ACCREDITATION REPORT

FOR

STUDY PROGRAM:

INDUSTRIAL ENGINEERING

Prepared by IE Accreditation Team

Faculty of Engineering and Natural Sciences

International University of Sarajevo

February 2018
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<thead>
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<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IUS</td>
<td>International University of Sarajevo</td>
</tr>
<tr>
<td>IE</td>
<td>Industrial Engineering</td>
</tr>
<tr>
<td>EHEA</td>
<td>European Higher Education Area</td>
</tr>
<tr>
<td>BHQF</td>
<td>Bosnian-Herzegovina Qualification Framework</td>
</tr>
</tbody>
</table>
CHAPTER 0  INTRODUCTION

0.1 GENERAL INFORMATION

<table>
<thead>
<tr>
<th>Full name of the institution</th>
<th>International University of Sarajevo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postal address:</td>
<td>Hrasnickacesta 15</td>
</tr>
<tr>
<td></td>
<td>71000 Sarajevo</td>
</tr>
<tr>
<td></td>
<td>Bosnia and Herzegovina</td>
</tr>
<tr>
<td>tel. (switchboard):</td>
<td>++387 33 957 102/110</td>
</tr>
<tr>
<td>fax (general):</td>
<td>++387 33 957 105</td>
</tr>
<tr>
<td>website:</td>
<td><a href="http://www.ius.edu.ba">www.ius.edu.ba</a></td>
</tr>
<tr>
<td>Year of foundation:</td>
<td>2004</td>
</tr>
</tbody>
</table>

The International University of Sarajevo (IUS) is a non-profit independent institution of higher education that autonomously provides funding for its work. It offers educational programs in all three study cycles, as well as specific professional development programs in the registered areas. IUS is accredited with the national Agency for the Development of Higher Education and Quality Assurance and listed in the state register of accredited higher education institutions in Bosnia & Herzegovina\(^1\).

At IUS, education is realized through intertwining scientific and artistic programs, thus enabling the symbiosis of traditional and new disciplines. IUS encourages and promotes academic, cultural and social cooperation with regional and international universities of similar values.

IUS’s aim is to enrich students with aspirations, knowledge and skills which will allow them to succeed in a rapidly changing interconnected world. Our students are taught to "dream no small dream". They are entrusted with the feeling that they are a part of the global society, and understanding what it means to be a good member of local community, the country and the nation.

\(^1\) [http://www.hea.gov.ba/akreditacija_vsu/akreditovani/?id=5378](http://www.hea.gov.ba/akreditacija_vsu/akreditovani/?id=5378)
The international character of the International University of Sarajevo, with students from all around the world and academic staff with significant international experience, gives IUS a special kind of quality. Such direct interaction with other nationals gives our university students the privilege to meet other cultures. This allows them not only to acquire knowledge, but to develop other competences and experiences immensely important in a globalized world of today.

IUS is an associate member of European University Association (EUA), and a full member of International Association of Universities (IAU) and European Consortium of Political Research (ECPR).

In 2014, IUS was rewarded with a prestigious recognition award ‘‘European University and Employer of the Year’’ by the NGO “European Movement in BiH”.

Figure 0.1 IUS campus
0.2 REALISATION OF THE SELF-DOCUMENTATION

Self-documentation was carried out by the team consisted of representatives of academic staff and administrative staff, and it was composed of the following members:

1. Assist. Prof. Dr. Benjamin Durakovic – Chair
2. Assistant Erna Keskinovic

0.3 ABOUT THE UNIVERSITY

0.3.1 IUS HISTORICAL CONTEXT

The International University of Sarajevo (hereinafter IUS) is a higher education institution founded by the Foundation for Development of Education in Sarajevo (hereafter: SEDEF) in 2004. SEDEF is registered with the Ministry of Justice of the Federation of Bosnia and Herzegovina. Its purpose is to support education in Bosnia and Herzegovina by creating the conditions for its development.

From its outset in 2004, IUS has applied the principles of the Bologna Declaration, as follows:

- The European Credit Transfer and Accumulation System (ECTS) is used in all study programs. Students are awarded ECTS Credits and grades upon successful completion of courses.
- IUS implements three cycles of studies. From the beginning of its operation IUS adopted 4+1+3 system. It means that the nominal duration of bachelor, master and doctoral programs are four (240 ECTS), one (60 ECTS) and three (180 ECTS) years, respectively.
- IUS is issuing Diploma Supplement to all of its graduates. It contains information on completed courses and grades achieved, accumulated number of ECTS credits and other information as defined in ECTS Users Guide.
- Learning-outcomes-based curricula are implemented in all study programs which is in line with European QF descriptors.
- Students are represented in IUS decision-making bodies (Senate, Faculty Councils, Boards, Committees, etc.) and have full voting rights.
As an international institution for education and development, the University cooperates with other universities in the region and other countries, to create a stimulating and pleasant atmosphere for teaching and conducting research for students’ and professors from around the world. IUS’s statute enables and motivates mobility of students, academics and administration. IUS students have the opportunity to accomplish a part of their programs abroad, and also students from other universities are allowed to spend a period of study at IUS. Lecturers are allowed to spend a period abroad and their mobility is supported by IUS.

IUS has experienced a great transformation in the past twelve years of its existence. It proved to be an institution that can meet challenges, overcome problems and improve itself. In the last 12 years, most of the resources, material and human, were directed towards institution-building. Two new faculties, a number of new study programs, new Centers and auxiliary departments and units were established. By the end of 2015, these processes are mostly completed. Today, International University of Sarajevo consists of five faculties and offers twenty-one study programs in all three study cycles of education.

Finally, the new IUS Strategic Plan (2016-2021) puts forth an overarching aspiration for the IUS: “To become widely recognized as the best university in Bosnia and Herzegovina and in the region, and a model university for the interweaving of liberal education and fundamental knowledge with practical education and impact on societal and world problems.”

0.3.2 MISSION, VISION AND CORE VALUES

MISSION

The mission of IUS is to produce science, art, and technology and present it to the benefit of humanity; to educate free-thinking, participating, sharing, open-minded individuals who are open to change and improvement and who have the ability to transform knowledge into values of importance for themselves and the community. International University of Sarajevo (IUS), with its identity as an international institution of education and research is cooperating with universities in the region
and in other countries in order to provide a peaceful and comfortable atmosphere of learning for students from a wide geography.

The following seven (7) key dimensions of IUS mission are as follows:

- Continuous improvement of quality culture;
- Internationalized Higher Education;
- Integrity with High Ethical Values to perform in society;
- Interdisciplinary programs;
- Intercultural Competency;
- Civic Engagement;
- Comprehensive Excellence.

VISION

The vision of IUS is to become an internationally recognized institution of higher education and research and a center of excellence and quality through the shared efforts of the founders, academic and administrative staff, students and all stakeholders.

IUS aims at becoming a major hub in Balkans that bridges East and West as a leading international institution of higher education and a research centre with comprehensive excellence and quality whose students are lifelong learners, interculturally competent and well-developed leaders in socio-economic development of societies.

0.3.3 IUS ORGANIZATIONAL CONTEXT

The University consists of five faculties, as follows: Faculty of Engineering and Natural Sciences (FENS), Faculty of Business and Administration (FBA), Faculty of Arts and Social Sciences (FASS), Faculty of Law (FLW), and Faculty of Education (FEDU). As of AY 2015/2016, the faculties offer 16 study programs in the first cycle, 16 in the second and 12 study programs in the third cycle of study. The degrees awarded per organizational unit are presented in APPENDIX A - INTERNATIONAL UNIVERSITY OF SARAJEVO.

The following centers are indivisible part of the University:
Through its centers, sport and cultural activities, formal and informal gatherings, IUS establishes sound relationships with local communities, social partners and industry representatives. These relationships yield mutual benefits for both IUS and external partners, and more and more partners are cooperating with IUS and joining its activities and programs. Aside from measurable indicators, IUS makes other influential cultural, social, intellectual, and research, humanitarian and civic contributions. IUS contributes to local communities through its expertise, its projects, and its scientific and cultural activities, but the greatest contribution of all is made by the quality education provided to its students. Every year IUS offers 1000 (ranging from 5-100%) scholarships to BiH students who demonstrate excellent knowledge at the entrance exam.

0.3.4 STATISTICS AND PROJECTIONS AT GLANCE

The International University of Sarajevo is continuously growing since its establishment in 2004. The number of faculties and study programs increased in the last five years. Table 0.1 shows the change in number of faculties, and study programs from 2012 to 2016, where it can be seen that the number of study programs increased from 12 to 20 programs in the first cycle and from 12 to 19 in the second cycle.

