



ASIIN Seal & European Labels

Accreditation Report

Bachelor's Degree Programmes
Information Systems and Technologies
Information Systems and Technologies - distance learning
Management and Organization

Provided by
University of Belgrade - Faculty of Organizational Sciences

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A About the Accreditation Process

| Name of the degree programme (in original language) | (Official) English translation of the name | Labels applied for ¹ | Previous accreditation (issuing agency, validity) | Involved Technical Committees (TC) ² |
|--|--|------------------------------------|--|---|
| Informacioni sistemi i tehnologije | Information Systems and Technologies | ASIIN, Euro-Inf [®] Label | Commission for accreditation and quality assurance, 1.10.2014.-30.09.2019. | 07 |
| Informacioni sistemi i tehnologije – studije na daljinu | Information Systems and Technologies - distance learning | ASIIN, Euro-Inf [®] Label | Commission for accreditation and quality assurance, 1.10.2014.-30.09.2019. | 07 |
| Menadžment i organizacija | Management and Organization | ASIIN | Commission for accreditation and quality assurance, 1.10.2014.-30.09.2019. | 07 |
| <p>Date of the contract: 30.01.2017</p> <p>Submission of the final version of the self-assessment report: 13.10.2017</p> <p>Date of the onsite visit: 08.-09.11.2017</p> <p>at: Belgrade, Serbia</p> | | | | |

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

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

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| <p>Peer panel:</p> <p>Prof. Dr. Susanne Strahringer, Technische Universität Dresden;</p> <p>Prof. Dr. Thomas Barton, University of Applied Sciences Worms;</p> <p>Günther Müller-Luschnat, iteratec GmbH</p> | |
| <p>Representative of the ASIIN headquarter: Dr. Martin Foerster</p> | |
| <p>Responsible decision-making committee: Accreditation Commission for Degree Programmes</p> | |
| <p>Criteria used:</p> <p>European Standards and Guidelines as of 15.05.2015</p> <p>ASIIN General Criteria, as of 10.03.2015</p> <p>Subject-Specific Criteria of Technical Committee 07 – Information Systems as of 09.12.2011</p> | |

B Characteristics of the Degree Programmes

| a) Name | Final degree (original/English translation) | b) Areas of Specialization | c) Corresponding level of the EQF ³ | d) Mode of Study | e) Double/Joint Degree | f) Duration | g) Credit points/unit | h) Intake rhythm & First time of offer |
|--|---|---|--|------------------|------------------------|-------------|-----------------------|--|
| Information Systems and Technologies | B.Sc. Diplomirani inženjer organizacionih nauka/ <i>Bachelor with honour</i> of organizational sciences | - | Level 6 | Full time | No | 8 Semester | 240 ECTS | Summer Semester |
| Management and Organization | B.Sc. Diplomirani inženjer organizacionih nauka/ <i>Bachelor with honour</i> of organizational sciences | Management; Operations Management; Quality Management and Standardization | Level 6 | Full time | No | 8 Semester | 240 ECTS | Summer Semester |
| Information Systems and Technologies - distance learning | B.Sc. Diplomirani inženjer organizacionih nauka/ <i>Bachelor with honour</i> of organizational sciences | - | Level 6 | Full time | No | 8 Semester | 240 ECTS | Summer Semester |

For the Bachelor's degree programmes Information Systems and Technologies as well as Information Systems and Technologies - distance learning the institution has presented the following English profile on the website (accessed 16.11.2017: <http://www.fon.bg.ac.rs/eng/studies/undergraduate-studies/>):

„Information Systems and Technologies study program is aimed at acquiring the latest knowledge and skills in the field of information systems and technologies, mastering the latest methods and techniques and preparing students for a successful application of the acquired knowledge and skills.“

³ EQF = The European Qualifications Framework for lifelong learning

For the Bachelor's degree programme Management and organization the institution has presented the following profile on the website (accessed 16.11.2017: <http://www.fon.bg.ac.rs/eng/studies/undergraduate-studies/>):

„Management and organization study program is designed as a modern way of educating engineers of organizational sciences and aimed at enabling them to successfully apply the acquired knowledge and skills in practice and continue further education. The study program content is based on current trends in business development in both domestic and international environment in areas of management, marketing, economics, finance, human resources, operational management, quality management and project and investment management.

Study program Management and organization is comprised of three study groups:

- Management
- Operations management
- Quality management“

C Peer Report for the ASIIN Seal⁴

1. The Degree Programme: Concept, content & implementation

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| Criterion 1.1 Objectives and learning outcomes of a degree programme (intended qualifications profile) |
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Evidence:

- Self-Assessment Report
- SSC-based Objectives-Module-Matrices for all courses as Appendix to the SAR

Preliminary assessment and analysis of the peers:

For the study programme Bachelor Organization and Management the HEI presented a more or less detailed description of general learning outcomes as can be seen in the appendix of this report. For the Bachelor programmes in Information Systems and Technologies and Information Systems and Technologies – Distance Learning, the descriptions given on the website as well as in the SAR proved to be very generic and allowed only a vague impression of the overall targets of the programmes. At the same time it became apparent to the peers that the descriptions of the distance learning programme do not differ in any kind from those of the regular programme. The reason for this duplicity will be discussed later on. In any case, the peers emphasized that for both programmes more detailed descriptions of learning outcomes and overarching objectives should be presented that allow at the same time a certain distinction between the programmes insofar as especially the didactical and organizational differences between them become apparent. During the discussions at the on-site-visit the peers understood that the coordination of the bachelor programmes at the Faculty of Organizational Sciences (FOS) is carried equally by eighteen Departments that are functioning more or less autonomously. This explained in the eyes of the peers why a general description of the programmes' learning outcomes proved so difficult; while each department organizes its individual modules that appeared to be of very high standards an intermediate level consisting of one or two programme coordinators was lacking. Thus, there was little responsibility for the respective programmes as a whole and

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

the peers considered it highly recommendable to introduce such an instance that would be able to join the loose ends of the otherwise excellent modules. This instance of superior responsibility for the programmes as whole would also be reflected in the general description of the programme objectives as described above.

Nevertheless, although the overarching level was not entirely clear, detailed learning outcomes for each module were presented in objectives-module-matrices for all programmes and courses. These enabled the peers to fully understand the content of the programmes and the learning outcomes envisaged although the general description demanded above was missing. Therefore, the peers were convinced that the programmes are up-to-date and they could evaluate to what degree the programmes comply with the criteria of ASIIN and the Euro-Inf-label.

In the case of Bachelor Information Systems and Technologies students gain general competences in Mathematics, Economics and Information Systems that will enable them to function effectively as an interface of technical, economical and administrative aspects in the constantly growing Serbian industry. At the same time students are being conveyed techniques of scientific research and writing in order to be able to continue the studies and to specialize in a continuing Masters' programme. The Bachelor Organization and Management on the other hand has a clear focus on economic and administrative elements while also conveying knowledge in E-Business and Business Information Systems. Since the curricula of all three Bachelor programmes is the same during the first year of study and students only decide afterwards which subject they want to choose, necessary fundamentals in Mathematics and Informatics are equally taught. There is only one difference to be observed during the first year: In Information Systems and Technologies and Information Systems and Technologies – Distance Learning, subjects „Sociology“ and „Psychology“ are elective subjects, so students choose one subject of those two, and have the obligatory subject “Programming 1“. In Organization and Management on the other hand, students do not have the subject of Programming one but both Psychology and Sociology. In Organization and Management students choose one of the three specializations “Management“, “Operations Management“ and “Quality Management and Standardization“ allowing for an adequate focus leading to specified job opportunities. In general, the peers were convinced for both programmes that graduates are being highly requested by the industry and that FOS maintains a close relationship with local industry representatives discussing the competences required from students. Nevertheless, the description of job profiles is equally missing along with the more detailed learning outcomes of the programme. Consequently, the peers consider it helpful to inform those interested in the degree programmes about the available specializations and the job opportunities to which they lead in a more transparent way.

In conclusion, the peers had no doubt about the high quality of the programmes and the learning outcomes that should be achieved by them. However, as has been outlined before, a description of these learning outcomes as well as the combined job profiles will be necessary and should be made public on the faculty website. Through these learning outcomes all three programmes should obtain a clearly recognizable characteristic, especially in order to distinguish the regular and the distance learning programme that is aptly enough to combine the otherwise excellent learning outcomes on course level to a programme-specific profile.

Apart from these descriptive deficiencies to the auditors it became clear that the programmes adequately reflect the ASIIN Subject-Specific Criteria as well as the EQF-level 6 for Bachelor programmes. For the Bachelor programmes Information Systems and Technologies and Information Systems and Technologies – Distance learning the HEI also applied for the Euro-Inf® (European Informatics) Label. The Euro-Inf® Label is a quality certificate for informatics degree programmes and is recognized Europe-wide. During the accreditation process, the reviewers moreover verified whether the degree programmes comply with the criteria fixed in the Euro-Inf® Framework Standards, operationalized by ASIIN SSC 07. Analysis of the Subject-Specific Criteria (SSC) of the Technical Committee for Information Systems encompasses the Euro-Inf® Framework Standards. The peers confirm that the Euro-Inf® Framework Standards regarding the intended learning outcomes are largely fulfilled for the Bachelor Programmes in line with the Bologna Declaration.

Criterion 1.2 Name of the degree programme

Evidence:

- Self-Assessment Report

Preliminary assessment and analysis of the peers:

The panel considered the names of the study programmes to be adequately reflecting the respective aims and learning outcomes.

Criterion 1.3 Curriculum

Evidence:

- Self-Assessment Report
- Curriculum for Information Systems and Technologies
- Curriculum for Information Systems and Technologies - distance learning

- Curriculum for Management and Organization
- Module Descriptions
- SSC-based Objectives-Module-Matrices for all courses

Preliminary assessment and analysis of the peers:

The curricula of all study programmes under review were being reviewed by the panel in order to identify whether the described learning objectives can be achieved by the available modules. The descriptions were being presented in English translation but it was noted by the peers that on the website only the Serbian version is available to the stakeholders. Since the HEI is interested in attracting international students it is considered important that all descriptions should also be accessible online in an English translation.

The curricula revealed that all students at FOS start with the same study year in which fundamentals in Mathematics, Management, Economics, and Information Systems are taught. Additionally, students take language courses and introductions to Psychology and Sociology. After the first year students decide which degree programme they want to follow and in case they opt for Management and Organization they select one of the three specializations “Management”, “Operations Management” and “Quality Management and Standardization”. All three specializations are characterized by a great variety of electives that allow to pursue individual interests while basic knowledge is conveyed compulsorily. The peers welcomed the division in specializations and fully agreed that the courses offered are adequate to reach the learning outcomes of the programme. In “Management” students gain special competences in courses such as “Marketing”, “Statistics”, “Project Management” and “Business Intelligence” before they specialize in electives such as “Business Communication skills and techniques”, “Reliability and Risk Analysis” or “Eco-marketing”. In “Operations Management” the focus is clearly laid on contents such as “Control systems”, “Process Engineering” or “Computer integrated Manufacturing”, complemented by electives such as “E-manufacturing”, “Production systems design” and “Maintenance Management”. “Quality Management and Standardization” on the other hand adds “Fundamentals of Quality”, “Normative regulation of quality” and “Environmental quality management systems”. This can be further specified in electives such as “Reliability and Risk Analysis”, “Accreditation and Certification” or “Project management software support”. In all three specializations the peers clearly saw the individual focus adequately reflected while the basic common knowledge of the Management and Organization was integrated. Furthermore, all students take a compulsory internship in the last semester before they write their final paper.

