds to 180 hours of work. The Master's thesis is awarded 18 ECTS credits and is expected to be prepared within 540 hours; in addition, 12 hours of supervised practice are normally envisaged.

In the discussions, the experts asked how the topics of the final theses are defined. The faculty explained that students normally discuss the selection of a thesis topic with their mentor. Students who are already employed may also choose a topic related to their professional projects. Furthermore, students are involved in ongoing research projects of the faculty, which may also provide suitable thesis topics. In cases where final theses are prepared in cooperation with external organisations or companies, the faculty assumes full responsibility for ensuring appropriate academic supervision and the quality of the content.

The panel reviewed a sample of examinations and final theses. While the examinations were found to be appropriate in scope and content and clearly suitable for testing the intended learning outcomes on the respective EQF levels, the experts expressed concerns regarding the quality of the final theses at both Bachelor's and Master's levels. The Bachelor's theses are often limited to the level of extended course papers, while the Master's theses lack sufficient scientific contribution and are considered overly reproductive in

nature. The experts therefore emphasise that the final theses must adequately reflect the academic qualification level. The university is required to raise the standards for both Bachelor's and Master's theses, ensuring greater scientific depth, stronger integration of research, and more scope for independent topics, particularly at the Master's level.

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

The university did not refer to this criterion in its statement.

3. Resources

Criterion 3.1 Staff and Development

Evidence:

- Self-Assessment Report
- Statute of the University of Zagreb
- Statute of the University of Zagreb Faculty of Civil Engineering
- Staff handbook
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The Faculty of Civil Engineering employs 75 teachers in scientific-teaching positions and four in full-time teaching positions, supported by 11 senior assistants and 21 assistants in associate positions. Academic staff cover a wide range of disciplines, with the majority appointed in civil engineering, complemented by expertise in technical sciences, mathematics, architecture, and related fields. In total, the equivalent of 98.25 full-time teachers ensures a favourable student–staff ratio of 14.7:1, significantly below the national limit of 30:1.

According to the SAR, the faculty places strong emphasis on continuous professional development of its employees and applies transparent recruitment procedures based on excellence criteria. Each academic year, external associates are hired as needed, with all appointments approved by the Faculty Council. In 2023/24, five external associates in scientific-teaching positions and four in teaching positions supported the existing staff. The faculty states that the combined expertise and qualifications of the permanent staff and associates ensure high-quality instruction and enable students to achieve the intended learning

outcomes. According to the institution, it also has a long-standing tradition of professional engagement, with teachers contributing to different projects across all fields of civil engineering in Croatia. As civil engineering is an applied science, the university underlines that such involvement in professional practice is an essential prerequisite for the continuous improvement of teaching quality and the relevance of knowledge transferred to students.

According to the SAR, the University of Zagreb emphasises its dual role as a teaching and research institution. The Faculty of Civil Engineering highlights that study programmes are continuously updated in line with the latest scientific developments, and that teachers actively contribute to research and professional projects in all branches of civil engineering.

The faculty reports that workshops and trainings are regularly organised to enhance teachers' knowledge and skills in evaluation and assessment methods. According to the university, such workshops are held frequently, with particular attention given to young researchers and the aim of making participation mandatory in the future. Topics include digitalisation in the classroom, methods of transferring knowledge to students, and mentoring, with workshops for mentors already obligatory. Activities are offered both at faculty and university level.

The panel concludes that the composition, professional orientation, and qualification of the teaching staff are well suited for successfully delivering the degree programmes. The favourable student–staff ratio and the broad disciplinary expertise ensure that students are adequately supported in achieving the intended learning outcomes. The reviewers also note that the faculty's engagement in research and professional projects contributes directly to the relevance and quality of education. Opportunities for continuous professional and didactic development are systematically provided, including regular workshops at faculty and university level. The panel finds that the measures in place ensure that the subject-specific and didactic qualifications of the lecturers are regularly reviewed and contribute adequately to the successful implementation of the programmes. The positive impression of the panel was further confirmed during the discussions with the teaching staff, who expressed a high level of satisfaction with the existing conditions and opportunities for their professional development.

Criterion 3.2 Student Support and Student Services

Evidence:

- Self-Assessment Report
- ASIIN student survey

- Discussions during the audit

Preliminary assessment and analysis of the experts:
The Faculty of Civil Engineering provides students with a comprehensive system of academic, personal, and career support. A central element is the Career Centre, which offers a wide range of activities such as training in digital skills (e.g. AutoCAD, BIM tools, advanced Excel), workshops on public speaking, business and creativity skills, personal development, as well as exam preparation in occupational safety. The Centre organises annual job fairs under the label *GRADify* (with 27 participating companies in 2024), alumni workshops entitled *Tea Party with a Civil Engineer*, and career counselling. In addition, it publishes a blog and supports students in professional internships and job market preparation.

Administrative and technical support structures are well established. The Student Office (three employees) provides services for undergraduate and graduate students, while the International Relations Office assists students and staff in international cooperation and mobility programmes. Further support is provided by the library, IT services, and the Career Centre. An ECTS coordinator advises students in cases of recognition of extracurricular activities or applications for ERASMUS. However, there is still room for improvement in this area, as problems with credit recognition have been noted (see Criterion 1.3 Student Mobility).

Particular attention is paid to students with specific needs. A coordinator for student support and students with disabilities is appointed, offering psychological and academic counselling, guidance, and skills development. The faculty cooperates with the University's Office for Students with Disabilities to ensure adequate adjustments to teaching and examination procedures, while safeguarding academic standards. Students from socially disadvantaged backgrounds may apply for a reduction of tuition fees. Special arrangements also exist for student athletes.

To ensure a smooth transition into university life, the faculty organises introductory sessions for first-year students with the Dean, the Vice-Dean for Education, and representatives of support services. Additional familiarisation is provided after the first weeks of study. The Vice-Dean and the Dean also maintain regular dialogue with the Student Council, which is provided with facilities and support to organise student gatherings, and participate in faculty governance through representation in various committees.

The experts gained a very positive impression of the student support structures in place at the Faculty of Civil Engineering. The students confirmed this view, highlighting that services are both accessible and effective. In the discussions, the vast majority of students indicated that lecturers are easily approachable outside the classroom, and most felt that lecturers

are open to questions and criticism. University-wide mental health support services were also perceived as particularly helpful.

Overall, the panel and the students agree that the support system is well developed, offering both subject-specific and general counselling opportunities.

Criterion 3.3 Funds and Equipment

Evidence:

- Self-Assessment Report
- Development Strategy
- ASIIN student survey
- Discussions during the audit

Preliminary assessment and analysis of the experts:
Objectives concerning material, human, financial and spatial resources are included in the Faculty's Development Strategy 2024–2029, which outlines the long-term framework for strengthening educational provision and scientific performance.

In the discussions, the experts inquired about the financial basis of the study programmes and laboratories as well as the sustainability of funding in the coming years. The faculty representatives explained that governmental funding is very limited and essentially covers only basic expenses. The majority of financial resources are generated through scientific and research projects. In addition, many staff members are engaged in cooperation with industry and carry out professional services, which provide further income streams for the faculty. According to the SAR, the faculty generates its own and other non-budgetary revenues through educational, scientific, professional and other activities not financed by state or local budgets. These revenues allow the faculty to cover the costs of additional development and improvements, such as hiring researchers and acquiring technology, with little or no reliance on budgetary funds. Substantial revenue is also generated from market-based professional work, which serves as a crucial resource for reinvestment in science and education. Representatives from industry confirmed this close cooperation, noting that they frequently use the faculty's laboratories for material testing and other specialised services. The expert panel considers this financial basis sufficient to ensure the sustainability of the study programmes.

With regard to facilities, the faculty has just recently returned to its main and courtyard buildings following a comprehensive renovation after the 2020 Zagreb earthquake. It now

disposes of 19 traditional lecture halls equipped with projectors and computers, 7 teaching laboratories/practicums, and 14 additional teaching spaces. The faculty library, which had been temporarily relocated during the renovation period, is now back in the main building.