Table 0.2 shows the number of local and foreign students in the period 2012-2016 as well as the number of graduates, where steady increase is also evident, which is in line with the IUS Strategic plan 2011-2016.
Table 0.1 Number of Faculties at IUS

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Number of faculties</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>5</td>
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Number of study programs per study cycle:

<table>
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<tbody>
<tr>
<td>I cycle</td>
<td>12</td>
<td>12</td>
<td>14</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>II cycle</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td>III cycle</td>
<td>12</td>
<td>12</td>
<td>14</td>
<td>12</td>
<td>14</td>
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</tbody>
</table>

Table 0.2 Number of Students at IUS from 2012 to 2016

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<th></th>
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<tbody>
<tr>
<td>Foreign</td>
<td>1000</td>
<td>1241</td>
<td>1284</td>
<td>1201</td>
<td></td>
</tr>
<tr>
<td>BH</td>
<td>600</td>
<td>510</td>
<td>595</td>
<td>730</td>
<td></td>
</tr>
<tr>
<td>Total:</td>
<td>1600</td>
<td>1751</td>
<td>1879</td>
<td>1931</td>
<td></td>
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Total number of full time students per AY/study cycle

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<tr>
<td>I cycle</td>
<td>1284</td>
<td>1363</td>
<td>1475</td>
<td>1637</td>
<td></td>
</tr>
<tr>
<td>II cycle</td>
<td>53</td>
<td>61</td>
<td>98</td>
<td>219</td>
<td></td>
</tr>
<tr>
<td>III cycle</td>
<td>35</td>
<td>59</td>
<td>56</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>English Language School</td>
<td>228</td>
<td>268</td>
<td>250</td>
<td>320</td>
<td></td>
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</tbody>
</table>

Graduates

<table>
<thead>
<tr>
<th>Degree</th>
<th>AY 2013 - 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor</td>
<td>984</td>
</tr>
<tr>
<td>Master</td>
<td>164</td>
</tr>
<tr>
<td>Doctor</td>
<td>6</td>
</tr>
</tbody>
</table>

0.3.5 FENS ORGANIZATIONAL CONTEXT

FENS Faculty Council, Departments and Study Programs are responsible for different administrative and academic responsibilities pursuant to Articles 59-61 and
Decentralized organizational structure of IUS offers each faculty, and consequently to departments and study programs, freedom to fulfill its potential in the creative and student-oriented manner. Special emphasis is put on timely flow of information from the University to the Faculty and Departments. FENS Faculty Council consists of representatives of all study programs in FENS, as well as of student representatives (see Figure 0.2 for organizational structure of the faculty).

![Figure 0.2 Structure of FENS faculty](image)

**0.4 ORGANIZATION OF THE REPORT**

The rest of the self-documentation is followed by the enclosures and documents to support program documentation.

**CHAPTER 1 STANDARD 1: STUDY PROGRAM AND PROGRAM MANAGEMENT**
1.1 ALIGNMENT OF THE STUDY PROGRAM WITH THE OBJECTIVES OF INSTITUTION

**Standard 1.1**—The study program is aligned with the objectives of the institution and is logically connected with its strategies and goals.

The Industrial Engineering Program at International University of Sarajevo is a study program within Faculty of Engineering and Natural Sciences with several other engineering and natural science programs. It is designed to provide students with a solid basis in mathematics and science, as well as in engineering economics, manufacturing systems, production and inventory control, operations research, quality and reliability engineering, facility planning, material handling and information technology. Beside this theoretical part, the students are encouraged, and obliged, to participate in industrial internships to acquire practical experience. The program, regarding its content and organization, is complementary with other engineering programs at IUS. They share the same vision and mission, follow the Bologna principles.

IUS applies BH NQF in a way that I cycle lasts for four years and students achieve 240 ECTS points in total. II cycle studies last for one year and students achieve 60 ECTS points under condition that s/he has acquired 240 ECTS points in I cycle and are awarded Master degree. III cycle lasts for three years and is valued 180 ECTS points.

The study program implements the teaching process according the above mentioned criteria. The Industrial Engineering program at IUS aims to equip its graduates with the best knowledge in the area.

The information on duration, number of ECTS and job profiles related to the IE bachelor degree program are listed in the Table 1.1.

<table>
<thead>
<tr>
<th><strong>Degree Awarded</strong></th>
<th>Bachelor of Science (B.Sc.) in Industrial Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration of the Study Program</strong></td>
<td>4 years</td>
</tr>
</tbody>
</table>

Table 1.1 Basic information about the IE Bachelor degree program
Total ECTS | 240
--- | ---
**Full time/Part time** | Full time
Language of instruction | English
**Total number of students in 2017/18** | 31

**Job profiles**
Graduates of Bachelor program are qualified to work as:
- Management Engineer, Quality Engineer, Director of Planning, Manufacturing Engineer, Product Engineer, Reliability Engineer, Ergonomist, Director of Engineering, etc.

1.2 QUALIFICATION OBJECTIVES OF THE STUDY PROGRAM

**Standard 1.2–SP** Learning outcomes are clearly defined and meet the technical, scientific and professional requirements and are in accordance with the respective levels of the qualification framework of the EHEA.

The Educational objectives and learning outcomes of the IE Bachelor study program are defined according to the qualification framework of the European Higher Education Area (EHEA), as well as Bosnia-Herzegovina Qualification Framework (BHQ).

Our educational objectives and learning outcomes are listed below, followed by correspondence matrices between IE program learning outcomes and EHEA framework, as well as, IE program learning outcomes vs. BHQ framework, in Table 1.2 and Table 1.3 respectively. In addition to this, the relationship level of the correspondence between the study program educational objectives and learning outcomes are given in Table 1.4.

**EDUCATIONAL OBJECTIVES of the IE Bachelor study program are:**

- **EO1** To equip our graduates with the skills and knowledge needed for improving processes by generating models, analyzing, and solving complex industrial engineering problems.
- **EO2** To provide education to students so they can acquire a broad knowledge and skills in various engineering and management disciplines, which provide fundamental basis for complex
and interdisciplinary approach to the problems of industry and business.

- EO3 To foster students’ capacity in effective communication and leadership skills.
- EO4 To provide understanding of ethical responsibility and service toward their peers, employers, and society and the need to follow these precepts in their daily lives.
- EO5 To motivate our students to pursue life-long learning.

**LEARNING OUTCOMES of the IE Bachelor study program**

On successful completion of the study program graduates will be able to:

- LO1 Describe, apply, and integrate the basic concepts and the knowledge of mathematics, science, and engineering.
- LO2 Design, develop, implement and improve integrated systems that include people, materials, information, equipment and energy using appropriate analytical, computational and experimental practices.
- LO3 Identify, formulate, and solve problems at the interface of engineering and business.
- LO4 Demonstrate their skills in computer usage, information systems, and telecommunications relevant to the industrial engineering.
- LO5 Demonstrate knowledge of the scientific method by identifying research questions; designing and implementing an independent research project, interpreting data based on scientific reasoning and evidence and conveying this knowledge formally and informally in both oral and written form.
- LO6 Use modern techniques, skills and tools necessary for industrial engineering practice and for disseminating the results of their work.
- LO7 Obtain practical experience in the field of industrial engineering through various formal and informal work experiences and assistantships.
- LO8 Obtain, analyze and interpret data from real life systems, addressing the problems associated with the application of engineering theory to real life cases.
- LO9 Analyse production and service systems, model, and apply optimization tools of industrial engineering.
- LO10 Design efficient systems based on the outcomes of optimization studies, which take environmental issues into account as well.
- LO11 Demonstrate job skills used by professional industrial engineers including the ability to set goals and priorities, work independently and in teams, locate and use career information, and develop an effective resume.
- LO12 Conduct research in both theoretical and practical aspects.
- LO13 Communicate effectively in the English language with written, oral and visual means in a technical manner;
- LO14 Find and use relevant technical literature and information sources.
- LO15 Acquire knowledge autonomously.