The curricula of Information Systems and Technologies and Information Systems and Technologies - distance learning are exactly identical. All students take the same courses in a

full time programme with the only difference the for the distance learning programme contents are made available online. Thus, after the first year of basic courses in Mathematics, Management, Economics, Informatics and Information Systems students deepen this knowledge in the second and third year with courses such as “Programming 2”, “Computer Architecture and Operating Systems” or “Financial Management and Accounting” (in the second year) and “Computer networks and telecommunication”, “Operational Research” and “Business Process Modelling” (in the third year). Now, the fourth year is then completely dominated by a huge variety of electives covering aspects ranging from “Internet marketing” to “Software Engineering” or “Mathematics and music”. Although the peers were impressed by the offers and the apparently high quality concerning the envisaged learning outcomes they criticized that different to the Bachelor Management and Organization no specialization areas are being indicated that can be ideally followed by the students. Especially because of the laudable amount of electives the peers think it highly important that the faculty issues certain guidelines that indicate exemplary study plans of modules that can be reasonably combined in order to avoid overlaps or redundancies. Out of the available courses the peers saw attractive combination options such as Data Science, Operations Research, Decision Support, Software Development & Management, Web Computing (or Web Engineering or Internet of Things and Services), Smart Systems, Statistics & Econometrics or Business Analysis. For all these areas a broad variety of courses does already exist. However, very important was considered by the peers that modules specialized on some of the core disciplines of Information Systems Management such as “Business Application Systems”, “Knowledge Management and e-Collaboration”, “Digital Transformation and Change Management”, “IS/ITManagement” or “IS Governance” are missing. Consequently, the peers strongly recommended strengthening these aspects which could also be introduced in a form of specialization area.

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| Criterion 1.4 Admission requirements |
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Evidence:

- Self-Assessment Report

Preliminary assessment and analysis of the peers:

Admission requirements are regulated for all study programmes in the same manner and follow a combination of High School results and an entrance exam at the Faculty. Thereby applicants can achieve a maximum of 100 points, 40 coming from High School grades, 60 from the entrance exam. All those who pass the entrance exam are being ranked in an enrolment list. Government defines the number of total places for enrolment and also the

number of places among those enrolled that will receive government funding. The remaining persons on the list are enrolled as self-funding students. In the case of Information systems and technologies there are currently 390 places of which 190 are government-funded and 200 self-financed. If several applicants achieve exactly the same number of points all of them are accepted since there are no further criteria in the election process. Quotas for applicants with special needs as well as ethnical minorities are equally respected. With the entrance regulations thus determined the peers found the admission requirements for all programmes suitable and well-defined.

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

From the comment of the HEI the peers welcome the announcement that a study programme council shall be formed in near future in order to improve the organization of the study programmes. The panel is convinced that this will be a first step in the right direction to increase the efficiency on organizational and structural level of the programmes.

Further, they understand that detailed information about the available specializations in Organization and Management as well job profiles are being presented in a separate guide that can be purchased by students at the Faculty bookstore. The peers welcome the Faculty's initiative that such descriptions will be presented in near future also on the programmes' websites. Thus, the panel maintains its criticism also regarding the more differentiating descriptions of the Information Systems and Technologies programmes until the modifications are being made accessible on the website.

Regarding the specialization areas for the Information Systems and Technologies programmes the peers approve very much of the faculty's ambitions to strengthen the core disciplines with modules such as "Business Application Systems", "Knowledge Management and e-Collaboration", "Digital Transformation and Change Management", "IS/IT Management" or "IS Governance". They will be glad to review the improvements made during a future re-accreditation.

In conclusion, the peers agree this criterion to be partly fulfilled.

2. The degree programme: structures, methods and implementation

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| Criterion 2.1 Structure and modules |
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Evidence:

- Self-Assessment Report
- Curriculum for Information Systems and Technologies
- Curriculum for Information Systems and Technologies - distance learning
- Curriculum for Management and Organization
- Module Descriptions
- SSC-based Objectives-Module-Matrices for all courses
- Audit discussions

Preliminary assessment and analysis of the peers:

All study programmes under review are divided into modules which comprise a sum of teaching and learning. The panel found the structure of the modules in general to be adequate and manageable.

As already described, the curricula offer a great variety of electives which in the case of the Information Systems programmes should be aligned in a more expedient way. Apart from this practical issue, the peers were convinced, that the programme structures allow for an individual yet goal-oriented order of study in the designated time. Practical experience in the form of an internship is also part of the curriculum, although only in a small module of two ECTS credits. Nevertheless, the peers understood that internships have been introduced as mandatory part of Serbian curricula only in 2009. However, many students use the option of voluntary internships during their holidays. This tradition was confirmed by the industry representatives. They argued that otherwise the companies would have to share their responsibility for content and structure with the universities and thus prefer to leave them out. Consequently, the peers accepted that students do a small internship as part of their degree programme for which they are awarded two ECTS while they gain much more practical experience during their holidays on a voluntary but frequent basis. In addition to the internships practical work is part of many modules for which the faculty provides excellent equipment on its premises (compare criterion 4.3).

Similarly the Bachelor thesis or final paper as it is termed is not of an overly extensive dimension with only seven ECTS credits. Since the peers gained a qualitatively good impression of the final papers they agreed that both practical experience as well as capstone project effectively support the learning progress of the students.

International mobility is generally promoted by the faculty but also due to political circumstances is still in its infancy. Offers and co-operations are slowly being established but participation of students is not as high as could be expected. During the discussion with the

students it became apparent that financial issues are the most discouraging factor reason why students shy away from going abroad. Nonetheless, some of them expressed great interest in doing so but complained about sometimes difficult procedures and limited places where to go. Consequently, the peers agreed that the offers should be continually extended but most importantly that the good infrastructure already existing should be better communicated to the students. Superficial fear could be easily overcome if more information about available scholarships and other opportunities were communicated more straightforwardly to the students. Furthermore, at the moment the programmes do not offer any clearly identifiable mobility windows; on the contrary, it was explained that students are welcome to go abroad at any time during their course of study. Although this might generally be positive it could be helpful to indicate one or two semesters where going abroad would be most logical and courses could be easily acknowledged. This could help to give students further orientation and push them to plan their mobility in advance. Apart from these communicative issues the panel was happy to see the regulations for the acknowledgement of qualifications gained at other universities are well in order and students are aware of it. Before leaving, students and faculty set up a learning agreement defining the courses that will be acknowledged afterwards. If courses cannot be acknowledged this needs to be justified by the responsible university committee. Consequently, the peers see that the acknowledgment regulations for international mobility are in accordance with the Lisbon convention.

In conclusion, the peers were of the opinion that the structure of the curricula and modules were well organized and support an effective study progress.

Criterion 2.2 Work load and credits

Evidence:

- Module Handbooks
- Self-Assessment Report
- Audit discussions

Preliminary assessment and analysis of the peers:

All modules are assigned with ECTS credits amounting to 30 credits each semester. Consequently, the workload is equally distributed over eight semesters. Each credit point amounts to 25-30 hours of student workload. The discussion with the students revealed that the calculation of workload is usually correct although it is not assessed by the course

evaluation. Nevertheless, as will be discussed under criterion 6 the peers were convinced that sufficient committees with student participation are in existence, which offer the opportunity to discuss any irregularities of the workload that might arise. The only critical point that was discussed was the full-time degree programme distance learning since it is generally thought to address working students. Thus, the peers wondered if a workload of 30 ECTS per semester can be done by people with regular jobs. The HEI outlined that after completion of the first year in which they must take 60 ECTS-credits self-financed students can choose from a range of 37-60 ECTS-credits in order to better coordinate with their job. In the discussion the peers learned, that according to Serbian law the introduction of part-time degree programmes is not allowed, thus there is no other possibility. However, the examination regulations allow for an extension of studies up to eight years. Additionally, the students of the distance learning programme present at the discussion affirmed that workload and job could be well managed. It is understood that many of the courses are offered at very early or late hours so that they can be attended by working students. Further, the flexible handling of the examination periods described below allow for an individual time schedule. Given the legal limitations and in order to appreciate the initiative taken by the university to offer such a programme at all the peers accepted this solution. However, they express their support of the programme coordinators to further develop the distance learning programme and to exercise some pressure on the government to come to a more flexible approach.

Criterion 2.3 Teaching methodology

Evidence:

- Self-Assessment Report
- Audit discussions

Preliminary assessment and analysis of the peers:

It has already been outlined that teaching in the three programmes includes many practical approaches which was welcomed by the peers, especially since they learned that practice-oriented teaching and the integration of practical experience into the curriculum are quite innovative in the Serbian context. In general, teaching includes lectures, classroom exercises, tutorials, group exercises, laboratory work, group and individual projects as well as seminars. From the discussion with the teaching staff it became apparent that the teaching methodology includes modern didactical approaches and technological innovations. Mate-

rials for all modules are being presented online where also details about the schedule, assignments, etc. are made accessible. Several staff members explained to the panel how they integrate practical approaches and real-life project work into their courses in order to keep up student enthusiasm. The peers liked how the teaching staff emphasized industry co-operations in order to prepare their students to normal work cycles, project management and industry demand although the number of mandatory internships is still limited. Innovative teaching and e-learning are of special importance in the context of the distance learning programme. The peers were informed that scripts and exercises of all courses are available online, additionally online demonstrations with audio commentary are produced for most modules; some are even filmed and posted online.

During the on-site-visit the peers also gained a very positive impression of the laboratories available which are equipped with the modern technology required. Great extension works were going on that promised to modernize the facilities significantly within a short time and create more space for innovation centres and needed places for students to study, do research and work in groups. In sum, the peers were convinced that the teaching methodology applied in the programmes under review is state-of-the-art and ensures the learning progress of all students.

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| Criterion 2.4 Support and assistance |
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Evidence:

- Self-Assessment Report
- Audit Discussions

Preliminary assessment and analysis of the peers:

The peers had a very good impression of the offers related to support and assistance of the students at FOS. The students confirmed that the teaching staff is always available to any questions and supports the students in every possible way. Similarly, the students' office offers support and a great variety of student societies, especially sports clubs, are made available and generously funded. Especially impressive was the recently established innovation centre that enables the students to develop their own ideas in a modern ambience and infrastructure offers guest lectures and classes, supports start-up-companies, etc. During the whole visit the peers got a great impression of the drive of staff and students that perfectly underlined the outstanding reputation of the degree programmes in the country and beyond.

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

Regarding the aspects of international mobility the peers welcome that the HEI plans to introduce a mobility window in order to help students to plan their mobility activities and course acknowledgment. The peers emphasize that they did have a good impression of the offers already in existence but underline, that the communication of these offers and possibilities may still be improved in the future.

In conclusion the peers consider this criterion to be largely fulfilled.

3. Exams: System, concept and organisation

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| Criterion 3 Exams: System, concept and organisation |
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Evidence:

- SSC-based Objectives-Module-Matrices for all programmes in the respective Self-Assessment Reports
- Self-Assessment Reports
- Module Handbooks
- Audit discussions

Preliminary assessment and analysis of the peers:

Each course-content in the reviewed study programmes is reflected in exams which are distributed in two examination periods each semester, the midterm and the final period. However, generally there are six exam windows from which students can flexibly and independently choose when to actually take their exams. This solution was considered very generous by the peers who were convinced that through this measure an equal distribution of the examinations is easily possible. This impression was confirmed by the students who very much like the flexibility which is also offered to the participants of the distance learning programme. Since all students have to take their exams in person at the University the six exam windows allow for a high compatibility with other work schedules.

The peers checked a variety of exams and bachelor theses and agreed that they all represented an adequate level of knowledge as represented by the EQF-Level 6. The Bachelor theses or “final papers” are awarded 7 ECTS only but the peers were generally contented with their standard and appreciated the fact the FOS co-ordinators are constantly trying to adapt to European standards. Further, the final paper is often prepared in connection with

an industry internship of 2 ECTS which also leads to an additional enhancement of the quantity. Thus, the peers encourage the co-ordinators to develop the concept of Bachelor theses in the programmes in the line already pursued.

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

The peers consider this criterion to be completely fulfilled.

4. Resources

Criterion 4.1 Staff

Evidence:

- Self-Assessment Reports include Student-Teacher-Ratio, Academic staff, Equipment and Financial Resources
- On-site-visit
- Audit discussions

Preliminary assessment and analysis of the peers:

Along with the information in the SAR the HEI presented lists of staff members and their research areas for all study programmes. On this basis, the peers were convinced that the number of staff assigned to the programmes was sufficient to properly sustain them. All teachers are of outstanding qualification, many of them have international degrees and good English language competences. In the discussion with the staff, the panel learned that the teaching staff feels well supported by the University, possibilities for sabbaticals do exist and after three years staff members may apply for additional funding for international research for example in the context of PhD-theses. Apart from that each staff member has 700 Euro per year available for the attendance at conferences etc.; a sum which was not considered sufficient by staff and peers but which is still more than average in Serbia. In general, the staff members showed to be quite content with university support, teaching load and additional funding.