The faculty also operates 11 IT classrooms with a total of 194 computers, supported by a local computer network and modern multimedia equipment in the lecture halls. Students also benefit from the availability of licensed software commonly used in civil engineering, such as AutoCAD, BIM tools, finite element software, SageMath, and Revit, which are accessible in the computer classrooms and via the faculty network.

In terms of specialised infrastructure, five major laboratories (geotechnical, hydrotechnical, structures testing, materials, and transportation) are in operation. In May 2024, two further laboratories were established: the Laboratory for River Dynamics and Sediment Transmission and the Laboratory for Vibrations and Environmental Noise.

During the on-site audit, the students expressed a positive perception of the available resources. They confirm that there are sufficient work spaces for individual and group learning on campus, that access to specialised software is adequate, and that the laboratories are well equipped. Affordable student dormitories in Zagreb were likewise highlighted as a positive aspect.

During the audit, the experts inspected the facilities and laboratories on campus. They found the infrastructure and equipment to be in good condition and adequate to achieve the intended learning outcomes of the programmes, and were particularly satisfied to see the close cooperation with industry in the use of laboratories and testing facilities.

In conclusion, the experts are convinced that the faculty disposes of sufficient and sustainable financial resources, and that the infrastructure and technical equipment are adequate to support the proper delivery of the study programmes.

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

The university did not refer to this criterion in its statement.

4. Transparency and Documentation

Criterion 4.1 Module Descriptions

Evidence:

- Self-Assessment Report
- Module handbook for each study programme
- Programme websites (Undergraduate and Graduate)
- Discussions during the audit

Preliminary assessment and analysis of the experts:
After reviewing the module handbook of both programmes, the experts confirm that they contain all required information, including the module title, the person(s) responsible for each module, the teaching methods, the credits and workload, the intended learning outcomes, the module content, the admission and examination requirements, the forms of assessment with details on how the module mark is calculated, the recommended literature, and the date of the last amendment. During discussions, students confirmed that course information is always accessible online and that details regarding examinations and course content are provided at the beginning of each course by the teaching staff.

The only point of criticism raised during the audit concerned the perceived absence of certain topics, such as sustainability and Building Information Modelling (BIM), as well as a lack of reference to recent developments and current trends. The programme coordinators assured the panel that these topics are indeed covered within the curriculum, which is regularly updated. The experts therefore find that the course titles and module descriptions do not always adequately reflect the actual content and recommend that the university revise them so that both the titles and descriptions clearly and accurately convey the course content. They believe that this would project a more contemporary image of the study programmes and would likely appeal to many prospective students (see also Section 1.3 Curriculum).

Criterion 4.2 Diploma and Diploma Supplement

Evidence:

- Exemplary Diploma per study programme
- Exemplary Diploma Supplement per study programme

Preliminary assessment and analysis of the experts:

The experts confirm that all graduates are issued a Diploma and a Diploma Supplement in English shortly after graduation. These documents provide a comprehensive overview of the graduate's qualification profile, individual performance, and the classification of the degree programme within the respective education system. They list the marks of individual modules and clearly outline the method used to calculate the final grade. The Diploma Supplement contains nearly all information required for transparency and comparability. However, it does not include the statistical data on the final results of other students in the same cohort as recommended by the ECTS Users' Guide. Such cohort-specific grade distribution data must be incorporated to allow a comparison of the graduate's performance with that of their peers.

Criterion 4.3 Relevant Rules

Evidence:

- Self-Assessment Report
- Statute of the University of Zagreb
- Statute of the University of Zagreb Faculty of Civil Engineering
- Ordinance on Studying on the Undergraduate and Graduate Studies on the University of Zagreb Faculty of Civil Engineering
- University website: Statute, other ordinances for Civil Engineering
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The auditors confirm that the rights and obligations at the Faculty of Civil Engineering are clearly defined and binding. The Statute of the Faculty specifies the rights and duties of both staff and students, while the Ordinance on Studying at the Undergraduate and Graduate Studies regulates the study process at both levels. All course-related information is provided in the language of the respective degree programme and made accessible to all participants. The Ordinance has been regularly updated to comply with national legislation and was most recently revised in 2024. All relevant documents are formally adopted by the Faculty Council, published on the university's website, and ensure full transparency for both students and staff.

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

In response to the experts' criticism that the Diploma Supplement needs to be complemented by statistical data on grade distribution to enhance transparency, the university states that the Diploma Supplement complies with the regulations of the Republic of Croatia and includes all elements prescribed by law, as well as security measures to prevent document tampering. The experts acknowledge this compliance but emphasise that the inclusion of grade distribution data would significantly improve transparency. The ECTS Users' Guide underlines that, due to differing cultural and academic traditions, grading scales and their application vary not only between countries but also across institutions and disciplines. To ensure comparability and fairness, higher education institutions are therefore expected to provide, alongside their grading scale and its explanation, a statistical distribution table of passing grades for the relevant programme or field of study. Such information is essential to guarantee transparency for mobile students and graduates, both in the context of academic progression and for labour market access. As the Diploma Supplement currently does not include such statistical data, the experts uphold their requirement that it be complemented accordingly.

5. Quality Management: Quality Assessment and Development

Criterion 5 Quality Management: Quality Assessment and Development

Evidence:

- Self-Assessment Report
- The Rulebook on the System of Quality Assurance
- Discussions during the audit

Preliminary assessment and analysis of the experts:

In the SAR, the university explains that the study programmes at the Faculty of Civil Engineering are subject to regular internal and external quality assurance procedures involving both internal (students, teaching staff, associates and the administrative, technical and auxiliary staff employed at the faculty) and external stakeholders (e.g. other institutions in the educational system, the economy, local and state administration, graduates). Data on teaching, research, and student progress are systematically collected and analysed, and the results are presented to the Faculty Council in annual reports. The faculty has adopted a

Quality Assurance Policy (2018), an Action Plan for Quality Improvement (2019–2024), and conducts internal evaluations, most recently in 2024, supported by a dedicated Quality Assurance and Improvement Department and a Vice-Dean for Quality Management from the academic year 2024/25. Both study programmes are revised on a regular basis, with smaller adjustments adopted twice a year, and the processes and responsibilities for programme development are defined in the relevant regulations and quality assurance manuals. The students are supposed to be actively involved through surveys, study year councils, and representation in relevant bodies, and the results of evaluations and derived measures are published and communicated.

Part of the faculty's quality management system is the international accreditation of the Bachelor's and Master's programmes in Civil Engineering by ASIIN. In the previous accreditation in 2018, the panel issued several requirements and recommendations. For both programmes, the university was required to restructure the pre-examination system to avoid delaying students' graduation. For the Master's programme, additional requirements included presenting a concept to familiarise all students with the application of Building Information Modelling (BIM) and construction aspects of building technology, and ensuring that at least students in structural engineering gain experience with the Finite Element Method. The panel also made several recommendations: for both programmes, to discuss evaluation results with the students concerned and to make more intensive use of e-learning components. For the Master's programme, it was further recommended to organise project work in a more interdisciplinary manner by integrating aspects from different specialisations.

In the discussion, the programme coordinators explained the developments since the last accreditation. They pointed to a number of challenges that had affected implementation, in particular the COVID-19 pandemic and the consequences of the 2020 earthquake, which required distance teaching and temporary relocation. Lectures in the main building resumed only in March 2025. Moreover, new legislation in higher education had necessitated the adoption of numerous new documents and administrative adjustments. At the same time, the faculty highlighted the establishment of an external practice system and the strengthening of its links with industry as important steps taken in recent years.

The experts acknowledge the progress made since the last accreditation and commend the faculty for advancing its quality assurance procedures despite the challenging circumstances of the COVID-19 pandemic and the 2020 earthquake. The requirements from the previous accreditation have been fulfilled, and improvements are visible, particularly regarding the use of e-learning, which has been considerably expanded, and in strengthening interdisciplinary project work. Nevertheless, the panel notes that the implementation of Building Information Modelling (BIM) has not yet fully met expectations and remains an

area for further development (see Criterium 1.3 Curriculum). With regard to the recommendation to discuss evaluation results with the students concerned, the panel equally sees further need for improvement.