<table>
<thead>
<tr>
<th>INDUSTRIAL ENGINEERING</th>
<th>EHEA</th>
</tr>
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<tbody>
<tr>
<td>Qualification that signify completion of the first cycle are awarded to students who (Explanation on Q1-Q5, please see bottom of the table):</td>
<td></td>
</tr>
</tbody>
</table>
### SP Learning Outcomes

<table>
<thead>
<tr>
<th>Description</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe, apply, and integrate the basic concepts and the knowledge of mathematics, science, and engineering.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Design, develop, implement and improve integrated systems that include people, materials, information, equipment and energy using appropriate analytical, computational and experimental practices.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Identify, formulate, and solve problems at the interface of engineering and business.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Demonstrate their skills in computer usage, information systems, and telecommunications relevant to the industrial engineering.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Demonstrate knowledge of the scientific method by identifying research questions; designing and implementing an independent research project, interpreting data based on scientific reasoning and evidence and conveying this knowledge formally and informally in both oral and written form.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Use modern techniques, skills and tools necessary for industrial engineering practice and for disseminating the results of their work.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Obtain practical experience in the field of industrial engineering through various formal and informal work experiences and assistantships.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Analyse production and service systems, model, and apply optimization tools of industrial engineering.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Design efficient systems based on the outcomes of optimization studies, which take environmental issues into account as well.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Demonstrate job skills used by professional industrial engineers including the ability to set goals and priorities, work independently and in teams, locate and use career information, and develop an effective resume.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Conduct research in both theoretical and practical aspects.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Communicate effectively in the English language with written, oral and visual means in a technical manner;</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Find and use relevant technical literature and information sources.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Acquire knowledge autonomously.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

#### Level Descriptors according to EHEA

Qualifications that signify completion of the first cycle are awarded to students who:

Q1: have demonstrated knowledge and understanding in a field of study that builds upon and their general secondary education, and is typically at a level that, whilst supported by advanced textbooks, includes some aspects that will be informed by knowledge of the forefront of their field of study;
Q2: can apply their knowledge and understanding in a manner that indicates a professional approach to their work or vocation, and have competences typically demonstrated through devising and sustaining arguments and solving problems within their field of study;

Q3: have the ability to gather and interpret relevant data (usually within their field of study) to inform judgments that include reflection on relevant social, scientific or ethical issues;

Q4: can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences;

Q5: have developed those learning skills that are necessary for them to continue to undertake further study with a high degree of autonomy.

Relationship Level

-: No contribution (~ very low),
1: Low level contribution,
2: Moderate contribution,
3: High level contribution.

Table 1.3 Correspondence between SP Learning Outcomes and BHQF (Bachelor)

<table>
<thead>
<tr>
<th>SP Learning Outcomes:</th>
<th>Knowledge*</th>
<th>Skills**</th>
<th>Competences***</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-Theoretical</td>
<td>-Cognitive</td>
<td>-Autonomy</td>
</tr>
<tr>
<td></td>
<td>-Factual</td>
<td>-Physical</td>
<td>-Responsibility</td>
</tr>
<tr>
<td>Describe, apply, and integrate the basic concepts and the knowledge of mathematics,</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>science, and engineering.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design, develop, implement and improve integrated systems that include people,</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>materials, information, equipment and energy using appropriate analytical,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>computational and experimental practices.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify, formulate, and solve problems at the interface of engineering and</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>business.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrate their skills in computer usage, information systems, and</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>telecommunications relevant to the industrial engineering.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrate knowledge of the scientific method by identifying research questions;</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>designing and implementing an independent research project, interpreting data</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>based on scientific reasoning and evidence and conveying this knowledge formally</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and informally in both oral and written form.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use modern techniques, skills and tools necessary for industrial engineering</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>practice and for disseminating the results of their work.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Obtain practical experience in the field of industrial engineering through various formal and informal work experiences and assistantships. | 3 | 3 | 3
---|---|---|---
Analyse production and service systems, model, and apply optimization tools of industrial engineering. | 3 | 3 | 2
Design efficient systems based on the outcomes of optimization studies, which take environmental issues into account as well. | 3 | 3 | 2
Demonstrate job skills used by professional industrial engineers including the ability to set goals and priorities, work independently and in teams, locate and use career information, and develop an effective resume. | 3 | 3 | 3
Conduct research in both theoretical and practical aspects. | 3 | 2 | 3
Communicate effectively in the English language with written, oral and visual means in a technical manner; | 3 | 2 | 3
Find and use relevant technical literature and information sources. | 3 | 3 | 2
Acquire knowledge autonomously. | 3 | 3 | 2

**Level Descriptors according to BHQF**

*Knowledge:* This person demonstrates knowledge and understanding in a field of study that builds upon their secondary education and which is typically at a level, whilst supported by appropriate learning resources (texts, information and communication technologies), which includes some aspects that will be informed by knowledge of the forefront in a given field of study.

**Skills:** This person: (i) is able to apply acquired knowledge and critical understanding of the principles relating to the given field of study/discipline in a manner to demonstrate professional approach to their work or vocation, and has competences typically demonstrated through devising and sustaining arguments and solving problems within a given field of study; (ii) is able to apply main methods of acquiring new knowledge and applicative research in a given discipline, and is able to decide on which approach to use in solving a given problem and is aware of the extent to which the selected approach is suitable for solving such a problem; (iii) is able to communicate in one or several foreign languages and by using communication technologies, information, ideas, problems and solutions to both specialist and non-specialist audiences for given area of study.

***Competences:**

**Professional competence:** This person (i) demonstrates ability to gather and interpret relevant data (usually within the given field of study) to inform judgments that include reflection on relevant social, scientific or ethical issues.

**Personal competence:** This person (i) has developed learning skills to undertake further study, with a high degree of autonomy and academic skills and attributes necessary to undertake research work, comprehend and evaluate new information, concepts and evidence from a range of sources; (ii) possesses a foundation for future self-directed and lifelong learning; (iii) has acquired interpersonal skills, teamwork skills adequate for employment and further study.

**Relationship Level**

- No contribution (~ very low),
- 1: Low level contribution,
- 2: Moderate contribution,
- 3: High level contribution.
<table>
<thead>
<tr>
<th>INDUSTRIAL ENGINEERING</th>
<th>Educational Objectives</th>
</tr>
</thead>
</table>
| **Contribution level:** | - No contribution  
1: Low level contribution  
2: Moderate contribution  
3: High level contribution |
| EO1 To equip our graduates with the skills and knowledge needed for improving processes by generating models, analyzing, and solving complex industrial engineering problems. | To provide education to students so they can acquire a broad knowledge and skills in various engineering and management disciplines, which provide fundamental basis for complex and interdisciplinary approach to the problems of industry and business. | To foster students’ capacity in effective communication and leadership skills. | To motivate our students to pursue life-long learning. |
| **SP Learning Outcomes** | Describe, apply, and integrate the basic concepts and the knowledge of mathematics, science, and engineering. | 3 | 3 | 3 | 1 | 1 |
| | Design, develop, implement and improve integrated systems that include people, materials, information, equipment and energy using appropriate analytical, computational and experimental practices. | 3 | 3 | 3 | 1 | 1 |
| | Identify, formulate, and solve problems at the interface of engineering and business. | 3 | 3 | 3 | 3 | 3 |
| | Demonstrate their skills in computer usage, information systems, and telecommunications relevant to the industrial engineering. | 3 | 3 | 3 | 3 | 3 |
| | Demonstrate knowledge of the scientific method by identifying research questions; designing and implementing an independent research | 1 | 1 | 2 | 3 | 3 |
## INDUSTRIAL ENGINEERING

<table>
<thead>
<tr>
<th>Contribution level:</th>
<th>Educational Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>-: No contribution</td>
<td>To equip our graduates with the skills and knowledge needed for improving processes by generating models, analyzing, and solving complex industrial engineering problems.</td>
</tr>
<tr>
<td>1: Low level contribution</td>
<td>To provide education so they can acquire a broad knowledge and skills in various engineering and management disciplines, which provide a fundamental basis for complex and interdisciplinary approach to the problems of industry and business.</td>
</tr>
<tr>
<td>2: Moderate contribution</td>
<td>To foster students' capacity in effective communication and leadership skills.</td>
</tr>
<tr>
<td>3: High level contribution</td>
<td>To provide understanding of ethical responsibility and service toward their peers, employers, and society and the need to follow these precepts in their daily lives.</td>
</tr>
<tr>
<td></td>
<td>To motivate our students to pursue life-long learning.</td>
</tr>
</tbody>
</table>

### SP Learning Outcomes

| Project, interpreting data based on scientific reasoning and evidence and conveying this knowledge formally and informally in both oral and written form. | 3 | 3 | 3 | 1 | 1 |
| Use modern techniques, skills and tools necessary for industrial engineering practice and for disseminating the results of their work. | 3 | 3 | 3 | 1 | 1 |
| Obtain practical experience in the field of industrial engineering through various formal and informal work experiences and assistantships. | 3 | 3 | 3 | 1 | 1 |
| Analyse production and service systems, model, and apply optimization tools of industrial engineering. | 3 | 3 | 3 | 3 | 3 |
| Design efficient systems based on the outcomes of optimization studies, which take environmental issues into account as well. | 3 | 3 | 3 | 3 | 3 |
| Demonstrate job skills used by professional industrial engineers including the ability | 1 | 1 | 2 | 3 | 3 |
## INDUSTRIAL ENGINEERING