Criterion 4.2 Staff development

Evidence:

- Self-Assessment Reports
- Audit discussions

Preliminary assessment and analysis of the peers:

As outlined above the staff members felt generally well supported by the University. Further, there is a broad variety of offers for individual professional development. Via Erasmus+ they can go abroad for research projects. Further, the University offers specific courses with a focus on the improvement of didactical skills. On a voluntary basis staff members can also obtain a didactical certificate; these measures are considered to be important since good evaluation results and teaching quality are important criteria in the internal promotion procedures. A special focus is also laid on the improvement of English language skills since it is the general strategy of the Faculty to increase the number of courses offered in English in the process of internationalization.

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| Criterion 4.3 Funds and equipment |
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Evidence:

- Self-Assessment Reports include Student-Teacher-Ratio, Academic staff, Equipment and Financial Resources
- On-site-visit
- Audit discussions

Preliminary assessment and analysis of the peers:

The programmes are mostly funded by student fees. According to the results in the entrance exams the most qualified receive government scholarships which also pay for the student fees, all other students may matriculate on a self-paying basis. Thus, the funding of the programme is largely related to the number of students. Since the programmes enjoy an outstanding reputation in Serbia and graduates are highly competitive on the job market the peers have no doubt that the funding in the accreditation period will be secured. Further, through the introduction of the distance learning programme a model has been established that allows taking in even more students without overstraining the FOS premises.

Concerning the equipment the peers had a good impression during their tour through the institution. While much is under construction at the moment the laboratories are already well-equipped and those parts of the extension works already finished fully supported this impression. The innovation centre has already been outlined as an outstanding opportunity

for research and study and if the construction works continue as envisaged the equipment and infrastructure will have significantly improved at the end of the accreditation period.

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

The peers consider this criterion to be completely fulfilled.

5. Transparency and documentation

Criterion 5.1 Module descriptions

Evidence:

- Module Handbooks

Preliminary assessment and analysis of the peers:

The peers appreciated the module descriptions presented beforehand with the self-assessment report. From the documentation and during the discussion with teaching staff and students they made certain that a complete description for each module is available to the students via internet thus ensuring that all students have sufficient information about the courses and their contents in advance. However, the descriptions available online are merely in Serbian; since the FOS aims at a further internationalization of the programmes the peers strongly recommend to present translations of all the descriptions. Further, the peers could not find any description of the module “final paper”. It was explained that there is a Serbian version available so the peers ask for a presentation of an English translation.

In some modules the description of the learning outcomes was considered to be too generic or redundant. For example, in the module “Software Engineering” the learning outcomes were simply given as “Students’ ability to use principles and techniques of contemporary software engineering” or in the module “Human Resources Management” as “Gaining necessary knowledge and preparing students to use it in practice”. In these cases the peers ask for a more detailed description in order to ensure the modules’ outcome-oriented approach. Also, the recommended literature was not always up-to-date. The peers would recommend re-checking the descriptions and occasionally update them. In a few cases there were also inconsistencies with the awarded ECTS credits. In “E-Business” the ECTS points are given as 5/6. While there may be an explanation for this it does not become clear from the description itself so the peers consider it necessary to add the missing information. Apart from these issues, the descriptions offer sufficient information about the

course content, the module responsibility, required examinations, teaching methodologies and workload.

Criterion 5.2 Diploma and Diploma Supplement

Evidence:

- Exemplary Diploma Supplement for each degree programme

Preliminary assessment and analysis of the peers:

Along with the self-assessment report the HEI presented exemplary Diploma Supplements for each degree programme covering all required information about the programme contents, the curricula, the calculation of the final grade and the Serbian system of higher education.

Criterion 5.3 Relevant rules

Evidence:

- Regulations for examination, admission, etc. are added to the Self-Assessment Report

Preliminary assessment and analysis of the peers:

The peers realized that regulations for all important aspects of student life and the respective degree programmes have been issued by the HEI and are accessible to the students through the University website. During the discussion with the students, it became clear that all participants knew perfectly well where to find any regulations or whom to contact if any additional information was required.

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

Together with the comments on the peers' report the HEI presented a translation of the course description for the final project that was generally satisfying. Further, more detailed descriptions of learning outcomes were presented and inconsistencies with the ECTS credits detailed. However, the peers emphasize that the sometimes limited descriptions of learning outcomes do also apply to other modules of which the corrected ones were only examples. Hence, they ask the HEI to check the module handbook and present a corrected version in future. The panel acknowledges the presented list of course literature for 2017/18 which is completely up-to-date.

Consequently, the peers consider this criterion to be partly fulfilled.

6. Quality management: quality assessment and development

Criterion 6 Quality management: quality assessment and development

Evidence:

- Surveys and Questionnaires attached to the Self-Assessment Report
- Audit discussions

Preliminary assessment and analysis of the peers:

Through the material presented in the Self-Assessment Report as well as the discussions during the on-site visit the peers had an excellent impression of the quality assurance mechanisms in place at the University and the FOS. For further external quality checking the FOS has an ISO 9001:2008 certificate standard, which is confirmed by Bureau Veritas Certification. The most central element of internal quality assurance is the course evaluation carried out every semester for each course. On faculty level a commission discusses the evaluation results and deals with any complaints; if individual teachers are criticized they will have a discussion with the dean. In the case of repeated issues additional didactical courses may be demanded. The students are not immediately informed about the results of each evaluation but the peers learned that student representatives are part of all commissions involved. Further, if any demands of the students cannot be met by the faculty this needs to be explained to the students. In addition to the course evaluations graduate students are also being asked to answer a survey. But importantly, the peers clearly saw that students and teachers are enjoying an open communication on faculty level where criticism can be expressed and is taken seriously. During the discussion with the students they emphasized that the faculty staff is very interested in their feedback and improving the teaching quality of the programmes. Therefore, the peers agreed that the quality management processes are well established and aim at an on-going improvement of the programmes.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 6:

The peers consider this criterion to be completely fulfilled.

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:

D 1. Module description of the „final project“

E Comment of the Higher Education Institution (10.01.2018)

The institution provided a detailed statement in a separate document as well as the following additional documents:

- Coverage Plan of courses with teachers and literature for school year 2017/2018

F Summary: Peer recommendations (19.01.2018)

Taking into account the additional information and the comments given by the HEI the peers summarize their analysis and final assessment for the award of the seals as follows:

| Degree Programme | ASIIN-seal | Subject-specific label | Maximum duration of accreditation |
|---|--------------------------------|------------------------|-----------------------------------|
| Ba Information Systems and Technologies | With requirements for one year | Euro-Inf | 30.09.2023 |
| Ba Information Systems and Technologies – Distance Learning | With requirements for one year | Euro-Inf | 30.09.2023 |
| Ba Management and Organization | With requirements for one year | - | 30.09.2023 |

Requirements

- A 1. (ASIIN 1.1) Draft the educational objectives/learning outcomes so that they describe in adequate detail the academic, subject-specific and professional classification of the qualifications gained in the degree programmes.
- A 2. (ASIIN 5.1) Rewrite the module descriptions so as to include information about the respective learning outcomes and the awarded ECTS credits.

Recommendations

For the Ba Information Systems and Technologies and Information Systems and Technologies – Distance learning

- E 1. (ASIIN 1.3) It is recommended to indicate different specializations in the elective courses through exemplary study plans.
- E 2. (ASIIN 1.3) It is recommended to strengthen the core disciplines of Information Systems management such as “Business Application Systems”, “Knowledge Management and e-Collaboration”, “Digital Transformation and Change Management” or “IS/IT Management” or “IS Governance”.
- E 3. (ASIIN 1.1) It is recommended to further strengthen the organization of the programme on Faculty level through the introduction of a responsible programme co-

ordinator and the formulation of general programme objectives accessible to all stakeholders.

For all programmes

- E 4. (ASIIN 2.1) It is recommended to enhance and to better communicate the offers of international mobility (through indicating a fixed window of mobility).
- E 5. (ASIIN 5.1) It is recommended, to translate all module descriptions into English and to make them accessible to all stakeholders via the programme websites.

G Comment of the Technical Committee 07 – Business Administration (13.03.2018)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the procedure and agrees with the assessment of the peers in all aspects.

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

The Technical Committee deems that the intended learning outcomes of the degree programmes Ba Information Systems and Technologies and Ba Information Systems and Technologies – Distance Learning do comply with the Subject-Specific Criteria of the Technical Committee 07 – Business Administration.

The TC 07 – Business Administration recommends the award of the seals as follows:

| Degree Programme | ASIIN-seal | Subject-specific label | Maximum duration of accreditation |
|---|--------------------------------|-------------------------------|--|
| Ba Information Systems and Technologies | With requirements for one year | Euro-Inf | 30.09.2023 |
| Ba Information Systems and Technologies – Distance Learning | With requirements for one year | Euro-Inf | 30.09.2023 |
| Ba Management and Organization | With requirements for one year | - | 30.09.2023 |

H Decision of the Accreditation Commission (23.03.2018)

Assessment and analysis for the award of the ASIIN seal:

The Accreditation Committee discusses the procedure and agrees with the assessment of the peers and the Technical Committee in all aspects.

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

The Accreditation Committee deems that the intended learning outcomes of the degree programmes Ba Information Systems and Technologies and Ba Information Systems and Technologies – Distance Learning do comply with the Subject-Specific Criteria of the Technical Committee 07 – Business Administration.

The Accreditation Committee recommends the award of the seals as follows:

| Degree Programme | ASIIN-seal | Subject-specific label | Maximum duration of accreditation |
|---|--------------------------------|-------------------------------|--|
| Ba Information Systems and Technologies | With requirements for one year | Euro-Inf | 30.09.2023 |
| Ba Information Systems and Technologies – Distance Learning | With requirements for one year | Euro-Inf | 30.09.2023 |
| Ba Management and Organization | With requirements for one year | - | 30.09.2023 |

Requirements

- A 1. (ASIIN 1.1) Draft the educational objectives/learning outcomes so that they describe in adequate detail the academic, subject-specific and professional classification of the qualifications gained in the degree programmes.
- A 2. (ASIIN 5.1) Rewrite the module descriptions so as to include information about the respective learning outcomes and the awarded ECTS credits.

Recommendations

For the Ba Information Systems and Technologies and Information Systems and Technologies – Distance learning

- E 1. (ASIIN 1.3) It is recommended to indicate different specializations in the elective courses through exemplary study plans.
- E 2. (ASIIN 1.3) It is recommended to strengthen the core disciplines of Information Systems management such as “Business Application Systems”, “Knowledge Management and e-Collaboration”, “Digital Transformation and Change Management” or “IS/IT Management” or “IS Governance”.
- E 3. (ASIIN 1.1) It is recommended to further strengthen the organization of the programme on Faculty level through the introduction of a responsible programme coordinator and the formulation of general programme objectives accessible to all stakeholders.

For all programmes

- E 4. (ASIIN 2.1) It is recommended to enhance and to better communicate the offers of international mobility (through indicating a fixed window of mobility).
- E 5. (ASIIN 5.1) It is recommended, to translate all module descriptions into English and to make them accessible to all stakeholders via the programme websites.

Appendix: Programme Learning Outcomes and Curricula

According to the self-assessment report the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Information Systems and Technologies:

“The aim of the study program is to gain the latest knowledge and skills in the field of information systems and technologies, introduction and utilization of modern methods and techniques, to prepare students for a successful application of the gained knowledge and skills in their profession as well as to resume further education at higher levels of study.

Information Systems and Technologies is a study program of undergraduate studies. The outcome of the study process is to create competent and multidisciplinary oriented engineers for information systems who can work effectively and efficiently in dynamic business environment with the acquired theoretical and practical knowledge.”

