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| **Process owner** | AC ZSVTS Methodological Commission Chairman |
| **Purpose** | Set the criteria and standards for study programmes to be accredited for EUR-ACE label  |
| **To inform** | Members of AC ZSVTS Council, AC ZSVTS Commissions |
|  | **Prepared by** | **Reviewed by** | **Approved for AC ZSVTS** |
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| **Function** | Secretary General AC ZSVTS | Chairman of Methodological Commission of AC ZSVTS | Chairman AC ZSVTS |

The following criteria and standards are

* based on requirements stipulated in the "EUR-ACE® Framework Standards and Guidelines" (Edition, March 2015)
* applicable to engineering study programs of higher education institutions (HEIs)

### Accreditation criteria and standards - Organization of the study program

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| 1. Program aims |
| **Criteria** | **Standards** |
| **1.1 Educational needs of the labour market and other stakeholders** | * Relevant industry and labour market organisations and other stakeholders who have interest in study program are identified.
* Methods and schedules of consultations with the stakeholders are documented
* Educational needs of the labour market and other stakeholders are identified
* Study program respects the educational needs of the stakeholders. They are reflected in the profiles of the graduates.
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| **1.2. Program aims** | * The program aims aims are clearly formulated and documented
* The program aims are reflected in professional profiles of the graduates
* The program aims are consistent with the mission of HEI and the needs of the labor market
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| **1.3. Program outcomes** | * The programme outcomes are established in terms of what students are expected to know, understand and/or be able to demonstrate after completion of the learning process
* The programme outcomes are consistent with
	+ the relevant national qualifications framework
	+ the EUR-ACE® Programme Outcomes for accreditation
	+ the established programme aims
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| 2. Teaching and learning process |
| **Criteria** | **Štandards** |
| **2.1 Teaching and Learning Process** | * Curriculum of the program and description of its characteristics are documented.
* Characteristics of the modules/course units (in particular: number of ECTS credits, learning outcomes, content, typologies of teaching activities, assessment of students’ learning, pre-requisites, didactic material) are documented.
* Documentation of the suitability of the curriculum to the achievement of the programme outcomes. Accumulation of learning outcomes constitute the program outcomes.
* The curriculum of the program is formally approved by the HEI.
* The curriculum anables flexible learning paths and encourages the students to take active role in the learning process.
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| **2.2 Assessment of students’ learning** | * The methods and criteria of assessment of the students’ learning are included in the characteristics of the course units/modules.
* The assessment methods and criteria provide evidence of their capacity to check the effective achievement of the intended course unit/module learning outcomes by the students and ensure trust that the level of achievement by the students is assessed in a credible way.
* Assessment results are recorded and documented (as e.g. written exams, projects, presentations, reports, etc.)
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| **2.3 Planning of the learning process** | * The development of the learning process has been planned in order to enable students to achieve the programme outcomes in the expected time.
* There is a calendar and timetable of didactic activities and examinations of the program.
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| **2.4 Management of the learning process** | * The learning process is managed to assure achievement of the programme aims and the programme outcomes.
* It is described how the teaching and learning process and student assessment are managed including a feedback loop in relation to the quality of the learning process and the assessment of students.
* The program management should include statistical analysis and documentation used.
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| 3. Resources |
| **Criteria** | **Štandards** |
| **3.1 Teaching staff** | * The teaching staff and teaching support staff are appointed according to pre-defined recruitment criteria and recruitment policy.
* The curricula vitae of the teaching staff are consistent with the qualification requirements for the teaching position.
* Teachers are able to prove their competence by their research and publication activity, professional experience, attendance at conferences, participation in projects, etc.
* The teaching staff is offerred opportunities to improve their teaching skills and the use of new technologies.
* The teaching staff and teaching spport staff are quantitatively and qualitatively adequate for the achievement of the programme outcomes by students.
 |
| **3.2 Facilities and support staff** | * The facilities (classrooms, auditoria, laboratories, workshops, libraries, etc.) at the disposal of the programme, with the associated equipment, are quantitatively and qualitatively adequate for the development of the established programme aims as designed and planned, and enable the application of the established didactic methods
* There are rooms available for individual study used by the students of the programme, with the equipment available.
* There is adequate equipment and technical staff available in the laboratories, workshops and libraries used by the program.
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| **3.3 Financial resources** | * The financial resources available to the programme are adequate for the development of the learning process as designed and planned.