<table>
<thead>
<tr>
<th>Contribution level:</th>
<th>Educational Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>- No contribution</td>
<td>1: To equip our graduates with the skills and knowledge needed for improving processes by generating models, analyzing, and solving complex industrial engineering problems.</td>
</tr>
<tr>
<td>1: Low level contribution</td>
<td>2: To provide education to students so they can acquire a broad knowledge and skills in various engineering and management disciplines, which provide fundamental basis for complex and interdisciplinary approach to the problems of industry and business.</td>
</tr>
<tr>
<td>2: Moderate contribution</td>
<td>3: To foster students' capacity in effective communication and leadership skills.</td>
</tr>
<tr>
<td>3: High level contribution</td>
<td>1: To provide understanding of ethical responsibility and service toward their peers, employers, and society and the need to follow these precepts in their daily lives.</td>
</tr>
<tr>
<td></td>
<td>1: To motivate our students to pursue life-long learning.</td>
</tr>
</tbody>
</table>

### SP Learning Outcomes

<table>
<thead>
<tr>
<th></th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>1</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduct research in both theoretical and practical aspects.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Communicate effectively in the English language with written, oral and visual means in a technical manner;</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Find and use relevant technical literature and information sources.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Acquire knowledge autonomously.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

### 1.3 CONTENTS, STRUCTURE AND SCOPE OF TEACHING METHODS

**Standard 1.3**—The contents, structure and scope of and teaching methods applied to the curriculum and the modules meet the technical, scientific and professional requirements and are suited to achieve the intended learning outcomes.
1.3.1 BACHELOR DEGREE (I CYCLE)

1.3.1.1 Structure of the study program

The characteristic of IE bachelor study program is that required and elective courses are grouped as following:

- **University courses (required and elective)** – required and elective courses that include two foreign language elective courses. The objective of university courses are to:
  - provide students with basic knowledge and methods for independent and critical decision-making;
  - offer students a new approach and a deep understanding of the nature of social movements;
  - provide interdisciplinary understanding of the “state” in certain areas that will help further choice of courses in the study;
  - ensure the harmonization of the level of knowledge for all students IUS.

- **Faculty elective courses** – are elective courses defined by the study program which aims to equip the students with interdisciplinary competences.

- **Program courses (required and elective)** – are required and elective courses, which are defined by the study program to achieve the intended program learning outcomes.

- **Free elective courses** – are all undergraduate courses at IUS, excluding the University courses, Faculty courses and Program courses (defined for each program), which aims to give opportunity to students to freely choose a number of courses from other study programs.

The Bachelor degree of the IE study program is obtained by completing 240 ECTS in the following manner:

<table>
<thead>
<tr>
<th>Course type</th>
<th>Number of courses</th>
<th>Number of ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Required</td>
<td>Elective</td>
</tr>
<tr>
<td>University courses</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Foreign language elective</td>
<td>–</td>
<td>2</td>
</tr>
<tr>
<td>Course Type</td>
<td>Faculty courses</td>
<td>Program courses</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>48</td>
<td>72</td>
</tr>
</tbody>
</table>

The detailed information regarding the program structure and the required and elective courses is given in Table 5 and Table 6, while the lists of university electives, faculty electives and program elective courses are given in Table 9, Table 10 and Table 11, respectively. The content of each course and syllabi are publically available and can be found on the University web site. The Program is regularly updated each academic year.
### Table 5: Undergraduate Curriculum for IE Program (Part 1)

**Undergraduate Curriculum - Industrial Engineering Program (2017 - 2018)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Prerequisites</th>
<th>T</th>
<th>P</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS100</td>
<td>Computer Skills</td>
<td></td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>MATH101</td>
<td>Calculus I</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>ELIT100</td>
<td>Academic English and Effective Communication</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>xxx</td>
<td>University Elective I</td>
<td>See Table 1</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>xxx</td>
<td>Free Elective I</td>
<td></td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>xxx</td>
<td>Foreign Language Elective I</td>
<td>See Table 2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Semester Total = 30**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Prerequisites</th>
<th>T</th>
<th>P</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENS205</td>
<td>Materials Science</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>ENS207</td>
<td>Engineering Graphics</td>
<td>1</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>MATH201</td>
<td>Linear Algebra</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>MATH203</td>
<td>Introduction to Probability and Statistics</td>
<td>MATH101</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>xxx</td>
<td>Free Elective II</td>
<td></td>
<td>6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Semester Total = 30**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Prerequisites</th>
<th>T</th>
<th>P</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH102</td>
<td>Calculus II</td>
<td>MATH101</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>NS102</td>
<td>Physics</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>ELIT200</td>
<td>Critical Reading and Writing</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>xxx</td>
<td>University Elective II</td>
<td>See Table 1</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>xxx</td>
<td>University Elective III</td>
<td>See Table 2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>xxx</td>
<td>Foreign Language Elective II</td>
<td>See Table 2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Semester Total = 30**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Prerequisites</th>
<th>T</th>
<th>P</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH205</td>
<td>Numerical Analysis</td>
<td>MATH101</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>MATH202</td>
<td>Differential Equations</td>
<td>MATH102</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>ENS213</td>
<td>Programming for Engineers</td>
<td></td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>MATH306</td>
<td>Statistical Modeling</td>
<td>MATH203</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>ENS208</td>
<td>Introduction to Manufacturing Systems</td>
<td>ENS205</td>
<td>2</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

**Semester Total = 30**
Table 6: Undergraduate Curriculum for IE Program (Part 2)

<table>
<thead>
<tr>
<th>Semester V</th>
<th>Semester VI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code</td>
<td>Title</td>
</tr>
<tr>
<td>IE301</td>
<td>Production Planning I</td>
</tr>
<tr>
<td>IE303</td>
<td>Operations Research I</td>
</tr>
<tr>
<td>IE309</td>
<td>Ergonomics</td>
</tr>
<tr>
<td>xxx</td>
<td>Faculty Elective I</td>
</tr>
<tr>
<td>xxx</td>
<td>Faculty Elective II</td>
</tr>
<tr>
<td>Semester Total =</td>
<td>30</td>
</tr>
</tbody>
</table>

| Code | Title | Prerequisites | T | P | ECTS |
| IE302 | Production Planning II | IE301 | 3 | 2 | 6 |
| IE304 | Operations Research II | IE303 | 3 | 2 | 6 |
| IE306 | Simulation | MATH203 | 3 | 2 | 6 |
| IE307 | Quality and Reliability Engineering | MATH306 | 3 | 2 | 6 |
| SPS103 | Law and Ethics | | 3 | 0 | 6 |
| Semester Total = | 30 |

<table>
<thead>
<tr>
<th>Semester VII</th>
<th>Semester VIII</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code</td>
<td>Title</td>
</tr>
<tr>
<td>IE408</td>
<td>Project Management</td>
</tr>
<tr>
<td>IE412</td>
<td>Financial Engineering</td>
</tr>
<tr>
<td>IE370</td>
<td>Work Placement / Internship (at least 25 work days)</td>
</tr>
<tr>
<td>xxx</td>
<td>Program Elective I</td>
</tr>
<tr>
<td>xxx</td>
<td>Program Elective II</td>
</tr>
<tr>
<td>Semester Total =</td>
<td>30</td>
</tr>
</tbody>
</table>

| Code | Title | Prerequisites | T | P | ECTS |
| IE405 | Decision Analysis | Senior standing | 2 | 2 | 6 |
| IE413 | Manufacturing Systems | Senior standing | 3 | 0 | 6 |
| xxx | Program Elective III | See Table 4 | 6 |
| xxx | Program Elective IV | See Table 4 | 6 |
| IE495 | Graduation Project | | 2 | 2 | 6 |
| Semester Total = | 30 |

Abbreviations: T (Theory), P (Practice), ECTS credit

Total Credits Required for Graduation: 240
Total Credits of Electives: 69

No. of Courses: 42
Average ECTS Credit Load Per Semester: 73
Elective Ratio: 29%
In tables below, the division of curriculum courses into University required courses (Table 9), Program required courses (Table 10), and the electives (university-, faculty-, and program-level, Table 9, Table 10, and Table 11) is shown.