The following **curriculum** is presented:

| | Code | Course | Semester | Type | Course status | Classes of active teaching | | | Other classes | ECTS |
|------------|--------|---------------|----------|------|---------------|----------------------------|-----------|----------------|---------------|------|
| | | | | | | Lectures | Exercises | Lab. exercises | | |
| FIRST YEAR | | | | | | | | | | |
| 1. | Z00001 | Mathematics 1 | 1 | TM | O | 2 | 2 | 0 | 1 | 6 |
| 2. | Z00002 | Economics | 1 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 3. | Z00003 | Management | 1 | TM | O | 2 | 2 | 0 | 0 | 6 |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|-----|------------|--|--|-----|----|---|---|---|---|---|---|
| 4. | Z0000 4 | Fundamentals of Information and Communication Technologies | | 1 | AO | O | 2 | 1 | 1 | 0 | 5 |
| 5. | Z00IP1 | Elective course 1 | | 1 | AO | E | | | | | 4 |
| | | Z00005 | Socio-logy | 1 | AO | E | 2 | 1 | 0 | 0 | |
| | | Z00006 | Psycho-logy | 1 | AO | E | 2 | 1 | 0 | 0 | |
| 6. | Z00IP2 | Elective course 2 | | 1,2 | AO | E | | | | | 5 |
| | | Z00007 | English lan- guage for spe- cific pur- poses 1 | 1,2 | AO | E | 2 | 2 | 0 | 0 | |
| | | Z00008 | French lan- guage for spe- cific pur- poses 1 | 1,2 | AO | E | 2 | 2 | 0 | 0 | |
| 7. | Z0001 1 | Mathematics 2 | | 2 | TM | O | 2 | 3 | 0 | 1 | 6 |
| 8. | | Programming 1 | | 2 | NS | O | 2 | 0 | 2 | 0 | 4 |
| 9. | Z0001 2 | Organization Ba- sic | | 2 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 10. | Z0001 3 | Production sys- tems | | 2 | NS | O | 2 | 2 | 0 | 0 | 6 |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | |
|---|------------|--|-----|----|---|----|----|---|---|-----------|
| 11. | Z0001 4 | Introduction to Information Sys- tems | 2 | AO | O | 2 | 1 | 1 | 0 | 6 |
| Total of active teaching classes this academic year = | | | | | | 22 | 18 | 4 | 2 | 60 |
| SECOND YEAR | | | | | | | | | | |
| 1. | 00000 1 | Computer Archi- tecture and Oper- ating Systems | 3 | NS | O | 2 | 1 | 1 | 0 | 6 |
| 2. | 00000 2 | Programming 2 | 3 | NS | O | 2 | 1 | 1 | 0 | 6 |
| 3. | 00000 3 | Mathematics 3 | 3 | TM | O | 2 | 2 | 0 | 1 | 6 |
| 4. | 00000 4 | Marketing | 3 | NS | O | 2 | 2 | 0 | 0 | 5 |
| 5. | 00000 5 | Probability The- ory | 3 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 6. | Z00IP4 | Elective course 3 | 3,4 | AO | E | | | | | 3 |
| | | 000006 English lan- guage for spe- cific pur- poses 2 | 3,4 | AO | E | 2 | 2 | 0 | 0 | |
| | | 000007 French lan- guage for spe- cific pur- poses 2 | 3,4 | AO | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | |
|---|--------|--|---|----|---|----|----|---|---|-----------|
| 7. | 000010 | Data Structures and Algorithms | 4 | NS | O | 2 | 2 | 0 | 0 | 6 |
| 8. | 000013 | Statistics | 4 | TM | O | 2 | 2 | 0 | 1 | 6 |
| 9. | 000014 | Management of technology and development | 4 | TM | O | 2 | 2 | 0 | 1 | 5 |
| 10. | 000015 | Financial Management and Accounting | 4 | AO | O | 2 | 2 | 0 | 0 | 6 |
| 11. | ITIP01 | Elective course IT-01 | 4 | | E | | | | | 5 |
| | | 000011 Numerical Analysis | 4 | NS | E | 2 | 2 | 0 | 0 | |
| | | 000012 Discrete mathematical structures | 4 | TM | E | 2 | 2 | 0 | 0 | |
| Total of active teaching classes this academic year = | | | | | | 22 | 20 | 2 | 3 | 60 |
| THIRD YEAR | | | | | | | | | | |
| 1. | 000018 | Computer networks and telecommunication | 5 | NS | O | 2 | 1 | 1 | 0 | 6 |
| 2. | 000019 | Operational Research 1 | 5 | TM | O | 2 | 2 | 0 | 1 | 6 |
| 3. | 000020 | System theory | 5 | NS | O | 2 | 2 | 0 | 0 | 6 |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|-----|------------|--|--|---|----|---|---|---|---|---|---|
| 4. | 00002 1 | E-business | | 5 | AO | O | 2 | 1 | 1 | 0 | 6 |
| 5. | ITIP02 | Elective course IT-02 | | 5 | | E | | | | | 5 |
| | | 000016 | Human re- source ma- nage- ment | 5 | AO | E | 2 | 2 | 0 | 0 | |
| | | 000017 | Project Ma- nage- ment | 5 | AO | E | 2 | 2 | 0 | 0 | |
| 6. | 00002 2 | Operational Rese- arch 2 | | 6 | TM | O | 2 | 2 | 0 | 1 | 5 |
| 7. | 00002 3 | Databases | | 6 | NS | O | 2 | 2 | 0 | 1 | 6 |
| 8. | 00002 4 | Programming lan- guages | | 6 | AO | O | 2 | 1 | 1 | 0 | 5 |
| 9. | 00002 5 | Legal Basis of In- formation Sys- tems | | 6 | AO | O | 2 | 2 | 0 | 0 | 5 |
| 10. | 00002 6 | Business Proces- ses Modelling | | 6 | NS | O | 2 | 2 | 0 | 0 | 5 |
| 11. | ITIP03 | Elective course IT-03 | | 6 | | E | | | | | 5 |
| | | 000027 | Deci- sion Theory | 6 | AO | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|---|--------|-------------------------------------|-----------------------------|---|----|---|----|----|---|---|-----------|
| | | 000028 | Linear Statistical Models | 6 | AO | E | 2 | 2 | 0 | 0 | |
| Total of active teaching classes this academic year = | | | | | | | 22 | 19 | 3 | 3 | 60 |
| FOURTH YEAR | | | | | | | | | | | |
| 1. | 000029 | Information Systems Design | | 7 | TM | O | 2 | 2 | 1 | 0 | 6 |
| 2. | 000030 | Internet Technologies | | 7 | AO | O | 2 | 1 | 1 | 1 | 6 |
| 3. | 000031 | Simulation and simulation languages | | 7 | TM | O | 2 | 1 | 1 | 0 | 6 |
| 4. | 000034 | Intelligent Systems | | 7 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 5. | ITIP04 | Elective course IT-04 | | 7 | | E | | | | | 4 |
| | | I00001 | E-learning | 7 | AO | E | 2 | 2 | 0 | 0 | |
| | | I00110 | Software Engineering | 7 | AO | E | 2 | 2 | 0 | 0 | |
| | | I00004 | Software Project Management | 7 | AO | E | 2 | 2 | 0 | 0 | |
| | | I00006 | Decision support systems | 7 | AO | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|------------|--|---|----|---|---|---|---|---|--|
| | | I0001 2 | Mathe- matics Software Packa- ges | 7 | AO | E | 2 | 2 | 0 | 0 | |
| | | I000A 9 | Opti- mization Methods | 7 | AO | E | 2 | 2 | 0 | 0 | |
| | | I0001 4 | Data analysis | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I0001 6 | Ad- vanced .NET technol- ogies | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I0001 8 | Software patterns | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I0001 9 | Intro- duction to Com- binato- rial Opti- mization | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I0002 0 | Intro- duction to Math- ematical Pro- gram- ming | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I0002 4 | Multi- media | 7 | NS | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|--------|---|---|----|---|---|---|---|---|--|
| | | I00028 | Analysis and Logical Design of IS (project) | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I00032 | Risk management in e-business project | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I00033 | Concurrent programming | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I00034 | Time Series Analysis | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I00103 | Reliability and Risk Analysis | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I00037 | Game theory fundamentals | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I00100 | Econometrics | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | | Dynamics of organizational systems | 7 | NS | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|----|------------|---------------------------|--|---|----|---|---|---|---|---|---|
| | | | Distrib- uted com- puter systems | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | | User in- terface design | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | | XML Techno- logies and Applica- tions | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | | Pro- gram- ming langu- age transla- tors | 7 | SA | E | 2 | 2 | 0 | 0 | |
| | | | Mobile business | 7 | SA | E | 2 | 2 | 0 | 0 | |
| 6. | 00003 3 | Software design | | 8 | NS | O | 2 | 1 | 1 | 0 | 6 |
| 7. | 00008 1 | Fundamentals of Qualiy | | 8 | NS | O | 2 | 2 | 0 | 1 | 5 |
| 8. | ITIP05 | Elective course IT- 05 | | 8 | | E | | | | | 4 |
| | | I0001 3 | Ele- ments of the The- ory of al- gorithms | 8 | SA | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|------------|---|---|----|---|---|---|---|---|--|
| | | I0000 2 | Digital Econo- mics | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0003 5 | Biosta- tistics | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0010 7 | Financial systems mode- ling | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0010 8 | Intro- duction to opti- mal con- trol and game theory | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0011 1 | Supply Chain Manage- ment 1 | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0011 2 | Intro- duction to fuzzy logic | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0011 4 | Web Pro- gram- ming | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0000 3 | Internet marke- ting | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0000 5 | Machine learning | 8 | SA | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|------------|---|---|----|---|---|---|---|---|--|
| | | I0000 8 | Applied Operati- ons Re- search | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0001 0 | Pro- gram- ming data ac- cess | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0001 1 | Basis of Compu- ter Geo- metry | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0001 7 | Advan- ced Java Techno- logies | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0002 1 | Heuristic methods | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0002 5 | Multi- media produc- tion | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0002 6 | Mobile compu- ting | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0002 7 | Compu- ter Sys- tems Security | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0002 9 | Selected chapters | 8 | SA | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|--------|---|---|----|---|---|---|---|---|--|
| | | | in information systems | | | | | | | | |
| | | I00030 | Physical Project of IS in Selected Software Environment (project) | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00031 | Modern Software Architectures | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00036 | Statistical Inference | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00038 | Mathematical Models of Efficiency | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00039 | Introduction to electronic business management | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | IOA104 | Soft computing | 8 | SA | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|--|---|---|----|---|---|---|---|---|--|
| | | | Internet of things | 8 | TM | E | 2 | 2 | 0 | 0 | |
| | | | Intro-duction to neural net-works | 8 | AO | E | 2 | 2 | 0 | 0 | |
| | | | Peda-gogy with di-dactics | 8 | TM | E | 2 | 2 | 0 | 0 | |
| | | | Open source software | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | | Systems theory 2 | 8 | NS | E | 2 | 2 | 0 | 0 | |
| | | | English lan-guage for spe-cific pur-poses 3 | 8 | AO | E | 2 | 2 | 0 | 0 | |
| | | | French lan-guage for spe-cific pur-poses 3 | 8 | AO | E | 2 | 2 | 0 | 0 | |
| | | | Mathe-matical Logic with Ap-plica-tions | 8 | SA | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|----|--------|---------------------------|--|---|----|---|---|---|---|---|---|
| | | | Mathe- matics and mu- sic | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | | Optimi- zation in Natural Re- sources Manage- ment | 8 | SA | E | 2 | 2 | 0 | 0 | |
| 9. | ITIP06 | Elective course IT- 06 | | 8 | SA | E | | | | | 4 |
| | | 10000 2 | Digital Econo- mics | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | 10000 8 | Applied Operati- ons Re- search | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | 10000 3 | Internet marke- ting | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | 10000 5 | Machine learning | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | 10000 8 | Advan- ced Planning and Schedu- ling | 8 | | E | 2 | 2 | 0 | 0 | |
| | | 10001 0 | Pro- gram- ming | 8 | SA | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|------------|--|---|----|---|---|---|---|---|--|
| | | | data access | | | | | | | | |
| | | I0001 1 | Basis of Computer Geometry | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0001 3 | Elements of the Theory of algorithms | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0001 7 | Advanced Java Technologies | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0002 1 | Heuristic methods | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0002 5 | Multi-media production | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0002 6 | Mobile computing | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0002 7 | Computer Systems Security | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0002 9 | Selected chapters in information systems | 8 | SA | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|------------|--|---|----|---|---|---|---|---|--|
| | | I0003 0 | Physical Project of IS in Selected Software Environ- ment (project) | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0003 1 | Modern Software Architec- tures | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0003 5 | Biosta- tistics | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0003 6 | Statisti- cal Infer- ence | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0003 8 | Mathe- matical Models of Effi- ciency | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0003 9 | Intro- duction to elec- tronic business manage- ment | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0010 7 | Financial systems mode- ling | 8 | SA | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|------------|---|---|----|---|---|---|---|---|--|
| | | I0010 8 | Intro- duction to opti- mal con- trol and game theory | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0011 1 | Supply Chain Manage- ment 1 | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0011 2 | Intro- duction to fuzzy logic | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0011 4 | Web Pro- gram- ming | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | IOA10 4 | Soft compu- ting | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | | Internet of things | 8 | TM | E | 2 | 2 | 0 | 0 | |
| | | | Intro- duction to neural net- works | 8 | AO | E | 2 | 2 | 0 | 0 | |
| | | | Peda- gogy with di- dactics | 8 | TM | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|--|--|---|----|---|---|---|---|---|--|
| | | | Open source software | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | | Systems theory 2 | 8 | NS | E | 2 | 2 | 0 | 0 | |
| | | | English language for specific purposes 3 | 8 | AO | E | 2 | 2 | 0 | 0 | |
| | | | French language for specific purposes 3 | 8 | AO | E | 2 | 2 | 0 | 0 | |
| | | | Mathematical Logic with Applications | 8 | TM | E | 2 | 2 | 0 | 0 | |
| | | | Mathematics and music | 8 | TM | E | 2 | 2 | 0 | 0 | |
| | | | Optimization in Natural Resources Management | 8 | SA | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | |
|---|--------|--|---|----|---|----|----|---|---|-----------|
| 10. | ITIP07 | Elective course IT-07 (from the elective course sets IT-05 and IT-06) | 8 | SA | E | 2 | 2 | 0 | 0 | 4 |
| 11. | Z00020 | Internship | 8 | SA | O | | | | | 2 |
| 12. | 000059 | Final paper | 8 | SA | O | | | | | 7 |
| Total of active teaching classes this academic year = | | | | | | 20 | 17 | 4 | 2 | 60 |