* HEI provides the program with adequate finances covering the operation of the program
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| **3.4 Student support services**  | * Administrative staff and activities of student support services (career advice, tutoring and assistance) are available.
* The student support services are adequately organized and managed.
* The administrative staff is quantitatively and qualitatively adequate for the effective management of the student support services.
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| **3.5 Partnerships** | * There are partnerships of HEI which enable
	+ training periods outside the university at public and/or private bodies
	+ international study mobility periods at foreign universities.
* The partnerships are relevant to the study program and are adequate quantitatively and qualitatively to the achievement of the programme outcomes.
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| 4. Student admission, transfer, progression and graduation |
| **Criteria** | **Standard** |
| **4.1 Rules governing the students’ academic career** | * There are qualification requirements for admission to the programme and methods of assessment of their possession by the students.
* There are regulations for the recognition of higher education qualifications, periods of study and prior learning.
* Criteria for the management of the students’ progression in their studies are documented and published.
* There is certification of students’ studies successfully completed.
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| **4.2 Entrance students** | * Results of the assessment of the possession of the admission requirements are documented.
* Results of the examination performance in the first year are documented and analyzed. They are analyzed to provide evidence of the adequacy of the entrance requirements
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| **4.3 Student assessment** | * The results of assessment of students for each year and each module are documented and confirm that the criteria for student´s transfer and progression are met.
* The results of the monitoring of the students’ achievement of the learning outcomes provide evidence of the effectiveness of the learning process in the course units/modules.
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| **4.4 Student progression**  | * Results of the monitoring of student progression in the different course years are documented.
* Results of the monitoring of dropouts are documented.
* Results of the monitoring of the credits acquired by the students who pass from one course year to the next one.
* Results of the monitoring of the duration of studies leading to graduation are documented.
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| 5. Internal Quality Assurance |
| **Criteria** | **Standard** |
| **5.1 Policy and processes for the quality assurance of programmes** | * There is a documented policy for the quality assurance of programmes of the HEI.
* The policy for the quality assurance of programmes is implemented.
* Organizational structure for the quality assurance of programmes and decision-making processes of the HEI are set and implemented.
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| **5.2 Management system of the programme** | * There are documented quality assurance policies and procedures relevant to the programme.
* The programme participates satisfactorily in the HEI quality assurance processes and implements relevant findings
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| **5.3 Programme review and development** | * There are documented policies and procedures for programme review and development.
* The programme is periodically reviewed as to the needs and objectives, learning process, resources, results and management system, in order to guarantee their continuing relevance and effectiveness
* The results of the programme review are documented.
* The reviews promote the improvement of the effectiveness of the processes of programme management and of the associated results.
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| **5.4 Student feedback on the learning process** | * Students’ opinions are collected on
	+ the quality of course units/modules
	+ the training periods outside the university
	+ the periods of international mobility.
* Opinions of the final year students on the learning process and support services are collected.
* The monitoring of student opinion is adequate in relation to completeness of information gathered and response rate.
* The results of the monitoring of student opinion on the learning process provide evidence of the adequacy and effectiveness of the learning process and of student support services
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| **5.5 Engineering graduates’ placement** | * Monitoring results are collected related to
	+ the graduates’ job placement
	+ student progression to Master programmes (only for Bachelor programmes)
	+ student progression to Doctoral studies (only for Master programmes).
	+ employed graduates’ opinions on the education received
	+ employers’ opinion on the graduates’ education
* The results of the monitoring of the engineering graduates’ job placement and of the employed graduates’ and employers’ opinions on the graduates’ education provide evidence of the qualification's value, of the appropriateness of the programme aims and the programme outcomes to the educational needs of the labour market
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| **5.6 Public availability of information** | * Documentation in relation to the quality assurance of the programme is publicly provided.
* The documentation publicly available provides full, up to date, easily accessed information, both quantitative and qualitative, on its objectives, learning process, resources, results and management system.
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### Accreditation criteria and standards - Outputs of the study programs