### Table 9: University Required Courses for the IE Program

<table>
<thead>
<tr>
<th>Course group</th>
<th>EC/TS</th>
<th>Course name</th>
<th>Course code</th>
<th>Course type</th>
<th>EC/TS</th>
<th>Pre-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Required Courses</td>
<td></td>
<td>Law and Ethics</td>
<td>SPS103</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Computer Skills</td>
<td>CS100</td>
<td>required</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calculus II</td>
<td>MATH102</td>
<td>required</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Critical Reading and Writing</td>
<td>ELIT200</td>
<td>required</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>Academic English and Effective Communication</td>
<td>ELIT100</td>
<td>required</td>
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<tr>
<td></td>
<td></td>
<td>Calculus I</td>
<td>MATH101</td>
<td>required</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Physics</td>
<td>NS102</td>
<td>required</td>
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### Table 10: Program Required Courses for the IE Program

<table>
<thead>
<tr>
<th>Code</th>
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<th>Prerequisites</th>
<th>T</th>
<th>P</th>
<th>ECTS</th>
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</thead>
<tbody>
<tr>
<td>IE301</td>
<td>Production Planning I</td>
<td>MATH203</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>IE303</td>
<td>Operations Research I</td>
<td>MATH201</td>
<td>3</td>
<td>2</td>
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<tr>
<td>IE309</td>
<td>Ergonomics</td>
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<td>2</td>
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<tr>
<td>IE408</td>
<td>Project Management</td>
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<tr>
<td>IE412</td>
<td>Financial Engineering</td>
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<td>6</td>
<td></td>
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</tr>
<tr>
<td>IE302</td>
<td>Production Planning II</td>
<td>IE301</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>IE304</td>
<td>Operations Research II</td>
<td>IE303</td>
<td>3</td>
<td>2</td>
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</tr>
<tr>
<td>IE306</td>
<td>Simulation</td>
<td>MATH203</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>IE307</td>
<td>Quality and Reliability Engineering</td>
<td>MATH306</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>IE405</td>
<td>Decision Analysis</td>
<td>Senior standing</td>
<td>2</td>
<td>2</td>
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</tr>
<tr>
<td>IE413</td>
<td>Manufacturing Systems</td>
<td>Senior standing</td>
<td>3</td>
<td>0</td>
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<tr>
<td>MATH306</td>
<td>Statistical Modeling</td>
<td>MATH203</td>
<td>3</td>
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Table 1: IUS Pool of 6 ECTS University Courses

<table>
<thead>
<tr>
<th>Code</th>
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<th>P</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON111</td>
<td>Introduction to Microeconomics</td>
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<td>ECON112</td>
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<td>ELIT101</td>
<td>Introduction to Literature</td>
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<tr>
<td>IR101</td>
<td>Introduction to International Relations</td>
<td></td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NS104</td>
<td>General Chemistry</td>
<td></td>
<td>6</td>
<td></td>
<td></td>
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<tr>
<td>NS103</td>
<td>Biology</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>POLS102</td>
<td>Introduction to Political Science</td>
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<td>6</td>
<td></td>
<td></td>
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<tr>
<td>PSY103</td>
<td>Introduction to Psychology</td>
<td></td>
<td>6</td>
<td></td>
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<tr>
<td>SPS120</td>
<td>Critical Thinking</td>
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<td>SPS150</td>
<td>World History</td>
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<tr>
<td>SOC102</td>
<td>Introduction to Sociology</td>
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<td>VA121</td>
<td>History of Art I</td>
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Table 2: IUS Pool of 3 ECTS University Courses

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<th>ECTS</th>
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<tbody>
<tr>
<td>ARCH107</td>
<td>Understanding Art and Architecture</td>
<td></td>
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<td>3</td>
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<tr>
<td>NS111</td>
<td>Understanding Nature and Knowledge</td>
<td></td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>NS112</td>
<td>Understanding Science and Technology</td>
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<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>CULT101</td>
<td>Understanding Cultural Encounters</td>
<td></td>
<td>2</td>
<td>0</td>
<td>3</td>
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<tr>
<td>SPS140</td>
<td>Understanding Religion</td>
<td></td>
<td>2</td>
<td>0</td>
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<tr>
<td>TURK111</td>
<td>Spoken Turkish I *</td>
<td>TURK111</td>
<td>2</td>
<td>0</td>
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<tr>
<td>BOS111</td>
<td>Spoken Bosnian I *</td>
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<tr>
<td>TURK112</td>
<td>Spoken Turkish II **</td>
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<td>BOS112</td>
<td>Spoken Bosnian II **</td>
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<td>3</td>
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<tr>
<td>ENS105</td>
<td>The Brain</td>
<td></td>
<td>3</td>
<td>0</td>
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</tr>
</tbody>
</table>

* Scholarship students will take either TURK111 / BOS 111
** Scholarship students will take either TURK112 / BOS 112

Table 3: Faculty Electives for IE

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Prerequisites</th>
<th>T</th>
<th>P</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH100</td>
<td>Introduction to Architectural Design</td>
<td>ARCH100</td>
<td>1</td>
<td>2</td>
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<tr>
<td>ARCH101</td>
<td>Basic Design Communication</td>
<td></td>
<td>1</td>
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</tr>
<tr>
<td>ARCH108</td>
<td>Introduction to Architectural Design II</td>
<td>ARCH100</td>
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</tr>
<tr>
<td>ARCH109</td>
<td>Introduction to Building Technology</td>
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<tr>
<td>BIO310</td>
<td>Bioinformatics</td>
<td>ENS213/CS103</td>
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<td>1</td>
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<tr>
<td>Code</td>
<td>Title</td>
<td>Prerequisites</td>
<td>T</td>
<td>P</td>
<td>ECTS</td>
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<tr>
<td>ENS210</td>
<td>Computational Biology</td>
<td>NS103</td>
<td>2</td>
<td>2</td>
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<tr>
<td>ENS221</td>
<td>Introduction to Engineering</td>
<td></td>
<td>3</td>
<td>0</td>
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<tr>
<td>ENS203</td>
<td>Electrical Circuits I</td>
<td>MATH101</td>
<td></td>
<td></td>
<td>6</td>
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<tr>
<td>ENS201</td>
<td>Electromagnetism I</td>
<td>MATH102</td>
<td></td>
<td></td>
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<tr>
<td>ENS206</td>
<td>System Modelling</td>
<td>MATH202</td>
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<tr>
<td>EE321</td>
<td>Electrical Machines</td>
<td>MATH203</td>
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<tr>
<td>EE305</td>
<td>Instrumentation and Measurements</td>
<td>MATH101</td>
<td></td>
<td></td>
<td>6</td>
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<tr>
<td>ENS209</td>
<td>Statics</td>
<td>MATH101</td>
<td></td>
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<td>ME210</td>
<td>Strength of Materials</td>
<td>ENS209</td>
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<td>ME312</td>
<td>Machine Elements</td>
<td>ME210</td>
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<td>ME208</td>
<td>Dynamics and Vibrations</td>
<td>ENS209</td>
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<td>ENS202</td>
<td>Thermodynamics</td>
<td>MATH102, NS102</td>
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<td>ME306</td>
<td>Heat and Mass Transfer</td>
<td>MATH202</td>
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<td>ME304</td>
<td>Fluid Mechanics</td>
<td>MATH202</td>
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<td></td>
<td>6</td>
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<tr>
<td>CS105/204</td>
<td>Advanced Programming</td>
<td>ENS213/CS103</td>
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<tr>
<td>MATH204</td>
<td>Discrete Mathematics</td>
<td>MATH101</td>
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<tr>
<td>CS302</td>
<td>Algorithms and Data Structures</td>
<td>CS105, MATH204</td>
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<td>CS305</td>
<td>Programming Languages</td>
<td>CS105</td>
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<td>6</td>
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<tr>
<td>CS306</td>
<td>Database Management</td>
<td>CS105</td>
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</table>