According to the Rulebook on the System of Quality Assurance, one of the tasks is to conduct student surveys. Yet, it remains unclear how regularly these surveys are carried out, how their implementation is monitored, and how the results are systematically fed back to the students. Programme coordinators explained that surveys on professors are not published but are shown to the Dean and Vice-Dean, while all other survey results are published on the website. Negative individual results may lead to a discussion between the Dean and the respective professor.

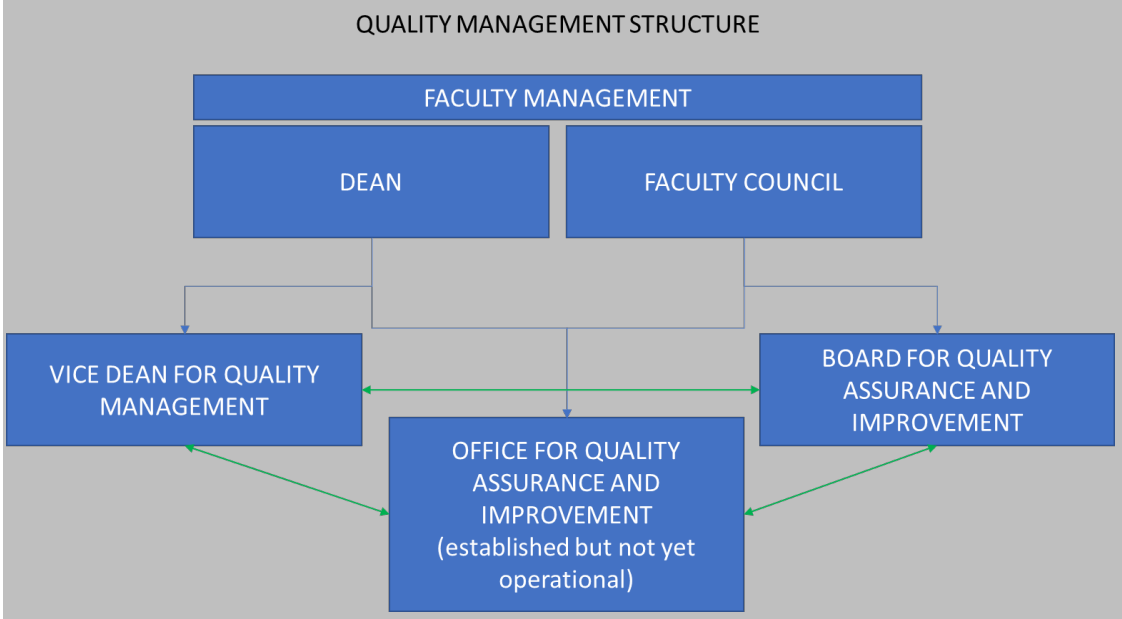
During the discussion rounds with students and teaching staff, however, it became apparent that the quality management system does not function as consistently as described in the SAR. Many students stated that they had never seen evaluation results and were not aware that these might be uploaded irregularly to the website. This lack of regular publication prevents direct feedback loops and follow-up discussions. Furthermore, several teachers confirmed that they were not fully aware of how student evaluations are conducted or used, and students reported that in many classes, evaluations were not carried out at all.

The expert panel therefore considers it essential that the quality assurance system be revised and more strictly implemented. Modules must be evaluated on a regular basis, and the results must be communicated to lecturers in a timely manner so that they can be discussed with students within the same semester. Moreover, the quality system needs to be clearly communicated, published, and binding for all stakeholders. It must be ensured that students are informed about the survey results and that measures derived from them are systematically shared. Finally, the university has to demonstrate how the results of its internal quality management (course evaluations, student workload surveys, study progress and graduate tracking) are taken into account for the further development of the study programmes.

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

In response to the experts' criticism that the quality assurance system needs to be implemented more consistently, with regular evaluations of courses, systematic communication of the results to both lecturers and students, and clear evidence that survey findings are used for programme improvement, the university submitted a detailed document on its QA system. It explains that two types of student surveys are conducted: surveys evaluating study programmes (undergraduate and graduate) and surveys evaluating teachers.

Programme evaluations are carried out at the time of graduation and coordinated by the University's Office for Quality Management. Results are published on the Faculty's website, analysed by the QA Board, and presented to the Faculty Council, highlighting strengths and weaknesses of the programmes. Teacher evaluations, based on a standard university-wide questionnaire, have been conducted regularly since 2010, most recently with online participation options (2022/23, 2024/25). Results are available on the Faculty's website, with confidentiality ensured. Cases of poor results are followed up by the Dean and department heads; corrective actions may include discussions with the individuals concerned. Student representatives are involved in relevant committees, ensuring that results are communicated back to the student body.



The experts appreciate the university's detailed clarification of its quality assurance system. Nevertheless, they identify some weaknesses. In particular, the three-year intervals between teacher evaluations are considered too long to ensure systematic and timely feedback. Moreover, the feedback loop to students appears insufficient, as results are neither effectively communicated via the website nor adequately through student representatives. The experts also note that teaching staff should be more consistently informed about the functioning and outcomes of the quality assurance system. One possible improvement would be to conduct surveys during the semester and to discuss the results with students already in the course context. The experts therefore see a clear need for further action and uphold their requirement in this regard.

D Additional Documents

Before preparing their final assessment, the panel ask that the following missing or unclear information be provided together with the comment of the Higher Education Institution on the previous chapters of this report:

D1. A brief concept or strategy on BIM (approx. one page, indicating how this topic is integrated into the different modules)
D2. A brief concept or strategy on sustainability (approx. one page, indicating how this topic is integrated into the different modules)
D3. A short document outlining the quality management structure, including a workflow organigram

E Comment of the Higher Education Institution (03.09.2025)

The following quotes the comment of the institution. First, the university cited the relevant passage from the report and then provided its response.

"'They point out that the recognition of credits obtained at other higher education institutions must be regulated in accordance with the Lisbon Recognition Convention, ensuring a transparent and student-friendly procedure. '

The recognition of ECTS credits is carried out in accordance with the Lisbon Recognition Convention. We acknowledge the challenges associated with credit recognition, particularly due to the partial differences in course content between our institution and other universities. To address this issue, we are currently in the process of adopting regulations designed to facilitate and streamline recognition procedures.

'The Diploma Supplement needs to be complemented by statistical data on grade distribution to enhance transparency.'

The diploma supplement complies with the regulations of the Republic of Croatia and includes all elements prescribed by law, as well as security measures to prevent document tampering.

'With regard to the curriculum, the panel considers it important to make modern aspects such as digitalisation, BIM, sustainability, contract management and refurbishment of existing buildings more visible in course titles and module descriptions.'

Modern aspects of the curriculum are incorporated into several courses and are further detailed in two supplementary documents, D1 and D2, which address Building Information Modeling (BIM) and sustainability. Additional relevant topics, including digitalization, contract management, and the refurbishment of existing buildings, are also integrated into the curriculum. Faculty members continuously introduce new topics into their lectures to ensure alignment with contemporary developments in the field.

In the most recent curriculum revision, several new courses were introduced to address the assessment and strengthening of existing buildings—an issue that gained particular relevance following the 2020 earthquakes in Zagreb. These courses are: *Existing Masonry Structures – Assessment and Strengthening*, *Technology of Repair and Strengthening*, *Energy Renovation of Buildings*, *Building Renovation and Strengthening Technologies*, and *Structural Assessment and Seismic Performance of Existing Buildings*.

Furthermore, the digitalization of the teaching process and the application of specialized software are evident in the wide range of software packages available for student use, as listed in Appendix A24 (*Computer Software*).

'Finally, the quality assurance system needs to be implemented more consistently, with regular evaluations of courses, systematic communication of the results to both lecturers and students, and clear evidence that the findings from surveys and tracking are used for the further improvement of the programmes.'

The quality assurance system is outlined in the supplementary document D3, with particular emphasis on the implementation and analysis of surveys."