According to the self-assessment report the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Information Systems and Technologies – Distance Learning:

“The aim of the study program is to gain the latest knowledge and skills in the field of information systems and technologies, introduction and utilization of modern methods and techniques, to prepare students for a successful application of the gained knowledge and skills in their profession as well as to resume further education at higher levels of study.

Information Systems and Technologies is a study program of undergraduate studies. The outcome of the study process is to create competent and multidisciplinary oriented engineers for information systems who can work effectively and efficiently in dynamic business environment with the acquired theoretical and practical knowledge.”

The following **curriculum** is presented:

| | Code | Course | Semester | Type | Course status | Classes of active teaching | Other classes | ECTS |
|--|------|--------|----------|------|---------------|----------------------------|---------------|------|
|--|------|--------|----------|------|---------------|----------------------------|---------------|------|

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | Lec- ture s | Excer- cices | Lab. exerc- cices | | | |
|------------|------------|---|--|-----|----|-------------------|-----------------|-------------------------|---|---|---|
| FIRST YEAR | | | | | | | | | | | |
| 1. | Z0000 1 | Mathematics 1 | | 1 | TM | O | 2 | 2 | 0 | 1 | 6 |
| 2. | Z0000 2 | Economics | | 1 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 3. | Z0000 3 | Management | | 1 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 4. | Z0000 4 | Fundamentals of Information and Communication Technologies | | 1 | AO | O | 2 | 1 | 1 | 0 | 5 |
| 5. | Z00IP1 | Elective course 1 | | 1 | AO | E | | | | | 4 |
| | | Z00005 | Socio- logy | 1 | AO | E | 2 | 1 | 0 | 0 | |
| | | Z00006 | Psycho- logy | 1 | AO | E | 2 | 1 | 0 | 0 | |
| 6. | Z00IP2 | Elective course 2 | | 1,2 | AO | E | | | | | 5 |
| | | Z00007 | English lan- guage for spe- cific pur- poses 1 | 1,2 | AO | E | 2 | 2 | 0 | 0 | |
| | | Z00008 | French lan- guage for spe- cific | 1,2 | AO | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|---|------------|---|--------------------------|-----|----|---|----|----|---|---|-----------|
| | | | pur- poses 1 | | | | | | | | |
| 7. | Z0001 1 | Mathematics 2 | | 2 | TM | O | 2 | 3 | 0 | 1 | 6 |
| 8. | | Programming 1 | | 2 | NS | O | 2 | 0 | 2 | 0 | 4 |
| 9. | Z0001 2 | Organization Ba- sic | | 2 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 10. | Z0001 3 | Production sys- tems | | 2 | NS | O | 2 | 2 | 0 | 0 | 6 |
| 11. | Z0001 4 | Introduction to Information Sys- tems | | 2 | AO | O | 2 | 1 | 1 | 0 | 6 |
| Total of active teaching classes this academic year = | | | | | | | 22 | 18 | 4 | 2 | 60 |
| SECOND YEAR | | | | | | | | | | | |
| 1. | 00000 1 | Computer Archi- tecture and Oper- ating Systems | | 3 | NS | O | 2 | 1 | 1 | 0 | 6 |
| 2. | 00000 2 | Programming 2 | | 3 | NS | O | 2 | 1 | 1 | 0 | 6 |
| 3. | 00000 3 | Mathematics 3 | | 3 | TM | O | 2 | 2 | 0 | 1 | 6 |
| 4. | 00000 4 | Marketing | | 3 | NS | O | 2 | 2 | 0 | 0 | 5 |
| 5. | 00000 5 | Probability The- ory | | 3 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 6. | Z00IP4 | Elective course 3 | | 3,4 | AO | E | | | | | 3 |
| | | 000006 | English lan- guage | 3,4 | AO | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|-----|--------|--|---|-----|----|---|---|---|---|---|---|
| | | | for specific purposes 2 | | | | | | | | |
| | | 000007 | French language for specific purposes 2 | 3,4 | AO | E | 2 | 2 | 0 | 0 | |
| 7. | 000010 | Data Structures and Algorithms | | 4 | NS | O | 2 | 2 | 0 | 0 | 6 |
| 8. | 000013 | Statistics | | 4 | TM | O | 2 | 2 | 0 | 1 | 6 |
| 9. | 000014 | Management of technology and development | | 4 | TM | O | 2 | 2 | 0 | 1 | 5 |
| 10. | 000015 | Financial Management and Accounting | | 4 | AO | O | 2 | 2 | 0 | 0 | 6 |
| 11. | ITIP01 | Elective course IT-01 | | 4 | | E | | | | | 5 |
| | | 000011 | Numerical Analysis | 4 | NS | E | 2 | 2 | 0 | 0 | |
| | | 000012 | Discrete mathematical structures | 4 | TM | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | |
|---|--------|--|---|----|----|---|---|-----------|---|---|
| Total of active teaching classes this academic year = | | | | 22 | 20 | 2 | 3 | 60 | | |
| THIRD YEAR | | | | | | | | | | |
| 1. | 000018 | Computer networks and tele-communication | 5 | NS | O | 2 | 1 | 1 | 0 | 6 |
| 2. | 000019 | Operational Research 1 | 5 | TM | O | 2 | 2 | 0 | 1 | 6 |
| 3. | 000020 | System theory | 5 | NS | O | 2 | 2 | 0 | 0 | 6 |
| 4. | 000021 | E-business | 5 | AO | O | 2 | 1 | 1 | 0 | 6 |
| 5. | ITIP02 | Elective course IT-02 | 5 | | E | | | | | 5 |
| | | 000016 Human resource management | 5 | AO | E | 2 | 2 | 0 | 0 | |
| | | 000017 Project Management | 5 | AO | E | 2 | 2 | 0 | 0 | |
| 6. | 000022 | Operational Research 2 | 6 | TM | O | 2 | 2 | 0 | 1 | 5 |
| 7. | 000023 | Databases | 6 | NS | O | 2 | 2 | 0 | 1 | 6 |
| 8. | 000024 | Programming languages | 6 | AO | O | 2 | 1 | 1 | 0 | 5 |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | |
|---|--------|-------------------------------------|---|----|---|----|----|---|---|-----------|
| 9. | 000025 | Legal Basis of Information Systems | 6 | AO | O | 2 | 2 | 0 | 0 | 5 |
| 10. | 000026 | Business Processes Modelling | 6 | NS | O | 2 | 2 | 0 | 0 | 5 |
| 11. | ITIP03 | Elective course IT-03 | 6 | | E | | | | | 5 |
| | | 000027 Decision Theory | 6 | AO | E | 2 | 2 | 0 | 0 | |
| | | 000028 Linear Statistical Models | 6 | AO | E | 2 | 2 | 0 | 0 | |
| Total of active teaching classes this academic year = | | | | | | 22 | 19 | 3 | 3 | 60 |
| FOURTH YEAR | | | | | | | | | | |
| 1. | 000029 | Information Systems Design | 7 | TM | O | 2 | 2 | 1 | 0 | 6 |
| 2. | 000030 | Internet Technologies | 7 | AO | O | 2 | 1 | 1 | 1 | 6 |
| 3. | 000031 | Simulation and simulation languages | 7 | TM | O | 2 | 1 | 1 | 0 | 6 |
| 4. | 000034 | Intelligent Systems | 7 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 5. | ITIP04 | Elective course IT-04 | 7 | | E | | | | | 4 |
| | | I00001 E-learning | 7 | AO | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|--------|--|---|----|---|---|---|---|---|--|
| | | I00110 | Software Engineering | 7 | AO | E | 2 | 2 | 0 | 0 | |
| | | I00004 | Software Project Management | 7 | AO | E | 2 | 2 | 0 | 0 | |
| | | I00006 | Decision support systems | 7 | AO | E | 2 | 2 | 0 | 0 | |
| | | I00012 | Mathematics Software Packages | 7 | AO | E | 2 | 2 | 0 | 0 | |
| | | I000A9 | Optimization Methods | 7 | AO | E | 2 | 2 | 0 | 0 | |
| | | I00014 | Data analysis | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I00016 | Advanced .NET technologies | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I00018 | Software patterns | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I00019 | Introduction to Combinatorial Optimization | 7 | NS | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|------------|--|---|----|---|---|---|---|---|--|
| | | I0002 0 | Intro- duction to Math- ematical Pro- gram- ming | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I0002 4 | Multi- media | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I0002 8 | Analysis and Logi- cal De- sign of IS (project) | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I0003 2 | Risk manage- ment in e-busi- ness project | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I0003 3 | Concur- rent pro- gram- ming | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I0003 4 | Time Se- ries Analysis | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I0010 3 | Reliabi- lity and Risk Analysis | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | I0003 7 | Game theory | 7 | NS | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|------------|--|---|----|---|---|---|---|---|--|
| | | | funda- mentals | | | | | | | | |
| | | I0010 0 | Econo- metrics | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | | Dyna- mics of orga- nizatio- nal sys- tems | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | | Distribu- ted com- puter systems | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | | User in- terface design | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | | XML Techno- logies and Applica- tions | 7 | NS | E | 2 | 2 | 0 | 0 | |
| | | | Pro- gram- ming langu- age transla- tors | 7 | SA | E | 2 | 2 | 0 | 0 | |
| | | | Mobile business | 7 | SA | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|----|------------|-------------------------|---|---|----|---|---|---|---|---|---|
| 6. | 00003 3 | Software design | | 8 | NS | O | 2 | 1 | 1 | 0 | 6 |
| 7. | 00008 1 | Fundamentals of Quality | | 8 | NS | O | 2 | 2 | 0 | 1 | 5 |
| 8. | ITIP05 | Elective course IT-05 | | 8 | | E | | | | | 4 |
| | | I0001 3 | Elements of the Theory of algorithms | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0000 2 | Digital Economics | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0003 5 | Biostatistics | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0010 7 | Financial systems modeling | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0010 8 | Introduction to optimal control and game theory | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0011 1 | Supply Chain Management 1 | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0011 2 | Introduction | 8 | SA | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|--------|-----------------------------|---|----|---|---|---|---|---|--|
| | | | to fuzzy logic | | | | | | | | |
| | | I00114 | Web Programming | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00003 | Internet marketing | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00005 | Machine learning | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00008 | Applied Operations Research | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00010 | Programming data access | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00011 | Basis of Computer Geometry | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00017 | Advanced Java Technologies | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00021 | Heuristic methods | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00025 | Multi-media | 8 | SA | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|------------|---|---|----|---|---|---|---|---|--|
| | | | production | | | | | | | | |
| | | I0002 6 | Mobile computing | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0002 7 | Computer Systems Security | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0002 9 | Selected chapters in information systems | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0003 0 | Physical Project of IS in Selected Software Environment (project) | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0003 1 | Modern Software Architectures | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0003 6 | Statistical Inference | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0003 8 | Mathematical Models of Efficiency | 8 | SA | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|------------|--|---|----|---|---|---|---|---|--|
| | | I0003 9 | Intro- duction to elec- tronic business manage- ment | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0A10 4 | Soft compu- ting | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | | Internet of things | 8 | TM | E | 2 | 2 | 0 | 0 | |
| | | | Intro- duction to neural net- works | 8 | AO | E | 2 | 2 | 0 | 0 | |
| | | | Peda- gogy with di- dactics | 8 | TM | E | 2 | 2 | 0 | 0 | |
| | | | Open source software | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | | Systems theory 2 | 8 | NS | E | 2 | 2 | 0 | 0 | |
| | | | English lan- guage for spe- cific pur- poses 3 | 8 | AO | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|----|--------|-----------------------|--|---|----|---|---|---|---|---|---|
| | | | French language for specific purposes 3 | 8 | AO | E | 2 | 2 | 0 | 0 | |
| | | | Mathematical Logic with Applications | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | | Mathematics and music | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | | Optimization in Natural Resources Management | 8 | SA | E | 2 | 2 | 0 | 0 | |
| 9. | ITIP06 | Elective course IT-06 | | 8 | SA | E | | | | | 4 |
| | | 100002 | Digital Economics | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | 100008 | Applied Operations Research | 8 | SA | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|--------|--------------------------------------|---|----|---|---|---|---|---|--|
| | | I00003 | Internet marketing | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00005 | Machine learning | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00008 | Advanced Planning and Scheduling | 8 | | E | 2 | 2 | 0 | 0 | |
| | | I00010 | Programming data access | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00011 | Basis of Computer Geometry | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00013 | Elements of the Theory of algorithms | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00017 | Advanced Java Technologies | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00021 | Heuristic methods | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00025 | Multi-media | 8 | SA | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|------------|---|---|----|---|---|---|---|---|--|
| | | | production | | | | | | | | |
| | | I0002 6 | Mobile computing | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0002 7 | Computer Systems Security | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0002 9 | Selected chapters in information systems | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0003 0 | Physical Project of IS in Selected Software Environment (project) | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0003 1 | Modern Software Architectures | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0003 5 | Biostatistics | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0003 6 | Statistical Inference | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I0003 8 | Mathematical Models | 8 | SA | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|--------|---|---|----|---|---|---|---|---|--|
| | | | of Efficiency | | | | | | | | |
| | | I00039 | Introduction to electronic business management | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00107 | Financial systems modeling | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00108 | Introduction to optimal control and game theory | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00111 | Supply Chain Management 1 | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00112 | Introduction to fuzzy logic | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | I00114 | Web Programming | 8 | SA | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|------------|---|---|----|---|---|---|---|---|--|
| | | IOA10 4 | Soft compu- ting | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | | Internet of things | 8 | TM | E | 2 | 2 | 0 | 0 | |
| | | | Intro- duction to neural net- works | 8 | AO | E | 2 | 2 | 0 | 0 | |
| | | | Peda- gogy with di- dactics | 8 | TM | E | 2 | 2 | 0 | 0 | |
| | | | Open source software | 8 | SA | E | 2 | 2 | 0 | 0 | |
| | | | Systems theory 2 | 8 | NS | E | 2 | 2 | 0 | 0 | |
| | | | English lan- guage for spe- cific pur- poses 3 | 8 | AO | E | 2 | 2 | 0 | 0 | |
| | | | French lan- guage for spe- cific pur- poses 3 | 8 | AO | E | 2 | 2 | 0 | 0 | |
| | | | Mathe- matical Logic | 8 | TM | E | 2 | 2 | 0 | 0 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | | |
|---|------------|--|--|---|----|---|---|----|----|---|---|-----------|
| | | | with Ap- plica- tions | | | | | | | | | |
| | | | Mathe- matics and mu- sic | 8 | TM | E | 2 | 2 | 0 | 0 | | |
| | | | Optimi- zation in Natural Re- sources Manage- ment | 8 | SA | E | 2 | 2 | 0 | 0 | | |
| 10. | ITIP07 | Elective course IT- 07 (from the elective course sets IT-05 and IT-06) | | 8 | SA | E | 2 | 2 | 0 | 0 | 4 | |
| 11. | Z0002 0 | Internship | | 8 | SA | O | | | | | 2 | |
| 12. | 00005 9 | Final paper | | 8 | SA | O | | | | | 7 | |
| Total of active teaching classes this academic year = | | | | | | | | 20 | 17 | 4 | 2 | 60 |