*** Minor-5 courses from these lists can be completed to get a minor in ME or EEE or CS.***

Table 11: Program Electives for the IE Program

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Prerequisites</th>
<th>T</th>
<th>P</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS306</td>
<td>Database Management</td>
<td>CS105</td>
<td>3</td>
<td>2</td>
<td>6</td>
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<tr>
<td>MAN231</td>
<td>Financial Accounting</td>
<td>Junior standing</td>
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<td>0</td>
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<tr>
<td>ECON301</td>
<td>Econometrics</td>
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<td>2</td>
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<tr>
<td>IE305</td>
<td>Work Analysis and Design</td>
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<tr>
<td>IE318</td>
<td>Engineering Economics</td>
<td>Junior standing</td>
<td>2</td>
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<tr>
<td>IE401</td>
<td>Manufacturing Processes</td>
<td>Senior standing</td>
<td>2</td>
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<tr>
<td>IE402</td>
<td>Integrated Manufacturing</td>
<td>Senior standing</td>
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<tr>
<td>IE404</td>
<td>Logistics</td>
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<td>IE406</td>
<td>Financial Analysis</td>
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<td>Management Information Systems</td>
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<td>IE409</td>
<td>Reliability Analysis</td>
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<td>Design of Experiments</td>
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<td>IE411</td>
<td>Forecasting</td>
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<td>IE414</td>
<td>Stochastic Models</td>
<td>Senior standing</td>
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<td>IE415</td>
<td>Scheduling and Sequencing</td>
<td>Senior standing</td>
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<tr>
<td>IE416</td>
<td>Supply Chain Management</td>
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<td>IE417</td>
<td>Facilities Design and Planning</td>
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<tr>
<td>IE418</td>
<td>Queuing Theory</td>
<td>Senior standing</td>
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</table>
Table 14 lists all electives students need to take during their undergraduate study as a IE at IUS:

<table>
<thead>
<tr>
<th>Course group</th>
<th>ECTS</th>
<th>Course name</th>
<th>Semester</th>
<th>Course type</th>
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<th>Pre-requisites</th>
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<tr>
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<td>69</td>
<td>University Electivs</td>
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<tr>
<td></td>
<td></td>
<td>Foreign Language Electivs</td>
<td>I, II</td>
<td>required</td>
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<td></td>
<td></td>
<td>Faculty Elective I &amp; II</td>
<td>V</td>
<td>required</td>
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<td></td>
<td></td>
<td>Program Elective I &amp; II</td>
<td>VII</td>
<td>required</td>
<td>6</td>
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<td></td>
<td></td>
<td>Program Elective III &amp; IV</td>
<td>VIII</td>
<td>required</td>
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</table>

Other MAN, ECON or IBF coded 3xx, 4xx or 5xx level courses can also be taken as program elective with Academic Advisor’s consent.
1.4 EUROPEAN CREDIT TRANSFER SYSTEM

**Standard 1.4—The application of ECTS is appropriate and plausible. It meets the recommendations of the European Commission.**

As an accredited university that is conducting its activities in the Sarajevo Canton, the International University Sarajevo is bound to be in compliance with the following legal acts pertaining to the use of ECTS model:

1. Framework Law on Higher Education in Bosnia And Herzegovina
2. Law on Higher Education adopted for the Sarajevo Canton

These laws set the higher education model in Bosnia and Herzegovina in three cycles:

- The first cycle leads to the academic title of completed undergraduate studies [the degree of Bachelor] or equivalent, obtained after no less than three years and no more than four years of full time study upon acquiring a secondary school leaving certificate, valued as no less than 180 or 240 ECTS credit points;

- The second cycle leads to the academic title of Master or equivalent, obtained after the completion of undergraduate studies, of duration of one or two years, and valued as 60 to 120 ECTS credit points, in such a way that the total with the first cycle represents 300 ECTS points; and

- The third cycle leads to the academic degree of doctor or equivalent, of duration of three years and valued as 180 ECTS credit points.

One semester of full-time study carries 30 ECTS credit points in each cycle. Law on Higher Education defines ECTS system as “European system of transferring the study points (credits). The study points – credits – are used to define a measure of a student workload and requirements of each course, and are determined on the basis of optimal student workload necessary for achieving competencies in each particular course” (Article 7). The Law further defines one ECTS study credit as 25 hours of the total student workload in all aspects of his/her work on a particular subject (Article 49). Article 31 of the Law stipulates the right of university to establish the manner of implementing European Credit Transfer System principles in its statute.
Implementation of ECTS system at IUS is regulated in Article 121 of our Statute in the following manner:

(1) Study programs apply the European Credit Transfer System (ECTS), i.e. the European system of transfer of study credits, for each course in a study program.

(2) The number of ECTS credits for each course is based upon the total student workload for which the student is engaged in the particular course, as follows:
   a) attending learning activities (theoretical and/or practical teaching activities, tutorials, seminar projects);
   b) independent work (homework, projects, research);
   c) preparing for assessments (tests, final examination); and
   d) other activities in the particular subject.

In addition to establishing credit value of its courses and study programs, IUS is uses ECTS for the following purposes:

1. Evaluation of courses passed at other higher education institution for students who are transferring to IUS
2. Evaluation of foreign qualifications and their recognition for the purpose of continuing education or for getting employment in Bosnia and Herzegovina,
3. Preparing learning agreement for exchange students.

In accordance to abovementioned regulations, I cycle of the IE study program lasts eight semesters, with 30 ECTS each, which in total adds to 240 ECTS needed for the completion of the program. Most of the courses require 150 hour workload consisting of various activities for the student to successfully finish the course. Required activities and methods of evaluation of students work and achieved learning outcomes are described in syllabus for each course. Students receive syllabus of each course which they register at the beginning of the semester. All syllabi can also be found on IUS web site.

For students who are transferring to the IE study program from other higher education institution courses which they passed at other institution can be recognized and ECTS credits can be accepted towards Bachelor of Sciences in Industrial Engineering at IUS. Process of recognition of those courses is conducted in accordance to the Book of Rules on Recognition of Passed Examinations and their
Equivalence at International University of Sarajevo. This bylaw stipulates that recognition of courses and ECTS credits is granted following the assessment which needs to establish that the level and type of knowledge, skills and competences, or learning outcomes achieved in the previously passed courses have no significant differences from the level and type of knowledge, skills and competences which are achieved in the subjects for which the recognition was applied for.

Process of evaluation of foreign qualifications and their recognition for the purpose of continuing education or for obtaining employment in Bosnia and Herzegovina is performed in accordance to the Role Book on Recognition of Foreign Qualification. In order for a higher education institution to have the legal power to perform recognition of foreign qualification and to enable usage of that qualification in Bosnia and Herzegovina, bylaw based on which recognition is carried out has to be approved by the Ministry. The Ministry approved IUS Role Book on Recognition of Foreign Qualification on 19th September, 2014 and since that day IUS is performing recognition of foreign qualification.

Other important documents used in the process of recognition of foreign qualification are Recommendations on the Use of Qualifications Frameworks in the Procedure for the Recognition of Foreign Higher Education Qualifications in Bosnia and Herzegovina and Recommendations on Evaluation Criteria for the Recognition of Foreign Higher Education Qualifications issued by Centre for Information and Recognition of Qualifications in Higher Education, Lisbon Recognition Convention, and ECTS Guide.

In order to facilitate students’ mobility, the curriculum is organized through the courses which values are expressed in units of the European Credit Transfer System (ECTS). Students’ workload per semester is determined with 30 ECTS credits so that the total load in one academic year is 60 ECTS.

Given the size of planned content and timing of their implementation, courses at IUS are predominantly assigned to an equal number of study credits i.e. 6 ECTS. One study ECTS point is equivalent to 25 hours of total workload for the average student, and curriculum indicates that this standard is met.
Total student activities, in accordance with the Law on Higher Education in Sarajevo Canton, mainly include the following:

a) Number of hours needed for instructions (lectures, seminars),

b) Time required for student for independent tasks,

c) Time required for preparation of assessment and grading, and

d) Time which academic staff need in assisting the student to acquire the necessary knowledge.

Based on the above legal basis for "assigning" the study points to every single activity in the preparation of curriculum, IUS, as a rule, in all its study programs applies a model of so called standardized workload (2) for each course, ensuring that the total load comprises 150 hours of total student activities per course.

This provides:

a) General harmonization of the scope and subjective “importance” of each course in the curriculum,

b) Standardizing subjective weight for mastering a particular course through a flexible allocation of credits to individual activities,

c) More efficient mobility of students,

d) A simpler implementation and organization of joint courses in the first year of the studies, and

e) An easier transition and recognition of courses with international higher education institutions.