Furthermore, the university provided the following additional documents:

- D1 BIM in teaching
- D2 Sustainability in teaching
- D3 QM – description

D1 BIM in teaching

"Here's how BIM is embedded in the two master-level courses at the University of Zagreb Faculty of Civil Engineering (Specialization in Construction Management, at Master level 1st year):

Course: Construction Management 2 (CM2):

- Status & timing: Mandatory course in the 1st semester of the Construction Management track (6 ECTS).
- Delivery mix: 30 hours of lectures + 13 hours of exercises + 17 hours of design exercises (project-type work). This mix signals that BIM-related methods are not only taught conceptually but also practiced through applied tasks: 3D modeling, information modeling, LOIN matrixes, classification system, quantity take-offs used for scheduling, bill of costs and bill of quantities, 4D and 5D models.
- What "BIM in CM2" typically looks like: Within the design-exercise component, students apply digital project-management workflows (e.g., model-based quantities, 4D/5D planning concepts) aligned with the department's published methodologies that use authoring tools such as Autodesk Revit or Nemetschek Allplan, Autodesk Navis, Bexel Manager etc to derive quantities and support planning/costing.

Course: Building Information Modeling (BIM)

- Status & timing: Elective in the 2nd semester of the same track (6 ECTS).
- Delivery mix: 30 hours of lectures + 11 hours of exercises + 19 hours of design exercises, i.e., a strongly hands-on, studio-style course.
- Focus in practice: Developing BIM literacy and project workflows - model creation/coordination, information extraction, and applying BIM to construction-management decisions - implemented through structured design-exercise assignments. Understanding major BIM standards (PAS, BS and ISO), BIM nomenclature, glossary and workflows. Delivering Exchange Information Required and BIM Execution Plans, Project Information Model and Asset Information Model.

How the two courses fit together

- CM2 introduces and uses BIM within the broader construction-management toolkit (planning, quantities/costs, coordination) and requires applied work via design exercises.
- The BIM elective deepens those skills with more model-centric tasks and extended design-exercise time, letting students consolidate BIM workflows for CM use cases.

Besides these two abovementioned subjects, lectures about BIM are part of some other subjects: Geometry in civil engineering, Bridges 3, Building physics, Building maintenance management, Planning and Scheduling Methods.

Here's how BIM is embedded in the one bachelor-level course at the University of Zagreb Faculty of Civil Engineering:

Basics of Engineering Informatics

- Semester: 1st semester, 1st year (3.0 ECTS)
- Workload: 45 hours total (15 hours lectures, 15 hours exercises, 15 hours practical/computer lab)

This is the course at the bachelor level whose title and structure clearly align with informatics/computer-related education within the standard Civil Engineering curriculum.

- *Basics of Engineering Informatics* introduces students to core digital literacy for engineers:
    - Operating systems, file organization, and data handling.

  - Use of office and engineering software (Excel, MATLAB, AutoCAD basics, Architecture 3D, programming concepts, databases).
  - Principles of data structures, algorithms, and information processing.
  - basic 2D/3D representation
- These competencies are prerequisites for working in BIM environments, where model data must be created, structured, queried, and exchanged.

BIM relies heavily on structured data and parametric models. Without mastering basic informatics concepts (data storage, interoperability, programming logic), it's difficult to understand how BIM tools manage information across the project lifecycle. The jump from 2D CAD (lines, layers) to BIM (objects, attributes) is much easier once students already understand digital representation principles.

Everything from above is written in Module handbooks which are appendices of our SAR:

A13 - Module handbook – undergraduate

A14 - Module handbook – graduate"

D2 Sustainability in teaching

"Here's how sustainability is embedded in courses at the University of Zagreb Faculty of Civil Engineering:

On department for Materials, sustainability is a topic which is taught on numerous subjects. On a bachelor level there are: Construction Materials, Basics of Concrete Technology.

On master lever, the folowing topics are part of lectures: the impact of CO2 emissions during the production of materials, primarily concrete, but also other materials, supplementary cementitious materials that can be used as a substitute for cement, waste materials of various origins, from construction waste to waste from biopower plants.

In subject Durability of Construction Materials there is a lecture about sustainable building materials. In subject Building physics we teach students about sustainability in terms of energy efficiency, the use of green technologies to reduce energy consumption, the impact of the building envelope on efficiency and the design of net to Zero buildings.

We have a subject Green Building where the curriculum clearly states the standards for certification and where students learn about LCA analysis.

All projects from department for Materials are related to sustainability in some way and have been implemented partly in teaching, and partly in final and graduate theses.

Concerning Construction management, sustainability is a part of three subjects:

Law in Construction - The course introduces sustainability through the European legal framework, covering the Energy Performance of Buildings Directive (EPBD recast), the Construction Products Regulation (CPR revision), and obligations from the EU Green Deal. Students learn how technical regulations address durability, recyclability, accessibility, and safety of construction works in line with international frameworks such as ISO 14001 and ISO 50001. Spatial planning content emphasizes sustainable land use and urban development as key regulatory drivers for long-term resilience.

Planning and Scheduling Methods - Sustainability is embedded in modules on resource and cost planning through concepts of life cycle costing and optimization of energy and material use. Lectures on BIM and AI highlight regenerative design and circular construction planning, where students apply strategies of material reuse, carbon monitoring, and waste minimization within project schedules. “Trends in Planning” further introduce frameworks such as BREEAM and DGNB, linking digital planning to long-term climate goals.

Study of work - The course enhances sustainability by teaching methods for time and material measurement that directly reduce waste and inefficiencies. Topics on Industry 4.0 and robotics illustrate how automation supports low-carbon processes, safer worksites, and energy savings. Work-study exercises also connect to circular construction, including on-site recycling logistics, recovery of secondary raw materials, and Lean/Six Sigma methods that align productivity with environmental responsibility.

Building maintenance management – The main topics are building maintenance management and energy efficiency, the importance of maintenance and life-cycle management of building components in sustainability.

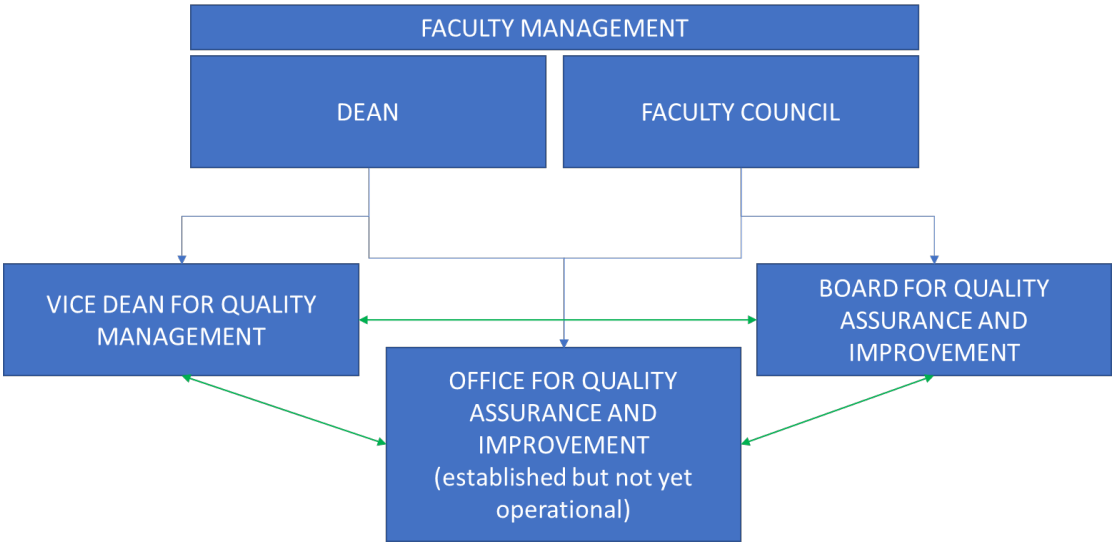
Management in Construction - one of the topic addresses non-financial reporting, including current legislation and standards for sustainability reports.

Business Strategies for Construction Companies - students develop an ESG strategy for a company by analysing the industry's environmental, social, and governance requirements.”