According to the self-assessment report the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Management and organization:

In accordance with that, the purpose of study programme Management and organization at the Faculty of Organizational Sciences is reflected in the following:

- Development of competitive professionals with required theoretical knowledge and practical skills for active involvement and qualitative management of industry and non-industry organizations;
- Building of ethical and responsible professionals with developed management, leadership and entrepreneurship skills;
- The achieved results and successes of students and graduates from the Faculty of Organizational Sciences who promote the reputation of the Faculty of Organizational Sciences, the University of Belgrade and the Republic of Serbia in our country and abroad;
- Education of students in accordance with market needs as well as contemporary tendencies and environmental requirements;
- Providing education to all interested for professional education in the field of management and organization

The purpose of study programme is in accordance with mission and main objectives and tasks of the Faculty of Organizational Sciences:

- The study programme contributes to the University, as well as a local and national community;
- The study programme provides development of the Faculty of Organizational Sciences in accordance with real needs and with provided resources;
- The study programme has been designed to respect requirements of students and all other interested parties, and the significant attention has been dedicated to measurement of satisfaction of students and other interested parties;
- The contemporariness and attractiveness of the study programme will result in number of students interested in studying at the Faculty of Organizational Sciences
- The students will be provided with the most advanced conditions in terms of equipment, facilities, methods and procedures during their studies at the study programme;
- The study programme will provide achieving a high quality of education and other processes based on clearly stated quantitative and qualitative performance indicators of these processes;
- The programme contents of the study programme will be constantly open for innovating contents and teaching methods;

The study programme should achieve satisfied efficiency and high employment rate of graduates.

The following **curriculum** is presented:

Study program: MANAGEMENT AND ORGANIZATION; Study group: MANAGEMENT

| | Code | Course | S | Course category | Course status | The number of class hours per week | | | Other classes | ECTS |
|------------|--------|--|----------------------|-----------------|---------------|------------------------------------|------|-----------|---------------|------|
| | | | | | | Lectures | Labs | Workshops | | |
| FIRST YEAR | | | | | | | | | | |
| 1. | Z00001 | Mathematics 1 | 1 | TM | O | 2 | 2 | 0 | 1 | 6 |
| 2. | Z00002 | Economics | 1 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 3. | Z00003 | Management | 1 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 4. | Z00004 | Fundamentals of Information and Communication Technologies | 1 | AO | O | 2 | 1 | 1 | 0 | 5 |
| 5. | Z00005 | Sociology | 1 | | E | 2 | 1 | 0 | 0 | 4 |
| 6. | Z00006 | Psychology | 1 | | E | 2 | 1 | 0 | 0 | 4 |
| 7. | Z00IP1 | Elective course 1 | 1, 2 | AO | E | 1 | 1 | 0 | 0 | 5 |
| | | Z00007 | English language for | | E | | | | | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|---|--------|-------------------------------------|--------------------------------|------|----|---|----|----|---|---|-----------|
| | | | specific purposes 1 | | | | | | | | |
| | | Z00010 | French for specific purposes 1 | | | E | | | | | |
| 8. | Z00011 | Mathematics 2 | | 2 | TM | O | 2 | 2 | 0 | 1 | 6 |
| 9. | Z00012 | Organization Basics | | 2 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 10. | Z00013 | Production systems | | 2 | NS | O | 2 | 2 | 0 | 0 | 6 |
| 11. | Z00014 | Introduction to Information Systems | | 2 | AO | O | 2 | 1 | 1 | 0 | 6 |
| Total number of hours of active teaching in the year of study = | | | | | | | 22 | 18 | 2 | 2 | 60 |
| SECOND YEAR | | | | | | | | | | | |
| 12. | 000001 | Human resource management | | 3 | NS | O | 2 | 2 | 0 | 0 | 5 |
| 13. | 000002 | Business Economics and Planning | | 3 | SA | O | 2 | 2 | 0 | 0 | 6 |
| 14. | 000003 | Accounting | | 3 | TM | O | 2 | 2 | 0 | 1 | 6 |
| 15. | 000004 | Marketing | | 3 | NS | O | 2 | 2 | 0 | 0 | 5 |
| 16. | 000005 | Probability Theory | | 3 | AO | O | 2 | 2 | 0 | 0 | 6 |
| 17. | Z00IP4 | Elective course 2 | | 3, 4 | AO | E | 1 | 1 | 0 | 0 | 3 |
| | | 000006 | English language for | | | E | | | | | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|---|---------|--|--------------------------------|----|---|----|----|---|---|-----------|--|
| | | | specific purposes 2 | | | | | | | | |
| | | 000009 | French for specific purposes 2 | | | E | | | | | |
| 18 | 000010 | Key concepts of financial management | 4 | NS | O | 2 | 2 | 0 | 0 | 6 | |
| 19 | 000013 | Statistics | 4 | AO | O | 2 | 2 | 0 | 1 | 6 | |
| 20 | 000014 | Management of technology and development | 4 | TM | O | 2 | 2 | 0 | 1 | 6 | |
| 21 | 000015 | Cost Management | 4 | AO | O | 2 | 2 | 0 | 0 | 6 | |
| 22 | 000016 | Fundamentals of Quality | 4 | NS | O | 2 | 2 | 0 | 0 | 5 | |
| Total number of hours of active teaching in the year of study = | | | | | | 22 | 22 | 0 | 3 | 60 | |
| THIRD YEAR | | | | | | | | | | | |
| 23 | 000017 | Project Management | 5 | NS | O | 2 | 2 | 0 | 0 | 6 | |
| 24 | 000018 | Operations research 1 | 5 | TM | O | 2 | 2 | 0 | 1 | 6 | |
| 25 | 000019 | Managerial accounting | 5 | NS | O | 2 | 2 | 0 | 0 | 6 | |
| 26 | 000020 | Business Law | 5 | NS | O | 2 | 2 | 0 | 0 | 5 | |
| 27 | MiOIP02 | Elective course M&O-01 | 5 | NS | E | 2 | 1 | 1 | 0 | 6 | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|---------------|-----------------------------|--------------------------------------|---|----|---|----|----|---|---|-----------|
| | | 0000 21 | E-business | | | | | | | | |
| | | 0000 22 | Business In- formation Systems | | | | | | | | |
| 28 | 00002 . 3 | Decision Theory | | 6 | TM | O | 2 | 2 | 0 | 0 | 5 |
| 29 | 00002 . 4 | Simulation in busi- ness | | 6 | NS | O | 2 | 2 | 0 | 1 | 5 |
| 30 | 00002 . 5 | Project Appraisal | | 6 | SA | O | 2 | 2 | 0 | 0 | 5 |
| 31 | 00002 . 6 | Public Relations | | 6 | NS | O | 2 | 2 | 0 | 0 | 5 |
| 32 | MiOIP . 03 | Elective course M&O-02 | | 6 | NS | E | 2 | 2 | 0 | 1 | 6 |
| | | 0000 27 | Operational Research 2 | | | | | | | | |
| | | 0000 28 | Economet- rics | | | | | | | | |
| 33 | MiOIP . 04 | Elective course M&O-03 | | 6 | NS | E | 2 | 2 | 0 | 0 | 5 |
| | | 0000 27 | Environ- mental man- agement | | | | | | | | |
| | | 0000 28 | Change Manage- ment | | | | | | | | |
| Total number of hours of active teaching in the year of study = | | | | | | | 22 | 21 | 1 | 3 | 60 |
| FOURTH YEAR | | | | | | | | | | | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|----|--------------|-----------------------------------|---|---|----|---|---|---|---|---|---|
| 34 | 00002 .9 | Strategic management | | 7 | SA | O | 2 | 2 | 0 | 0 | 5 |
| 35 | 00003 .0 | Introduction to Financial Markets | | 7 | SA | O | 2 | 2 | 0 | 0 | 6 |
| 36 | 00003 .1 | Business Intelligence | | 7 | SA | O | 2 | 2 | 0 | 0 | 6 |
| 37 | 00003 .4 | International Management | | 7 | SA | O | 2 | 2 | 0 | 0 | 6 |
| 38 | MiOIP .05 | Elective course M&O-04 | | 7 | SA | E | 2 | 2 | 0 | 0 | 4 |
| | | I000 01 | Digital Economics | | | | | | | | |
| | | I000 02 | Multimedia technologies and Internet in culture | | | | | | | | |
| | | I000 03 | Analysis of financial statements and valuation | | | | | | | | |
| | | I000 04 | Bank Management | | | | | | | | |
| | | I000 05 | Financial analysis of sales | | | | | | | | |
| | | I000 06 | Introduction to Corporate Finance | | | | | | | | |
| | | I000 07 | Financial restructuring | | | | | | | | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|------------|--|--|--|--|--|--|--|--|--|
| | | I000 08 | Securities brokers and dealers | | | | | | | | |
| | | I000 09 | Integrated marketing communicati on | | | | | | | | |
| | | I000 10 | Marketing Research | | | | | | | | |
| | | I000 11 | Business communicati on skills and techniques | | | | | | | | |
| | | I000 12 | Tools and Techniques of Project Management | | | | | | | | |
| | | I000 13 | Group Dynamics and Interpersonal Relations | | | | | | | | |
| | | I000 14 | Training and development | | | | | | | | |
| | | I000 15 | Reliability and Risk Analysis | | | | | | | | |
| | | I000 16 | Econometrics | | | | | | | | |
| | | I000 17 | Statistical Inference | | | | | | | | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|----|-------------|------------|---|---|----|---|---|---|---|---|---|
| | | I000 18 | Statistical methods in management | | | | | | | | |
| | | I000 19 | Event Management | | | | | | | | |
| | | I000 20 | Entrepreneur ship | | | | | | | | |
| 39 | 00003 .3 | | Strategic manage- ment | 8 | SA | O | 2 | 2 | 0 | 0 | 6 |
| 40 | 00008 .1 | | Designing organiza- tions | 8 | NS | O | 2 | 2 | 0 | 0 | 6 |
| 41 | MiOIP 06 | | Elective course M&O-05 | 8 | SA | E | 2 | 2 | 0 | 0 | 4 |
| 42 | | | | 8 | SA | | 2 | 2 | 0 | 0 | 4 |
| 43 | MiOIP 07 | | Elective course M&O-06 | 8 | SA | | 2 | 2 | 0 | 0 | 4 |
| | | | | | | | | | | | |
| | | I000 21 | Proces analysis and Petri nets | | | | | | | | |
| | | I000 22 | Time Series Analysis | | | | | | | | |
| | | I000 23 | Eco- marketing | | | | | | | | |
| | | I000 24 | Institutional investors | | | | | | | | |
| | | I000 25 | Investment Banking | | | | | | | | |
| | | I000 26 | Linear Statistical Models | | | | | | | | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|------------|---|--|--|--|--|--|--|--|--|
| | | 1000 27 | Marketing Logistics | | | | | | | | |
| | | 1000 28 | Mathematica I Models of Efficiency | | | | | | | | |
| | | 1000 29 | International Marketing | | | | | | | | |
| | | 1000 30 | Soft computing | | | | | | | | |
| | | 1000 31 | Introduction to electronic business management | | | | | | | | |
| | | 1000 52 | Optimization Methods | | | | | | | | |
| | | 1000 32 | Innovation Management | | | | | | | | |
| | | 1000 33 | Media Relations | | | | | | | | |
| | | 1000 34 | Operational Research 2 | | | | | | | | |
| | | 1000 35 | Introduction to Game Theory | | | | | | | | |
| | | 1000 36 | Consumer Behavior | | | | | | | | |
| | | 1000 37 | Business ethics | | | | | | | | |
| | | 1000 38 | Organization al psychology | | | | | | | | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|------------|--|--|--|--|--|--|--|--|--|
| | | 1000 39 | Entrepreneurial Business | | | | | | | | |
| | | 1000 40 | Economic development | | | | | | | | |
| | | 1000 41 | Program management | | | | | | | | |
| | | 1000 42 | Relational Marketing | | | | | | | | |
| | | 1000 43 | Simulation models in finance | | | | | | | | |
| | | 1000 44 | Project Management Software Support | | | | | | | | |
| | | 1000 45 | English language for specific purposes 3 | | | | | | | | |
| | | 1000 47 | French for specific purposes 3 | | | | | | | | |
| | | 1000 48 | Sales management | | | | | | | | |
| | | 1000 49 | Management of production and trademark | | | | | | | | |
| | | 1000 50 | Leadership and Motivation | | | | | | | | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|-------------|-------------|--------------------------|---|----|---|----|----|---|---|-----------|
| | | I000 51 | Enterprize evaluation | | | | | | | | |
| 44 | Z0002 .0 | Internship | | 8 | SA | O | 0 | 0 | 0 | 0 | 2 |
| 45 | 00005 .9 | Final paper | | 8 | SA | O | 0 | 0 | 0 | 0 | 7 |
| Total number of hours of active teaching in the year of study = | | | | | | | 20 | 20 | 0 | 0 | 60 |

Study program: MANAGEMENT AND ORGANIZATION; Study group: OPERATIONS MANAGEMENT

| | Code | Course | S | Course category | Course status | The number of class hours per week | | | Othe r clas ses | ECT S |
|------------|--------|---|---|--------------------|------------------|--|----------|-------------------|--------------------------|----------|
| | | | | | | Le ct ur es | Lab s | Work shop s | | |
| FIRST YEAR | | | | | | | | | | |
| 1. | Z00001 | Mathematics 1 | 1 | TM | O | 2 | 2 | 0 | 1 | 6 |
| 2. | Z00002 | Economics | 1 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 3. | Z00003 | Management | 1 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 4. | Z00004 | Fundamentals of Information and Communication Technologies | 1 | AO | O | 2 | 1 | 1 | 0 | 5 |
| 5. | Z00005 | Sociology | 1 | | E | 2 | 1 | 0 | 0 | 4 |
| 6. | Z00006 | Psychology | 1 | | E | 2 | 1 | 0 | 0 | 4 |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|---|--------|-------------------------------------|--|------|----|---|----|----|---|---|-----------|
| 7. | Z00IP1 | Elective course 1 | | 1, 2 | AO | E | 1 | 1 | 0 | 0 | 5 |
| | | Z00007 | English language for specific purposes 1 | | | E | | | | | |
| | | Z00010 | French for specific purposes 1 | | | E | | | | | |
| 8. | Z00011 | Mathematics 2 | | 2 | TM | O | 2 | 2 | 0 | 1 | 6 |
| 9. | Z00012 | Organization Basics | | 2 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 10. | Z00013 | Production systems | | 2 | NS | O | 2 | 2 | 0 | 0 | 6 |
| 11. | Z00014 | Introduction to Information Systems | | 2 | AO | O | 2 | 1 | 1 | 0 | 6 |
| Total number of hours of active teaching in the year of study = | | | | | | | 22 | 18 | 2 | 2 | 60 |
| SECOND YEAR | | | | | | | | | | | |
| 12. | 000001 | Human resource management | | 3 | NS | O | 2 | 2 | 0 | 0 | 5 |
| 13. | 000002 | Business Economics and Planning | | 3 | SA | O | 2 | 2 | 0 | 0 | 6 |
| 14. | 000003 | Mathematics 3 | | 3 | TM | O | 2 | 2 | 0 | 1 | 6 |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|---|--------|--|--|------|----|---|----|----|---|---|-----------|
| 15. | 000004 | Marketing | | 3 | NS | O | 2 | 2 | 0 | 0 | 5 |
| 16. | 000005 | Probability Theory | | 3 | AO | O | 2 | 2 | 0 | 0 | 6 |
| 17. | Z00IP4 | Elective course 2 | | 3, 4 | AO | E | 1 | 1 | 0 | 0 | 3 |
| | | 000006 | English language for specific purposes 2 | | | E | | | | | |
| | | 000009 | French for specific purposes 2 | | | E | | | | | |
| 18. | 000010 | Financial Management and Accounting | | 4 | NS | O | 2 | 2 | 0 | 0 | 6 |
| 19. | 000013 | Statistics | | 4 | AO | O | 2 | 2 | 0 | 1 | 6 |
| 20. | 000014 | Management of technology and development | | 4 | TM | O | 2 | 2 | 0 | 1 | 6 |
| 21. | 000015 | Fundamentals of industrial engineering | | 4 | AO | O | 2 | 2 | 0 | 0 | 6 |
| 22. | 000016 | Fundamentals of Quality | | 4 | NS | O | 2 | 2 | 0 | 0 | 5 |
| Total number of hours of active teaching in the year of study = | | | | | | | 22 | 22 | 0 | 3 | 60 |