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1.5 STUDY PROGRAM VS. QUALIFICATION OBJECTIVES

**Standard 1.5—The study program is structured consistently with regard to formulated qualification objectives.**

In the following tables, the learning outcomes are compared to the University Required and Program Required courses to demonstrate the way in which and to what extent they match the learning outcomes and educational objectives of the program.
### Table 15: Correspondence between the Learning Outcomes and University Required courses

<table>
<thead>
<tr>
<th>INDUSTRIAL ENGINEERING</th>
<th>SP Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe, apply, and integrate the basic concepts and the knowledge of mathematics, science, and engineering.</td>
<td>Identify, formulate, and solve problems at the interface of engineering and business.</td>
</tr>
<tr>
<td>Design, develop, implement, and improve integrated systems that include people, materials, information, equipment, and energy using appropriate analytical, computational, and experimental practices.</td>
<td>Use modern techniques, skills, and tools necessary for industrial engineering practice and for disseminating the results of their work.</td>
</tr>
<tr>
<td>Demonstrate their skills in computer usage, information systems, and telecommunications relevant to the industrial engineering practice and for disseminating the results of their work.</td>
<td>Observe practical experience in the field of industrial engineering through various formal and informal work experiences and assistantships.</td>
</tr>
<tr>
<td>Demonstrate knowledge of the scientific method by identifying research questions, designing and implementing an independent research project, interpreting data based on scientific reasoning and evidence, and conveying this knowledge formally and informally in both oral and written form.</td>
<td>Analyze production and service systems, model, and apply optimization tools of industrial engineering.</td>
</tr>
<tr>
<td>Use modern techniques, skills, and tools necessary for industrial engineering practice and for disseminating the results of their work.</td>
<td>Design efficient systems based on the outcomes of optimization studies, which take environmental issues into account as well.</td>
</tr>
<tr>
<td>Obtain practical experience in the field of industrial engineering through various formal and informal work experiences and assistantships.</td>
<td>Demonstrate job skills used by professional industrial engineers including the ability to set goals and priorities, work independently and in teams, locate and use career information, and develop an effective resume.</td>
</tr>
<tr>
<td>Conduct research in both theoretical and practical aspects.</td>
<td>Communicate effectively in the English language with written, oral, and visual means in a technical manner.</td>
</tr>
<tr>
<td>Find and use relevant technical literature and information sources.</td>
<td>Acquire knowledge autonomously.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contribution level:</th>
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<tbody>
<tr>
<td>1: Low level contribution</td>
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<td>2: Moderate contribution</td>
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<tr>
<td>3: High level contribution</td>
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<table>
<thead>
<tr>
<th>University Required Courses</th>
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<th>Calculus I</th>
<th>Calculus II</th>
<th>Critical Reading and Writing</th>
<th>Academic English and Effective Communication</th>
<th>Physics</th>
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</tbody>
</table>

37
Table 16: Correspondence between the Learning Outcomes and the Program Required Courses

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<tr>
<th>INDUSTRIAL ENGINEERING</th>
<th>SP Learning Outcomes</th>
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</thead>
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<td>-: No contribution</td>
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<tr>
<td>1: Low level contribution</td>
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<td>2: Moderate contribution</td>
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<tr>
<td>3: High level contribution</td>
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</tr>
<tr>
<td>Describe, apply, and integrate the basic concepts and the knowledge of mathematics, science, and engineering.</td>
<td>Describe, apply, and integrate the basic concepts and the knowledge of mathematics, science, and engineering.</td>
</tr>
<tr>
<td>Design, develop, implement and improve integrated systems that involve appropriate analytical and experimental practices.</td>
<td>Design, develop, implement and improve integrated systems that involve appropriate analytical and experimental practices.</td>
</tr>
<tr>
<td>Identify, formulate, and solve problems at the interface of engineering and business.</td>
<td>Identify, formulate, and solve problems at the interface of engineering and business.</td>
</tr>
<tr>
<td>Demonstrate knowledge of the scientific method by identifying research questions, designing and implementing an independent research project, interpreting data based on scientific reasoning and evidence, and conveying this knowledge formally and informally in both oral and written form.</td>
<td>Demonstrate knowledge of the scientific method by identifying research questions, designing and implementing an independent research project, interpreting data based on scientific reasoning and evidence, and conveying this knowledge formally and informally in both oral and written form.</td>
</tr>
<tr>
<td>Use modern techniques, skills and tools necessary for industrial engineering practice and for disseminating the results of their work.</td>
<td>Use modern techniques, skills and tools necessary for industrial engineering practice and for disseminating the results of their work.</td>
</tr>
<tr>
<td>Obtain practical experience in the field of industrial engineering through various formal and informal experiences and assistedships.</td>
<td>Obtain practical experience in the field of industrial engineering through various formal and informal experiences and assistedships.</td>
</tr>
<tr>
<td>Analyze production and service systems, model and apply optimization tools of industrial engineering.</td>
<td>Analyze production and service systems, model and apply optimization tools of industrial engineering.</td>
</tr>
<tr>
<td>Design efficient systems based on the outcomes of optimization studies, which take environmental issues into account as well.</td>
<td>Design efficient systems based on the outcomes of optimization studies, which take environmental issues into account as well.</td>
</tr>
<tr>
<td>Demonstrate job skills used by professional industrial engineers including the ability to set goals and priorities, work independently and in teams, locate and use career information, and develop an effective resume.</td>
<td>Demonstrate job skills used by professional industrial engineers including the ability to set goals and priorities, work independently and in teams, locate and use career information, and develop an effective resume.</td>
</tr>
<tr>
<td>Conduct research in both theoretical and practical aspects.</td>
<td>Conduct research in both theoretical and practical aspects.</td>
</tr>
<tr>
<td>Communicate effectively in the English language with written, oral and visual means as a technical researcher.</td>
<td>Communicate effectively in the English language with written, oral and visual means as a technical researcher.</td>
</tr>
<tr>
<td>Find and use relevant technical literature and information sources.</td>
<td>Find and use relevant technical literature and information sources.</td>
</tr>
<tr>
<td>Acquire knowledge autonomously.</td>
<td>Acquire knowledge autonomously.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Program Required Courses</th>
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<td>Ergonomics</td>
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<td>Project Management</td>
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<td>Financial Engineering</td>
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<tr>
<td>Simulation</td>
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</table>
**INDUSTRIAL ENGINEERING**

<table>
<thead>
<tr>
<th>Contribution level:</th>
<th>No contribution</th>
<th>Low level contribution</th>
<th>Moderate contribution</th>
<th>High level contribution</th>
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</table>

| Quality and Reliability Engineering | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2 |
| Decision Analysis | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| Manufacturing Systems | 3 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 3 |
| Statistical Modeling | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 3 |

**SP Learning Outcomes**

- Describe, apply, and integrate the basic concepts and the knowledge of mathematics, science, and engineering.
- Design, develop, implement and improve integrated systems that include people, materials, information, equipment, and energy using appropriate analytical, computational and experimental practices.
- Identity, formulate, and solve problems at the interface of engineering and business.
- Demonstrate knowledge of the scientific method by identifying research questions; designing and implementing an independent research project, interpreting data based on scientific reasoning and evidence, and conveying this knowledge formally and informally in both oral and written form.
- Use modern techniques, skills and tools necessary for industrial engineering practice and for disseminating the results of their work.
- Observe practical experience in the field of industrial engineering through various formal and informal work experiences and assistantships.
- Analyze production and service systems, model, and apply optimization tools of industrial engineering.
- Design efficient systems based on the outcomes of optimization studies, which take environmental issues into account as well.
- Demonstrate job skills used by professional industrial engineers including the ability to set goals and priorities, work independently and in teams, locate and use career information, and develop an effective resume.
- Conduct research in both theoretical and practical aspects.
- Communicate effectively in the English language with written, oral, and visual means in a technical manner.
- Find and use relevant technical literature and information sources.
- Acquire knowledge autonomously.
Table 17: Correspondence between the Educational Objectives and the Faculty Required Courses

<table>
<thead>
<tr>
<th>Contribution level:</th>
<th>SP Learning Outcomes</th>
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<td>1: Low level contribution</td>
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<td>3: High level contribution</td>
<td>3: High level contribution</td>
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</table>

<table>
<thead>
<tr>
<th>INDUSTRIAL ENGINEERING</th>
<th>Design, develop and improve integrated systems that are relevant to the industrial engineer.</th>
<th>Describe, apply, and integrate the basic concepts and the knowledge of mathematics, science, and engineering.</th>
<th>Demonstrate their skills in computer usage, information systems, and telecommunications relevant to the industrial engineer.</th>
<th>Demonstrate knowledge of the scientific method by identifying research questions, designing and implementing an independent research project, interpreting data based on scientific reasoning and evidence, conveying this knowledge formally and informally in both oral and written form.</th>
<th>Conduct research in both theoretical and practical aspects.</th>
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Table 18: Correspondence between the Educational Objectives and the Program Required Courses

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<th>INDUSTRIAL ENGINEERING</th>
<th>Educational Objectives</th>
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<td>1: Low level contribution</td>
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<table>
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<tr>
<th>Program Required Courses</th>
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<td>Ergonomics</td>
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<td>Financial Engineering</td>
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<td>Simulation</td>
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<td>Quality and Reliability</td>
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<td>Statistical Modeling</td>
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</tr>
</tbody>
</table>
1.6 STUDENTS’ WORKLOAD

**Standard 1.6**—The students’ workload required for the study program is devised in a way so as to allow them to reach the aspired qualification objectives in the study period specified.