D3 QM – description

“Quality system structure

QUALITY MANAGEMENT STRUCTURE



Student surveys

There are two types of student surveys which are regularly conducted. There is a *survey for evaluation of graduate studies and surveys for the evaluation of undergraduate studies*. These surveys are completed by students when they graduate. Analysis of results and comparison between faculties at the University is coordinated by University's Office for quality management. These results are compiled in a report that is made available to Faculty representatives for quality system. Faculty of Civil Engineering is publishing these reports for both graduate and undergraduate studies at its web page (https://www.grad.unizg.hr//osiguravanje_kvalitete/izvjesca) and these documents are publicly available. These documents are analyzed by the faculty's Board for QA and analysis was presented to the Faculty's council for the academic years 2019-2020-2021 by underlining strengths and weaknesses of faculty's study programs as seen by students.

The second type of student survey is the *survey for evaluation of teachers*. The aim of conducting the survey is to evaluate the teachers on each course. This survey is using questionnaire approved by the University of Zagreb. Faculties of Zagreb's University are obliged to use this type of questionnaire. Since around 2010 University's Office for quality management organized surveys in a 3-year period and all teachers and assistants were evaluated. Last survey like this was in the academic year 2018/2019. And these results are available on the faculty's web page.

(https://www.grad.unizg.hr//osiguravanje_kvalitete/izvjesca). The next round of surveys was planned for the year 2021/2022 but it was not performed due to restrictions caused by Covid -19 pandemic. In the academic year 2023/2024. and 2024/2025. University Board for quality management issued recommendations which implicated that survey is to be

conducted only if necessary (primarily linking this to meeting the criteria for selection to scientific and teaching positions).

How often and how are they carried out

Survey for evaluation od study programs is continuously conducted throughout the year in the periods of final exams.

Survey for evaluation of teachers is performed at the end of the semester. In the year 2022/2023. online survey was enabled for all course lecturers (not for assistants). In the year 2023/2024. survey in written form was conducted for all interested teachers and assistants. In the year 2024/2025. online survey was enabled for all teachers and assistants and for the first time it was enabled that students can access the survey through their smartphones during the last 3 weeks of semester (https://www.grad.unizg.hr/novosti_i_objave?@=2b4fi).

How is it checked that they are carried out

Survey for evaluation of study programs is linked to final exams so response to survey is very high.

Survey for evaluation of teachers, for online survey, can be checked by survey coordinator.

What happens if the results are poor

For survey for evaluation of study programs are analyzed by Committee for quality assurance and improvement and strengths and weaknesses of faculty's study programs as seen by students are underlined.

We had a case of poor results for one teacher in the year 2019/2020. The Dean and the Head of Department were notified about poor results which lead to conducting interviews with poorly evaluated teacher. There was also the case in the year 2023/2024. where student representative in the Committee for quality assurance and improvement, initiated conduction of survey for two teaching assistants due to student complaints. Head of their department was also involved in this process.

How regularly are the results published

Results of survey for evaluation of study programs are published as received by the University's Office for quality management.

According to the Quality manual od Zagreb University results of the survey are made publicly available in a way that confidentiality is preserved, and every teacher has the liberty to make publicly available its own results.

(https://www.unizg.hr/fileadmin/rektorat/Studiji_studiranje/Studiji/Kvaliteta/Kvaliteta2/anketa/Prirucnik-osiguravanje-kvalitete-tisak-02-2014.pdf - page 120.)

How are the students informed about the publication of the results

Students have their representatives in Faculty Council, Education Committee and Committee for quality assurance and improvement where this information are communicated."

F Summary: Expert Recommendations (12.09.2025)

Taking into account the additional information and the comments given by three of the experts summarise their analysis and **final assessment** for the award of the seals as follows:

Degree Programme	ASIIN Seal	Accredited by German Engineers	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Civil Engineering	With requirements for one year	With requirements for one year	30.09.2031	EUR-ACE®	Subject to the approval of the ENAEE Administrative Council
Ma Civil Engineering	With requirements for one year	With requirements for one year	30.09.2031	EUR-ACE®	Subject to the approval of the ENAEE Administrative Council

Requirements

For both degree programmes

A 1. (ASIIN 1.3) Define the rules for the recognition of credits acquired at other higher education institutions in accordance with the Lisbon Recognition Convention in order to promote outgoing student mobility.

A 2. (ASIIN 1.5) All compulsory modules, including physical education and health culture, must be awarded ECTS credits.

A 3. (ASIIN 1.5) It must be ensured that the workload required for the Bachelor's degree is feasible within the standard period of study.

A 4. (ASIIN 2) The final theses have to adequately reflect the academic qualification level.

A 5. (ASIIN 4.2) Provide statistical data according to the ECTS Users' Guide in the Diploma Supplement.

A 6. (ASIIN 5) Revise the quality assurance system.

a) Ensure that all modules are evaluated on a regular basis and in a timely manner.

b) Communicate the survey results to lecturers in due time.

c) Ensure that students are systematically informed about the survey results and their assessments/evaluations.

d) Define the quality system still more clearly, make it binding for all stakeholders, and publish it transparently.

Recommendations

For both degree programmes

E 1. (ASIIN 1.3) It is recommended to extend the scope of the mandatory practical components within the curriculum.

E 2. (ASIIN 1.3) It is recommended to offer more and mandatory modules on soft skills.

E 3. (ASIIN 1.3) It is recommended to offer more classes in English.

E 4. (ASIIN 1.3/4.1) The names of the modules and the module descriptions should adequately reflect their content.

G Comment of the Technical Committee 03 – Engineering, Geodesy and Architecture (17.09.2025)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the procedure and follows the assessment of the experts without any changes.

Assessment and analysis for the award of the EUR-ACE® Label:

The Technical Committee deems that the intended learning outcomes of the degree programmes do comply with the engineering specific parts of Subject-Specific Criteria of the Technical Committee 03 – Civil Engineering, Geodesy and Architecture.

The Technical Committee 03 – Civil Engineering, Geodesy and Architecture recommends the award of the seals as follows:

Degree Programme	**ASIIN Seal**	**Accredited by German Engineers**	**Maximum duration of accreditation**	**Subject-specific label**	**Maximum duration of accreditation**
Ba Civil Engineering	With requirements for one year	With requirements for one year	30.09.2031	EUR-ACE®	Subject to the approval of the ENAEE Administrative Council
Ma Civil Engineering	With requirements for one year	With requirements for one year	30.09.2031	EUR-ACE®	Subject to the approval of the ENAEE Administrative Council

H Decision of the Accreditation Commission (26.09.2025)

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

The AC discusses the procedure and follows the experts' and the TC's assessment almost without changes. Only in one respect do they deviate: they consider the updating of the module handbooks and the alignment of module titles with the content important enough to be defined as a condition. Therefore, they raise the recommendation to a requirement.

Assessment and analysis for the award of the EUR-ACE® Label:

The Accreditation Commission deems that the intended learning outcomes of the degree programmes do comply with the engineering specific parts of Subject-Specific Criteria of the Technical Committee 03 – Civil Engineering, Geodesy and Architecture.

The Accreditation Commission decides to award the following seals:

Degree Programme	**ASIIN Seal**	**Accredited by German Engineers**	**Maximum duration of accreditation**	**Subject-specific label**	**Maximum duration of accreditation**
Ba Civil Engineering	With requirements for one year	With requirements for one year	30.09.2031	EUR-ACE®	Subject to the approval of the ENAEE Administrative Council
Ma Civil Engineering	With requirements for one year	With requirements for one year	30.09.2031	EUR-ACE®	Subject to the approval of the ENAEE Administrative Council

Requirements

For both degree programmes

A 1. (ASIIN 1.3) Define the rules for the recognition of credits acquired at other higher education institutions in accordance with the Lisbon Recognition Convention in order to promote outgoing student mobility.

A 2. (ASIIN 1.3/4.1) The names of the modules and the module descriptions should adequately reflect their content.

A 3. (ASIIN 1.5) All compulsory modules, including physical education and health culture, must be awarded ECTS credits.