0 Appendix: Programme Learning Outcomes and Curricula

| THIRD YEAR | | | | | | | | | | | |
|------------|-------------|-----------------------------|--|---|----|---|---|---|---|---|---|
| 23. | 000017 | Project Management | | 5 | NS | O | 2 | 2 | 0 | 0 | 6 |
| 24. | 000018 | Operations re- search 1 | | 5 | TM | O | 2 | 2 | 0 | 1 | 6 |
| 25. | 000019 | Logistics | | 5 | NS | O | 2 | 2 | 0 | 0 | 7 |
| 26. | 000020 | Programming Basics | | 5 | NS | O | 2 | 1 | 1 | 0 | 6 |
| 27. | MiOIP0 2 | Elective course OM-01 | | 5 | NS | E | 2 | 2 | 0 | 0 | 6 |
| | | 00002 1 | Facility Loca- tion and Layout | | | | | | | | |
| | | 00002 2 | Process Engi- neering | | | | | | | | |
| 28. | 000023 | Environmental management | | 6 | TM | O | 2 | 2 | 0 | 0 | 5 |
| 29. | 000024 | Innovation Man- agement | | 6 | NS | O | 2 | 2 | 0 | 0 | 6 |
| 30. | 000025 | Control systems | | 6 | SA | O | 2 | 2 | 0 | 0 | 7 |
| 31. | 000026 | Operational Re- search 2 | | 6 | NS | O | 2 | 2 | 0 | 1 | 6 |
| 32. | MiOIP0 3 | Elective course OM-02 | | 6 | NS | E | 2 | 2 | 0 | 0 | 5 |
| | | 00002 7 | Quality Control | | | | | | | | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|---|--------|--|--|----|---|----|----|---|---|-----------|--|
| | | 00002 8 | Deci- sion Theory | | | | | | | | |
| Total number of hours of active teaching in the year of study = | | | | | | 20 | 19 | 1 | 0 | 60 | |
| FOURTH YEAR | | | | | | | | | | | |
| 33. | 000029 | Enterprise Infor- mation Systems | 7 | SA | O | 2 | 4 | 0 | 0 | 6 | |
| 34. | 000030 | Planning of pro- duction and ser- vices delivery (PPSD) | 7 | SA | O | 3 | 2 | 0 | 0 | 6 | |
| 35. | 000031 | Computer Inte- grated Manufac- turing | 7 | SA | O | 2 | 2 | 0 | 0 | 6 | |
| 36. | MiOIP0 | Elective course | 7 | SA | E | 2 | 2 | 0 | 0 | 4 | |
| 37. | 4 | OM-03 | | | | 2 | 2 | 0 | 0 | 4 | |
| 38. | MiOIP0 | Elective course | | | | 2 | 2 | 0 | 0 | 4 | |
| | 5 | OM-04 | | | | | | | | | |
| | MiOIP0 | Elective course | | | | | | | | | |
| | 6 | OM-05 | | | | | | | | | |
| | | I0000 1 | Flexible Services and Manu- factur- ing | | | | | | | | |
| | | I0000 2 | Contin- uous produc- | | | | | | | | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|--|--|------------|--|--|--|--|--|--|--|--|--|
| | | | tion im- prove- ment | | | | | | | | |
| | | 10000 3 | Value Analysis | | | | | | | | |
| | | 10000 4 | E-man- ufactur- ing | | | | | | | | |
| | | 10000 5 | Produc- tion and Key Perfor- mance Man- age- ment | | | | | | | | |
| | | 10000 6 | Tech- nology com- mer- cializa- tion | | | | | | | | |
| | | 10000 7 | Tech- nology man- age- ment meth- ods | | | | | | | | |
| | | 10000 8 | Tech- nology strat- egy of | | | | | | | | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|-----|--------|-----------------------------------|--|---|----|---|---|---|---|---|---|
| | | | an enterprise | | | | | | | | |
| | | I00009 | Innovation Projects | | | | | | | | |
| | | I00010 | Eco-marketing | | | | | | | | |
| | | I00011 | English language for specific purposes 3 | | | | | | | | |
| | | I00013 | French for specific purposes 3 | | | | | | | | |
| 39. | 000033 | Production and Service Management | | 8 | SA | O | 2 | 2 | 0 | 0 | 6 |
| 40. | OMIPO7 | Elective course OM-06 | | 8 | NS | E | 2 | 2 | 0 | 0 | 6 |
| | | 000027 | Production systems design | | | | | | | | |
| | | 000028 | Management of Small and Medium | | | | | | | | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|-----|------------|-------------------|--|---|----|---|---|---|---|---|---|
| | | | Enter-prises | | | | | | | | |
| 41. | OMIPO 8 | Elective OM-07 | course | 8 | NS | E | 2 | 2 | 0 | 0 | 4 |
| | | 00002 7 | Supply Chain Man- age- ment 1 | | | | | | | | |
| | | 00002 8 | Devel- opment of small and me- dium- sized enter- prises | | | | | | | | |
| 42. | OMIPO 9 | Elective OM-08 | course | 8 | SA | E | 2 | 2 | 0 | 0 | 4 |
| | | I0000 1 | Mainte- nance Man- age- ment | | | | | | | | |
| | | I0000 2 | Perfor- mance Meas- ure- ment and Evalua- tion | | | | | | | | |
| | | I0000 3 | Intellec- tual | | | | | | | | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|---|--------|-------------|--|---|----|---|----|----|---|---|-----------|
| | | | prop-erty | | | | | | | | |
| | | 10000 4 | Optimi- zation Meth- ods | | | | | | | | |
| | | 10000 5 | Reliabil- ity and Risk Analysis | | | | | | | | |
| | | 10000 6 | Design for the Envi- ron- ment | | | | | | | | |
| 43. | Z00020 | Internship | | 8 | SA | 0 | 0 | 0 | 0 | 0 | 2 |
| 44. | 000059 | Final paper | | 8 | SA | 0 | 0 | 0 | 0 | 0 | 7 |
| Total number of hours of active teaching in the year of study = | | | | | | | 21 | 22 | 0 | 0 | 60 |

Study program: MANAGEMENT AND ORGANIZATION; Study group: QUALITY MANAGMENT AND STANDARDIZATION

| Code | Course | S | Cours e cat- egory | Cours e sta- tus | The number of class hours per week | | | Oth er clas- ses | ECT S |
|------------|--------|---|--------------------------|------------------------|--|----------|-------------------|---------------------------|----------|
| | | | | | Lec- ture s | Lab s | Wor ksho ps | | |
| FIRST YEAR | | | | | | | | | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|-----|------------|---|---|---------|----|---|---|---|---|---|---|
| 1. | Z0000 1 | Mathematics 1 | | 1 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 2. | Z0000 2 | Economics | | 1 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 3. | Z0000 3 | Management | | 1 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 4. | Z0000 4 | Fundamentals of In-formation and Communication Technologies | | 1 | AO | O | 2 | 1 | 1 | 0 | 5 |
| 5. | Z0000 5 | Sociology | | 1 | | E | 2 | 1 | 0 | 0 | 4 |
| 6. | Z0000 6 | Psychology | | 1 | | E | 2 | 1 | 0 | 0 | 4 |
| 7. | Z00IP 1 | Mathematics 1 | | 1, 2 | AO | E | 1 | 1 | 0 | 0 | 5 |
| | | 30000 7 | English lan- guage for specific purposes 1 | | | E | | | | | |
| | | 30000 7 | French for specific purposes 1 | | | | | | | | |
| 8. | Z0001 1 | Mathematics 2 | | 2 | TM | O | 2 | 2 | 0 | 1 | 6 |
| 9. | Z0001 2 | Organization Basics | | 2 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 10. | Z0001 3 | Production systems | | 2 | NS | O | 2 | 2 | 0 | 0 | 6 |
| 11. | Z0001 4 | Introduction to In-formation Systems | | 2 | AO | O | 2 | 1 | 1 | 0 | 6 |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | |
|---|--------|--|--|----|----|---|---|-----------|---|---|
| Total number of hours of active teaching in the year of study = | | | | 22 | 18 | 2 | 1 | 60 | | |
| SECOND YEAR | | | | | | | | | | |
| 12. | 000001 | Human resources management | 3 | NS | O | 2 | 2 | 0 | 0 | 5 |
| 13. | 000002 | Process Engineering | 3 | SA | O | 2 | 2 | 0 | 0 | 6 |
| 14. | 000003 | Fundamentals of Quality | 3 | TM | O | 2 | 2 | 0 | 0 | 6 |
| 15. | 000004 | Marketing | 3 | NS | O | 2 | 2 | 0 | 0 | 5 |
| 16. | 000005 | Probability Theory | 3 | AO | O | 2 | 2 | 0 | 0 | 6 |
| 17. | Z00IP4 | Elective course 2 | 3, 4 | AO | E | 1 | 1 | 0 | 0 | 3 |
| | | 000006 | English language for specific purposes 2 | | E | | | | | |
| | | 000007 | French for specific purposes 2 | | E | | | | | |
| 18. | 000010 | Financial Management and Accounting | 4 | NS | O | 2 | 2 | 0 | 0 | 6 |
| 19. | 000013 | Statistics | 4 | AO | O | 2 | 2 | 0 | 1 | 6 |
| 20. | 000014 | Management of technology and development | 4 | TM | O | 2 | 2 | 0 | 1 | 6 |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | |
|---|--------|--|---------------------------------|----|---|----|----|---|---|-----------|
| 21. | 000015 | Fundamentals of industrial engineering | 4 | AO | O | 2 | 2 | 0 | 0 | 6 |
| 22. | 000016 | Quality management | 4 | NS | O | 2 | 2 | 0 | 0 | 5 |
| Total number of hours of active teaching in the year of study = | | | | | | 22 | 22 | 0 | 0 | 60 |
| THIRD YEAR | | | | | | | | | | |
| 23. | 000017 | Document Management | 5 | NS | O | 2 | 2 | 0 | 0 | 5 |
| 24. | 000018 | Operations research 1 | 5 | TM | O | 2 | 2 | 0 | 1 | 6 |
| 25. | 000019 | Normative regulation of quality | 5 | NS | O | 2 | 2 | 0 | 0 | 5 |
| 26. | 000020 | Standardization 1 | 5 | NS | O | 2 | 2 | 0 | 0 | 6 |
| 27. | YKIP02 | Elective course QMS-01 | 5 | NS | E | 2 | 2 | 0 | 0 | 6 |
| | | 000021 | Logistics | | | | | | | |
| | | 000022 | Business Economics and Planning | | | | | | | |
| 28. | 000023 | Decision Theory | 6 | TM | O | 2 | 2 | 0 | 0 | 5 |
| 29. | 000024 | Quality control | 6 | NS | O | 2 | 1 | 1 | 1 | 5 |
| 30. | 000025 | Operational Research 2 | 6 | NS | O | 2 | 2 | 0 | 1 | 6 |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | |
|---|------------|--|------------------------------|----|---|----|----|---|---|-----------|
| 31. | 00002 6 | Metrology with fundamentals of technique | 6 | NS | O | 2 | 1 | 1 | 0 | 6 |
| 32. | 00002 7 | Quality Management System | 6 | SA | O | 2 | 2 | 0 | 0 | 5 |
| 33. | 00002 8 | Quality Planning | 6 | NS | O | 2 | 2 | 0 | 0 | 5 |
| Total number of hours of active teaching in the year of study = | | | | | | 22 | 20 | 2 | 3 | 60 |
| FOURTH YEAR | | | | | | | | | | |
| 34. | 00002 9 | Environmental quality management systems | 7 | SA | O | 2 | 2 | 0 | 0 | 5 |
| 35. | 00003 0 | Occupational health and safety management system | 7 | SA | O | 2 | 2 | 0 | 0 | 5 |
| 36. | 00003 1 | Quality Engineering | 7 | SA | O | 2 | 2 | 0 | 0 | 6 |
| 37. | YKIP0 3 | Elective course QMS-02 | 7 | NS | E | 2 | 2 | 0 | 0 | 6 |
| | | 00002 7 | Project Management | | | | | | | |
| | | 00002 8 | Business Information Systems | | | | | | | |
| 38. | YKIP0 4 | Elective course QMS-03 | 7 | NS | E | 2 | 2 | 0 | 0 | 5 |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|-----|------------|---|--|----|---|---|---|---|---|---|--|
| | | 00002 7 | Total quality management | | | | | | | | |
| | | 00002 8 | Reliability and Risk Analysis | | | | | | | | |
| 39. | 00003 3 | Selected Topics in Quality Management 1 | 7 | SA | O | 2 | 2 | 0 | 0 | 4 | |
| 40. | 00003 2 | Business system quality assessment | 8 | SA | O | 2 | 2 | 0 | 0 | 6 | |
| 41. | YKIP0 5 | Elective course QMS-05 | 8 | SA | E | 2 | 2 | 0 | 0 | 4 | |
| 42. | YKIP0 6 | Elective course QMS-06 | 8 | SA | | 2 | 2 | 0 | 0 | 4 | |
| | | I0000 1 | Selected Topics in Quality Management 2 | | | | | | | | |
| | | I0000 2 | Quality management – selected chapters 3 | | | | | | | | |
| | | I0000 3 | Quality management – selected chapters 4 | | | | | | | | |
| | | I0000 4 | Accreditation and certification | | | | | | | | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | | |
|-----|--------|---------------------------|--|---|----|---|---|---|---|---|---|
| | | I0000 5 | English language for specific purposes 3 | | | | | | | | |
| | | I0000 7 | French for specific purposes 3 | | | | | | | | |
| | | I0000 8 | Group dynamics and interpersonal relations | | | | | | | | |
| | | I0000 9 | Statistical inference | | | | | | | | |
| | | I0001 0 | Maintenance management | | | | | | | | |
| | | I0001 1 | Project management software support | | | | | | | | |
| 43. | YKIP08 | Elective course QMS-08 | | 8 | NS | E | 2 | 2 | 0 | 0 | 6 |
| | | 00002 7 | Designing organizations | | | | | | | | |
| | | 00002 8 | Production systems design | | | | | | | | |

0 Appendix: Programme Learning Outcomes and Curricula

| | | | | | | | | | | |
|---|------------|-------------|---|----|---|----|----|---|---|-----------|
| 44. | Z0002 0 | Internship | 8 | SA | 0 | 0 | 0 | 0 | 0 | 2 |
| 45. | 00005 9 | Final paper | 8 | SA | 0 | 0 | 0 | 0 | 0 | 7 |
| Total number of hours of active teaching in the year of study = | | | | | | 20 | 20 | 0 | 0 | 60 |

Course categories:

AO - Academic-general courses (A)

DH - Social humanist

MD - Medical objects

NS - scientific, artistic or professional courses (C)

SA - Interdisciplinary courses (D)

SS - Professional, or artistic-professional courses

TM - Theoretical and methodological items (B)

TU - Theoretical art

UM - Artistic