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| **Output** | **Standard** |
| **1. Knowledge and understanding of principles** | 1st cycle graduates should* know and understand the basic sciences and mathematics used in the engineering specialization at adequate level
* know and understand engineering desciplines underlying the engineering specialization
* be aware of the wider miltidisciplinary context of engineering
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| 2nd cycle graduates should* know more in-depth and understand the basic sciences and mathematics used in the engineering specialization at adequate level
* know more in-depth and understand engineering desciplines underlying the engineering specialization
* be critically aware of the wider multidisciplinary context of engineering and of issues at the interface between different fields
* be critically aware of the forefronts of their specialization
 |
| **2**. Engineering analysis | 1st cycle graduates should* be able to analyse complex engineering products, processes and systems in their field of study; to select and apply relevant methods from established analytical, computational and experimental methods; to correctly interpret the outcomes of such analyses
* be able to identify, formulate and solve engineering problems in their field of study; to select and apply relevant methods from established analytical, computational and experimental methods; to recognise the importance of non-technical –societal, health and safety, environmental, economic and industrial - constraints.
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| 2nd cycle graduates should* be able to analyse new and complex engineering products, processes and systems within broader or multidisciplinary contexts; to select and apply the most appropriate and relevant methods from established analytical, computational and experimental methods or new and innovative methods; to critically interpret the outcomes of such analyses ;
* be able to conceptualise engineering products, processes and systems;
* be able to identify, formulate and solve unfamiliar complex engineering problems that are incompletely defined, have competing specifications, may involve considerations from outside their field of study and non-technical - societal, health and safety, environmental, economic and industrial - constraints; to select and apply the most appropriate and relevant methods from established analytical, computational and experimental methods or new and innovative methods in problem solving;
* show ability to identify, formulate and solve complex problems in new and emerging areas of their specialisation.
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| **3. Engineering design** | 1st cycle graduates should demonstrate* ability to develop and design complex products (devices, artefacts, etc.), processes and systems in their field of study to meet established requirements, that can include an awareness of non-technical – societal, health and safety, environmental, economic and industrial– considerations; to select and apply relevant design methodologies.
* ability to design using some awareness of the forefront of their engineering specialisation.
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| 2nd cycle graduates should* be able to develop, to design new and complex products (devices, artefacts, etc.), processes and systems, with specifications incompletely defined and/or competing, that require integration of knowledge from different fields and non-technical - societal, health and safety, environmental, economic and industrial commercial - constraints; to select and apply the most appropriate and relevant design methodologies or to use creativity to develop new and original design methodologies.
* be able to design using knowledge and understanding at the forefront of their engineering specialisation.
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| **4. Investigations** | 1st cycle graduates should* be able to conduct searches of literature, to consult and to critically use scientific databases and other appropriate sources of information, to carry out simulation and analysis in order to pursue detailed investigations and research of technical issues in their field of study;
* be able to consult and apply codes of practice and safety regulations in their field of study;
* have laboratory/workshop skills and ability to design and conduct experimental investigations, interpret data and draw conclusions in their field of study.
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| 2nd cycle graduates should* be able to identify, locate and obtain required data;
* be able to conduct searches of literature, to consult and critically use databases and other sources of information, to carry out simulation in order to pursue detailed investigations and research of complex technical issues;
* be able to consult and apply codes of practice and safety regulations;
* have advanced laboratory/workshop skills and ability to design and conduct experimental investigations, critically evaluate data and draw conclusions;
* be able to investigate the application of new and emerging technologies at the forefront of their engineering specialisation
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| **5. Engineering practice** | 1st cycle graduates should* understand applicable techniques and methods of analysis, design and investigation and their limitations in their field of study;
* have practical skills for solving complex problems, realising complex engineering designs and conducting investigations in their field of study;
* have understanding of applicable materials, equipment and tools, engineering technologies and processes, and of their limitations in their field of study;
* be able to apply norms of engineering practice in their field of study;
* be aware of non-technical -societal, health and safety, environmental, economic and industrial - implications of engineering practice;
* be aware of economic, organisational and managerial issues (such as project management, risk and change management) in the industrial and business context.
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| 2nd cycle graduates should* have comprehensive understanding of applicable techniques and methods of analysis, design and investigation and of their limitations;
* have practical skills, including the use of computer tools, for solving complex problems, realising complex engineering design, designing and conducting complex investigations;
* have comprehensive understanding of applicable materials, equipment and tools, engineering technologies and processes, and of their limitations;
* be able to apply norms of engineering practice;
* have knowledge and understanding of the non-technical - societal, health and safety, environmental, economic and industrial - implications of engineering practice;
* have critical awareness of economic, organisational and managerial issues (such as project management, risk and change management)
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| **6. Universal skills** | 1st cycle graduates should* be able to gather and interpret relevant data and handle complexity within their field of study, to inform judgements that include reflection on relevant social and ethical issues;
* be able to manage complex technical or professional activities or projects in their field of study, taking responsibility for decision making.
* be able to communicate effectively information, ideas, problems and solutions with engineering community and society at large;
* be able to function effectively in a national and international context, as an individual and as a member of a team and to cooperate effectively with engineers and non-engineers
* be able to recognise the need for and to engage in independent life-long learning;
* be able to follow developments in science and technology.
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| 2nd cycle graduates should* be able to integrate knowledge and handle complexity, to formulate judgements with incomplete or limited information, that include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgement;
* be able to manage complex technical or professional activities or projects that can require new strategic approaches, taking responsibility for decision making.
* be able to use diverse methods to communicate clearly and unambiguously their conclusions, and the knowledge and rationale underpinning these, to specialist and non-specialist audiences in national and international contexts;
* be able to function effectively in national and international contexts, as a member or leader of a team, that may be composed of different disciplines and levels, and that may use virtual communication tools.
* be able to engage in independent life-long learning;
* be able to undertake further study autonomously.
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