A 4. (ASIIN 1.5) It must be ensured that the workload required for the Bachelor's degree is feasible within the standard period of study.

A 5. (ASIIN 2) The final theses have to adequately reflect the academic qualification level.

A 6. (ASIIN 4.2) Provide statistical data according to the ECTS Users' Guide in the Diploma Supplement.

A 7. (ASIIN 5) Revise the quality assurance system.

a) Ensure that all modules are evaluated on a regular basis and in a timely manner.

b) Communicate the survey results to lecturers in due time.

c) Ensure that students are systematically informed about the survey results and their assessments/evaluations.

d) Define the quality system still more clearly, make it binding for all stakeholders, and publish it transparently.

Recommendations

For both degree programmes

E 1. (ASIIN 1.3) It is recommended to extend the scope of the mandatory practical components within the curriculum.

E 2. (ASIIN 1.3) It is recommended to offer more and mandatory modules on soft skills.

E 3. (ASIIN 1.3) It is recommended to offer more classes in English.

Appendix: Programme Learning Outcomes and Curricula

According to the website and the Diploma Supplement, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme in Civil Engineering:

ACQUIRING KNOWLEDGE AND UNDERSTANDING

- ability to recognize and describe engineering issues, interaction between design, construction, marketing, clients' demands and demolition of structures
- understanding impact of civil engineering on the society and environment

APPLYING KNOWLEDGE AND UNDERSTANDING

- application of varied knowledge and expertise acquired in mathematics, science and technology
- ability to prepare and carry out experiments, and analyse and interpret their results
- application of current computer tools to perform calculations and simulations
- basic structure design capability and dimensioning of medium-sized building structures

MAKING INFORMED JUDGEMENTS AND CHOICES

- critical assessment of arguments, hypotheses, abstract concepts and data for making competent decisions, and finding creative solutions to engineering issues

COMMUNICATING KNOWLEDGE AND UNDERSTANDING, TEAM WORK

- participation in the planning, design, realisation, supervision and maintenance of large-scale construction works and supervision of small-scale construction works
- exchange of information and ideas with experts and non-experts, adjustment to work environment
- application of current computer tools to produce documents, presentations and internet pages

CAPACITIES TO CONTINUE LEARNING, ETHICS

- application of acquired knowledge and skills in further professional and academic education

- ability to adapt to changes in technology and work methods in the process of life-long learning
- ethical attitude to finding solutions to engineering issues

The following **curriculum** is presented:

1st year, 1st semester

Course			Total hours			ECTS
			Lectures	Seminar	Practice	
1	Elective Course	Introduction to Civil Engineering History of Building	30	0	0	3
2	Mathematics 1		60	0	60	9
3	Descriptive Geometry		30	0	45	6
4	Basics of Engineering Informatics		15	0	30	3
5	Mathematical Programmes for Engineers		15	0	15	2
6	Geodesy		30	0	30	4
7	Physical Education and Health Culture 1		0	0	30	-
7	Elective Course	Sociology of Work and Professional Ethics Sociology of Work and Professional Ethics Basics of Civil Engineering Law Business Economics English in Civil Engineering 1 German in Civil Engineering 1	30	0	0	3
	Total		**210**	**0**	**210**	**30**

1st year, 2nd semester

Course		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Mathematics 2	60	0	45	8
2	Physics	60	0	15	6
3	Mechanics 1	30	0	30	5
4	Building Construction	45	0	45	7
5	Materials Science	30	0	15	4
6	Physical Education and Health Culture 2	0	0	30	-
	Total	**225**	**0**	**180**	**30**

2nd year, 3rd semester

Course			Total hours			ECTS
			Lectures	Seminar	Practice	
1	Probability and Statistics		30	0	30	4
2	Strength of Materials 1		45	0	45	7
3	Fluid Mechanics		45	0	30	6
4	Mechanics 2		30	0	30	5
5	Elective Course	Construction Materials Basics of Concrete Technology	30	0	30	5
6	Hydrology		30	0	15	3
7	Physical Education and Health Culture 3		0	0	30	-
	Total		**210**	**0**	**210**	**30**

2nd year, 4th semester

Course			Total hours			ECTS
			Lectures	Seminar	Practice	
1	Elective Course	Applied Geology Environmental Protection	30	0	0	3
2	Strength of Materials 2		45	0	30	5.5
3	Structural Analysis 1		60	0	45	7.5
4	Introduction to Structural Engineering		30	0	0	2
5	Soil Mechanics		45	0	30	5
6	Elective Course	Water Supply and Sewerage 1 Water Protection	30	0	15	4
7	Law in Construction		30	0	0	3
8	Physical Education and Health Culture 4		0	0	30	-
	Total		**270**	**0**	**150**	**30**

3rd year, 5th semester

Course			Total hours			ECTS
			Lectures	Seminar	Practice	
1	Concrete and Masonry Structures 1		60	0	45	6.5
2	Rock Mechanics		45	0	30	6
3	Roads		45	0	30	6
4	Elective Course	Building Technology Technology of Heavy Construction	30	0	0	3
5	Elective Course	Structural Analysis 2 Numerical Modelling of Structures	30	0 4	30 26	4.5
6	Railways		30	0	15	3
	Total		**240**	**0** **4**	**150** **146**	**29**

3rd year, 6th semester

Course			Total hours			ECTS
			Lectures	Seminar	Practice	
1	Construction Management		45	0	45	6.5
2	Metal Structures		30	0	15	4
3	Bridges		30	0	15	4
4	Elective Course	Timber Structures Lightweight Structures	30	0	15	4
5	Hydraulic Engineering Structures		45	0	0	3.5
6	Education on Construction Site		0	0	45	3
7	Final Assignment					6
	Total		**180**	**0**	**135**	**31**

According to the website and the Diploma Supplement, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master's degree programme in Civil Engineering:

ACQUIRING KNOWLEDGE AND UNDERSTANDING

- comprehensively understand phenomena and problems in their area of specialisation

- demonstrate a high level of professional knowledge and aptitude in civil engineering

APPLYING KNOWLEDGE AND UNDERSTANDING

- apply knowledge and skills in the planning, design, construction, supervision and maintenance of complex building structures, and in interventions especially with regard to the issues of stability, safety, occupancy, environmental protection, and costs
- apply knowledge and skills obtained during studies in recognizing, formulating and analysing problems and in finding one or more acceptable solutions in their field of specialisation
- adopt an analytical approach to work, based on extensive knowledge of science acquired during studies plan, supervise and realize professional, development and research projects

MAKING INFORMED JUDGEMENTS AND CHOICES

- interpret social aspects and social context of construction projects
- manage companies and research institutions and contribute to innovation work
- develop civil engineering profession taking into account development of other scientific disciplines

COMMUNICATING KNOWLEDGE AND UNDERSTANDING, TEAM WORK

- explain their ideas and projects to associates
- find solutions to technical and personal problems in working environment
- creatively apply knowledge obtained during studies in high-level decision making situations
- work in international settings, taking into account various cultural, linguistic, social and economic influences

CAPACITIES TO CONTINUE LEARNING, ETHICS

- continuously gain knowledge about innovations and make professional improvement efforts
- accept responsibility for decisions made and be ready to take part in interdisciplinary activities

The following **curriculum** is presented:

Specialisation in GEOTECHNICS

1st year, 1st semester

Course			Total hours			ECTS
			Lectures	Seminar	Practice	
1	Elective Course	Mathematics 3 Stochastic processes	45	0	30	7.5
2	Research Methods		15	0	0	1.5
3	Geotechnical Engineering		30	0	30	6
4	Numerical modelling in geotechnics		30	0	45	7.5
5	Applied Soil Mechanics		45	0	30	7.5
	Total		**165**	**0**	**135**	**30**

1st year, 2nd semester

Course			Total hours			ECTS
			Lectures	Seminar	Practice	
1	Applied Rock Mechanics		30	0	30	6
2	Foundation Engineering		45	0	30	7.5
3	Embankments and Slopes		30	0	30	6
4	Elective Course	Applied Geology Environmental Protection	30	0	0	3
5	Elective courses (one to be chosen)					
	Total					**Min 27**

Elective courses (2nd semester)		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Dynamics of Structures and Earthquake Engineering	45	6	24	7.5
2	Theory of Elasticity and Plasticity	45	0	30	7.5
3	Numerical Mathematics	30	0	30	6
4	Perspective	30	0	30	6
5	Geometry in Civil Engineering	15	0	30	4.5
6	Waves and Oscillations	30	0	30	6
7	Courses of other specialisations or of other study programmes				

2nd year, 3rd semester

Course		Total hours			ECTS
		Lecture	Seminar	Practice	
1	Improvement of Soil and Rock	30	0	30	6
2	Retaining Structures	30	0	30	6
3	Hydrogeology and Engineering Geology	30	0	0	3
4	Geotechnical Laboratory	30	0	45	7.5
5	Elective course (two to be chosen)				Min. 10.5
	Total				**Min. 33**

Elective courses (3nd semester)		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Underground Structures	30	0	30	6
2	Geotechnics and Environmental Protection	30	0	15	4.5
3	Soil Dynamics	30	0	30	6
4	English in Civil Engineering 2	0	0	45	4.5
5	German in Civil Engineering 2	0	0	45	4.5
6	Courses of other specialisations or of other study programmes				

2nd year, 4th semester

Course		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Geotechnical Design	30	0	30	6
2	Field investigations and Monitoring	30	0	30	6
3	Final Assignment				18
	Total	**60**	**0**	**60**	**30**

Specialisation in HYDRO ENGINEERING

1st year, 1st semester

Course			Total hours			ECTS
			Lectures	Seminar	Practice	
1	Elective Course	Mathematics 3 Stochastic processes	45	0	30	7.5
2	Research Methods		15	0	0	1.5
3	Hydraulics 1		45	0	30	7.5
4	Hydrology 2		30	0	30	6
5	River Training		45	0	30	7.5
	Total		**180**	**0**	**120**	**30**

1st year, 2nd semester

Course			Total hours			ECTS
			Lectures	Seminar	Practice	
1	Elective Course	Water Supply and Sewerage 1 Water Protection	30	0	15	4
2	Elective Course	Applied Geology Environmental Protection	30	0	0	3
3	Elective Course	Structures Data Analysis for Hydrosciences	30	0	30	6
4	Waterways and Ports		45	0	45	9
5	Drainage and Irrigation 1		45	0	30	8
	Total		**180**	**0**	**120**	**30**

2nd year, 3rd semester

Course		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Water Power Use	30	0	30	6
2	Water Supply and Sewerage 2	30	0	30	6
3	Elective courses (to be enrolled into 3 or 4)				Min. 18
	Total				**30**

Elective courses (3rd semester)		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Urban Hydrology	30	0	30	6
2	Water and Wastewater Treatment	30	0	30	6
3	Modelling in Hydraulic Engineering	30	0	30	6
4	Drainage and Irrigation 2	30	0	30	6
5	Flood Protection	28	2	30	6
6	Hydraulics 2	30	0	30	6
7	Retaining Structures	30	0	30	6
8	Hydrogeology and Engineering Geology	30	0	0	3
9	Hydrotechnical Concretes	30	0	30	6

2nd year, 4th semester

Course		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Hydrosystems	45	0	15	6
2	Elective Course				6
3	Final Assignment	0		12	18
	Total				**30**

Elective courses (4th semester)		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Design in Hydraulic Engineering	0	0	60	6
2	Vegetative Water Facilities	30	0	30	6
3	Special Water Power Projects	30	0	30	6
4	Maritime Structures	30	0	30	6

Specialisation in STRUCTURAL ENGINEERING

1st year, 1st semester

	Course		Total hours			ECTS
			Lectures	Seminar	Practice	
1	Elective Course	Mathematics 3 Stochastic processes	45	0	30	7.5
2	Research Methods		15	0	0	1.5
3	Prestressed Concrete		30	0	30	6
4	Bridges 2		30	0	30	6
5	Metal Structures 2		30	0	30	6
6	Reliability of Structures		30	0	0	3
	Total		**180**	**0**	**120**	**30**

1st year, 2nd semester

	Course	Total hours			ECTS
		Lectures	Seminar	Practice	
1	Concrete and Masonry Structures 2	30	0	30	6
2	Metal Structures 3	30	0	30	6
3	Timber Structures 2	30	0	30	6
4	Durability of Structures 1	30	0	30	6
5	Precast Reinforced Concrete Structures	30	0	30	6
	Total	**150**	**0**	**150**	**30**

2nd year, 3rd semester

	Course	Total hours			ECTS
		Lectures	Seminar	Practice	
1	Concrete Structures 3	30	0	30	6
2	Bridges 3	30	0	30	6
3	Dynamics of Structures	30	0	15	4.5
4	Elective courses (to be enrolled into 3)				Min. 13.5
	Total				**30**

Elective courses (3nd semester)		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Stability of Structures	30	0	15	4.5
2	Durability of Structures 2	30	0	15	4.5
3	Tall Buildings	30	0	15	4.5
4	Structural Testings	30	0	15	4.5
5	English in Civil Engineering 2	0	0	45	4.5
6	German in Civil Engineering 2	0	0	45	4.5

2nd year, 4th semester

Course		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Special Engineering Structures	30	0	15	4.5
2	Composite Structures	30	0	15	4.5
3	Elective Course				3
4	Final Assignment	0		12	18
	Total				**30**

Elective courses (4th semester)		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Earthquake Engineering	30	0	0	3
2	Numerical Mathematics	30	0	30	6
3	Perspective	30	0	30	6
4	Geometry in Civil Engineering	15	0	30	4.5
5	Waves and Oscillations	30	0	30	6
6	Assessment of Existing Bridges	30	0	30	6
7	Existing Masonry Structures – Assessment and Strengthening	30	0	30	6
8	Aluminium Structures	30	0	30	6
9	Structural Design of The Facades	30	0	30	6

Specialisation in CONSTRUCTION MATERIALS

1st year, 1st semester

Course			Total hours			ECTS
			Lectures	Seminar	Practice	
1	Elective Course	Mathematics 3 Stochastic processes	45	0	30	7.5
2	Research Methods		15	0	0	1.5
3	Theory and Technology of Concrete		30	16	14	6
4	Building Physics		30	0	30	6
5	Polymers		30	6	9	4.5
6	Mechanics of Material		30	0	15	4.5
	Total		**180**	**22**	**98**	**30**

1st year, 2nd semester

Course			Total hours			ECTS
			Lectures	Seminar	Practice	
1	Elective Course	Applied Geology Environmental Protection	30	0	0	3
2	Elective Course	Quality Management Theory of Elasticity and Plasticity	45	0	30	7.5
3	Durability of Structural Materials		30	4	26	6
4	Special Concrete and Technologies		45	0	30	7.5
5	Concrete and Masonry Structures 2		30	0	30	6
	Total		**180**	**4**	**116**	**30**

2nd year, 3rd semester

Course		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Precast Systems	30	0	30	6
2	Non-Destructive Testings	30	0	30	6
3	Fire Protection	30	0	30	6
4	Elective courses 1 (1 or 2 to be chosen)				6
5	Elective courses 2 (one to be enrolled into)				6
	Total				30

Elective courses 1 (3rd semester)		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Technology of Repair and Strengthening	30	8	22	6
2	Work and Production Organization	30	0	0	3
3	Material Production Technology	30	0	0	3

Elective courses 2 (3rd semester)		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Concretes for Roads	30	14	16	6
2	Hydrotechnical Concretes	30	0	30	6
3	Metal Structures 2	30	0	30	6

2nd year, 4th semester

Course		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Final Assignment				18
2	Elective courses 1 (one to be enrolled into)				6
3	Elective courses 2 (1 or 2 to be chosen)				Min. 6
	Total				**30**

Elective courses 1		Total hours			ECTS
		Lectures	Seminar	Practice	
1	High-performance concrete	30	0	30	6
2	Numerical Modelling in Engineering Materials	30	0	30	6
3	Energy renovation of buildings	15	0	45	6

Elective courses 2		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Design of Experiments	30	0	30	6
2	English in Civil Engineering 2	0	0	45	4.5
3	German in Civil Engineering 2	0	0	45	4.5
4	Numerical Mathematics	30	0	30	6
5	Geometry in Civil Engineering	15	0	30	4.5
6	Perspective	30	0	30	6
7	Applied Metallurgy	30	0	30	6
8	Waves and Oscillations	30	0	30	6
9	Green Building	15	15	15	4.5

Specialisation in CONSTRUCTION MANAGEMENT

1st year, 1st semester

Course			Total hours			ECTS
			Lectures	Seminar	Practice	
1	Elective Course	Mathematics 3 Stochastic processes	45	0	30	7.5
2	Research Methods		15	0	0	1.5
3	Construction Management 2		30	0	30	6
4	Building Maintenance Management		30	0	15	4.5
5	Optimization Methods in Construction		30	0	30	6
6	Study of Work		30	0	15	4.5
	Total		**180**	**0**	**120**	**30**

1st year, 2nd semester

Course			Total hours			ECTS
			Lectures	Seminar	Practice	
1	Construction Equipment		26	4	30	6
2	Management for The Construction Industry		30	11	4	4.5
3	Construction Project Management		60	5	25	9
4	Elective courses (to be enrolled into one)	Environmental Protection	30	0	0	3
		Building information modelling	30	0	30	6
		English in Civil Engineering 2	0	0	45	4.5
		German in Civil Engineering 2	0	0	45	4.5
5	Elective courses (1 or 2 to be chosen)					Min. 10.5
	Total					**30**

Elective courses (2nd semester)		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Construction Technologies 1	45	0	30	7.5
2	Supervision and Monitoring of Construction Projects	30	0	0	3
3	Numerical Mathematics	30	0	30	6
4	Perspective	30	0	30	6
5	Geometry in Civil Engineering	15	0	30	4.5
6	Facility Management	30	0	30	6
7	Waves and Oscillations	30	0	30	6
8	Courses of other specialisations or of other study programmes				

2nd year, 3rd semester

Courses		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Construction Business Systems	30	0	30	6
2	Planning and Scheduling Methods	30	0	30	6
3	Sociology of Organization	30	0	15	4.5
4	Elective courses (to be enrolled into two)				Min. 12
	Total				**28.5**

Elective courses (3nd semester)		Total hours			ECTS
		Lectures	Seminar.	Practice	
1	Human Resource Management	30	0	30	6
2	Construction Technologies 2	30	0	30	6
3	Investment Appraisals in Construction	30	0	30	6
4	Courses of other specialisations or of other study programmes				

2nd year, 4th semester

Courses		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Business Strategies for Construction Companies	45	0	0	4.5
2	Construction Site Practice	0	0	60	6
3	Elective courses (to be enrolled into one)				Min. 3
4	Final Assignment	0		12	18
	Total				**31.5**

Elective courses (4th semester)		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Supervision and Monitoring of Construction Projects	30	0	0	3
2	Facility Management	30	0	30	6
3	Construction Health & Safety	30	0	15	4.5
4	Building Renovation and Strengthening Technologies	30	0	30	6
5	Courses of other specialisations or of other study programmes				

Specialisation in TRANSPORTATION ENGINEERING

1st year, 1st semester

Course			Total hours			ECTS
			Lectures	Seminar	Practice	
1	Elective Course	Mathematics 3 Stochastic processes	45	0	30	7.5
2	Traffic Noise		30	0	15	4.5
3	Transportation Engineering		30	0	30	6
4	Planning and Design of Roads		30	0	30	6
5	Railway Design and Construction		30	0	30	6
	Total		**165**	**0**	**135**	**30**

1st year, 2nd semester

Course			Total hours			ECTS
			Lectures	Seminar	Practice	
1	Management in Civil Engineering		30	0	0	3
2	Elective Course	Applied Geology Environmental Protection	30	0	0	3
3	Pavement structures		30	0	30	6
4	Permanent Way		45	0	15	6
5	Earthworks		30	0	30	6
6	Road Intersections		30	0	30	6
	Total		**180**	**0**	**105**	**30**

2nd year, 3rd semester

Course		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Research Methods	15	0	0	1.5
2	Transportation Tunnels	30	0	30	6
3	Airports	30	0	15	4.5
4	Road Equipment	45	0	0	4.5
5	Traffic Systems	45	0	0	4.5
6	Elective courses (to be enrolled into two)				Min. 9
	Total				**30**

Elective courses (3nd semester)		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Drainage of Transportation Facilities	30	0	15	4.5
2	Asphalt Pavement Maintenance and Preservation	30	0	15	4.5
3	Soil Improvement Methods	30	0	15	4.5
4	English in Civil Engineering 2	0	0	45	4.5
5	German in Civil Engineering 2	0	0	45	4.5
6	Vibrations in Transportation Engineering	30	0	15	4.5
7	Courses of other specialisations or of other study programmes				

2nd year, 4th semester

Course		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Pavement Management	30	0	0	3
2	Elective courses (to be enrolled into two)				Min. 9
3	Final Assignment				18
	Total				**30**

Elective courses (4th semester)		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Parking Facilities	30	0	15	4.5
2	Design of urban streets	30	0	15	4.5
3	Railway track Maintenance	45	0	0	4.5
4	Urban Railways	30	0	15	4.5
5	Numerical Modelling of Railway Track Structures	30	0	15	4.5
6	Numerical Mathematics	30	0	30	6
7	Perspective	30	0	30	6
8	Geometry in Civil Engineering	15	0	30	4.5
9	Waves and Oscillations	30	0	30	6
10	Courses of other specialisations or of other study programmes				

Specialisation in THEORY AND MODELLING OF STRUCTURES

1st year, 1st semester

Course		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Mathematics 3	45	0	30	7.5
2	Research Methods	15	0	0	1.5
3	Mechanics of Material	30	0	15	4.5
4	Nonlinear Statics of Rod Structures	30	0	15	4.5
5	Experimental Methods 1	30	0	30	6
6	Metal Structures 2	30	0	30	6
	Total	**180**	**0**	**120**	**30**

1st year, 2nd semester

Course		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Theory of Elasticity and Plasticity	45	0	30	7.5
2	Dynamics of Structures and Earthquake Engineering	45	6	24	7.5
3	Finite Element Method	30	0	30	6
4	Theory of Composites	30	0	15	4.5
5	Concrete and Masonry Structures 2	30	0	15	4.5
	Total	**180**	**6**	**114**	**30**

2nd year, 3rd semester

Course		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Space Structures	30	4	26	6
3	Structural Testings	30	0	30	6
4	Stability Theory	30	4	26	6
3	Elective courses (for 1-5: courses of a minimum of 9 ECTS credits to be chosen)				Min. 12
	Total				**30**

Elective courses (3nd semester)		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Methods of Theory of Elasticity and Plasticity	30	0	15	4.5
2	Polymers	30	6	9	4.5
3	Basics of Fracture Mechanics	30	0	15	4.5
4	Programming of Structural Analysis Procedures	30	0	15	4.5
5	Numerical Methods in Structural Analysis	30	0	15	4.5
6	Stochastic Processes or courses of other specialisations or of other study programmes				

2nd year, 4th semester

Course		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Elective courses (for 1-4: at least one course to be chosen)				Min. 12
2	Final Assignment				18
	Total				**30**

Elective courses (4th semester)		Total hours			ECTS
		Lectures	Seminar	Practice	
1	Selected Topics on Strength of Materials	30	0	15	4.5
2	Stochastic Analysis of Structures	30	0	15	4.5
3	Membrane and Cable Structures	30	0	30	6
4	Structural Assessment and Seismic Performance of Existing Buildings	30	10	20	6
5	Numerical Mathematics	30	0	30	6
6	Perspective	30	0	30	6
7	Geometry in Civil Engineering	15	0	30	4.5
8	Waves and Oscillations	30	0	30	6
9	English in Civil Engineering 2	0	0	45	4.5
10	German in Civil Engineering 2	0	0	45	4.5
11	Courses of other specialisations or of other study programmes				