1.6.1 BACHELOR DEGREE (FIRST CYCLE)

The IE Bachelor program satisfies legal requirements related to the workload and ECTS credits, with respect to both national and EU contexts.

The first cycle lasts four years, which is equivalent to 240 ECTS credits distributed in eight semesters, each of them enabling students to acquire 30 ECTS.

The standard for student workload and ECTS credit is defined in the Law and equals 25 hours of student engagement. The formula is consistently applied which can be evident from course syllabus forms, where courses that are valued, e.g. 6 ECTS assume that an average student will spend 150 hours of work per semester, including lecture/tutorial attendance, practical work, work on the project and individual learning. In this way, it is estimated that the total work time of an average student will allow him/her to fully obtain the expected knowledge, skills and competences in that course, subsequently assigning the ECTS credits after the successful examination. Student workload per course per semester is equally distributed throughout 14 weeks.

Teaching and Assessment Methods applied at the University vary significantly depending on the faculty and discipline. In general, the courses of IE program have a tendency towards larger structure and more formal lessons than subjects of humanities and social sciences. An important component of studying at the IUS is independent learning, and special attention is given to individual office hours with students. Academic staff may combine different teaching approaches to achieve specified learning goals and to motivate students to study.

Implementation of teaching can take several forms, but it usually involves a combination of the following:
- Lectures, and class discussion.
- Tutorials, under the supervision of course holder professor, in small groups where individual attention is given to students. Tutorials usually complement lectures, but are more topic-specific. For example, they may include activities such as solving problems or having discussions on particular topics broadly discussed during lectures.

- Practical work, such as weekly sessions in the laboratory where students acquire technical and research skills.

- Internships (min 30 working days) have been designed in a way that offers students opportunities to experience on-the-job training and make well-informed decisions about their future careers. Through the choice of host institutions/sectors for carrying out the Internship, students develop their communication skills and learn how to join interdisciplinary teams.

- Independent learning: Apart from attending lectures and practical classes, students spend a great part of their week days in independent learning that includes reading relevant materials, research, studying in the reading room, doing homework, writing term papers and reports, group or individual projects and presentations.

**Student advisor**

Since its establishment, IUS has always given special attention to the academic advising of students in their studies. Within the study program, the Dean assigns to each student academic advisors, who have obligation to continuously monitor and evaluate student's progress. The task of academic advisors is also based on the expressed wishes of the student for education in the selected area, to advice on the choice of "a coherent set of courses" taking into account the personal preferences of student and the educational requirements of the study program.

**EXEMINATION METHODS**

**Standard 1.7—The examination methods are suitable to assess whether the defined learning outcomes have been achieved.**

The examination methods used in the IE undergraduate study program includes different types of assessments including papers, written exam questions, class discussions, homework, assignments, labs, problem sets, projects, etc. The detailed
information on how each type of assessment supports the expected learning outcomes is given in Table 19.

Table 19 Examination methods vs. Learning Outcomes (Bachelor)

<table>
<thead>
<tr>
<th>SP Learning Outcomes</th>
<th>Type of Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe, apply, and integrate the basic concepts and the knowledge of mathematics,</td>
<td>Papers, written exam questions, problems, class discussions, homework assignments</td>
</tr>
<tr>
<td>science, and engineering.</td>
<td></td>
</tr>
<tr>
<td>Design, develop, implement and improve integrated systems that include people,</td>
<td>Papers, written exam questions, problems, class discussions, homework assignments</td>
</tr>
<tr>
<td>materials, information, equipment and energy using appropriate analytical, computational and experimental practices.</td>
<td></td>
</tr>
<tr>
<td>Identify, formulate, and solve problems at the interface of engineering and business.</td>
<td>Papers, written exam questions, problems, class discussions, homework assignments, projects</td>
</tr>
<tr>
<td>Demonstrate their skills in computer usage, information systems, and telecommunications relevant to the industrial engineering.</td>
<td>Problem sets, class discussions, labs, projects, exams</td>
</tr>
<tr>
<td>Demonstrate knowledge of the scientific method by identifying research questions; designing and implementing an independent research project, interpreting data based on scientific reasoning and evidence and conveying this knowledge formally and informally in both oral and written form.</td>
<td>Papers, written exam questions, problems, class discussions, homework assignments</td>
</tr>
<tr>
<td>Use modern techniques, skills and tools necessary for industrial engineering practice and for disseminating the results of their work.</td>
<td>Papers, written exam questions, problems, class discussions, homework assignments</td>
</tr>
<tr>
<td>Obtain practical experience in the field of industrial engineering through various formal and informal work experiences and assistantships.</td>
<td>Papers, written exam questions, problems, class discussions, homework assignments</td>
</tr>
<tr>
<td>Analyse production and service systems, model, and apply optimization tools of industrial engineering.</td>
<td>Papers, written exam questions, problems, class discussions, homework assignments</td>
</tr>
<tr>
<td>Design efficient systems based on the outcomes of optimization studies, which take environmental issues into account as well.</td>
<td>Problem sets, class discussions, labs, projects</td>
</tr>
<tr>
<td>Demonstrate job skills used by professional industrial engineers including the ability to set goals and priorities, work independently and in teams, locate and use career information, and develop an effective resume.</td>
<td>Class discussions, case studies, projects</td>
</tr>
<tr>
<td>Conduct research in both theoretical and practical aspects.</td>
<td>Papers, written exam questions, problems, class discussions, homework assignments</td>
</tr>
</tbody>
</table>
INDUSTRIAL ENGINEERING

<table>
<thead>
<tr>
<th>SP Learning Outcomes</th>
<th>Type of Assessment</th>
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</thead>
<tbody>
<tr>
<td>Communicate effectively in the English language with written, oral and visual means in a technical manner;</td>
<td>Papers, written exam questions, problems, class discussions, homework assignments</td>
</tr>
<tr>
<td>Find and use relevant technical literature and information sources.</td>
<td>Papers, written exam questions, problems, class discussions, homework assignments, projects</td>
</tr>
<tr>
<td>Acquire knowledge autonomously.</td>
<td>Problem sets, class discussions, labs, projects</td>
</tr>
</tbody>
</table>

1.7 DIPLOMA SUPPLEMENT

Standard 1.8–Issuance of a diploma supplement is guaranteed.

Issuance of diploma supplement is guaranteed to each student. It is always issued together with the diploma. Package includes:

1. Diploma (in APPENDIX B - DIPLOMA);

2. Diploma supplement - Bosnian and English version available (APPENDIX C – DIPLOMA SUPPLEMENT);

3. Transcript of grades (Bosnian and English version available).
Diploma supplement is designed and prepared according to the instructions provided by the Ministry of Education, Science and Youth of Sarajevo Canton (www.mon.ks.gov.ba).

1.8 ADMISSION REQUIREMENTS FOR THE STUDY PROGRAM

**Standard 1.9**—Admission requirements for the study program are clearly defined, meet the statutory requirements and contribute to achieving the educational goals of the study program. Recognition rules for external achievements pursuant to the Lisbon Recognition Convention (Applicable to states that have ratified the Lisbon Recognition Convention and where it has come into force) and achievements outside of higher education institutions have been defined.

1.8.1 REQUIREMENTS CONDITION FOR THE FIRST CYCLE

To enroll into the 1st cycle of studies, a candidate needs to have completed four years of secondary education which he/she proves with valid high school diploma.

Being that teaching at the University is carried out in the English language only, in order to be enrolled into the first year, candidates must possess advanced knowledge of the English language. For a student to prove their sufficiency in English they can provide internationally recognized certificates of English language proficiency, such as TOEFL, IELTS, or equivalent certificate, in accordance with the criteria established by University regulations.

If a candidate does not possess any certificate which would waive the requirement for taking English Language Proficiency exam (Proficiency exam), candidates are required to pass Proficiency Exam organized by English Language School (ELS) at the University.

Candidates who meet all requirements for admission, but who do not pass this test, are required to attend intensive program (course) of the English language at the University’s Lifelong Learning Centre, in order to acquire necessary language skills.
to follow the lectures. While attending the English language course, students are required to submit request for dormant status for the purpose of preparation for the Proficiency exam and acquiring skills to attend lectures.

The general criteria for admission are determined in the public announcement published before each academic year. Ranking of candidates can be made on the basis of the following criteria:

- Success achieved in high school;
- Marks received in the interview organized for the candidates during application process;
- Points earned on the Scholarship test (Aptitude and Math tests) organized by University for those candidates who applied for scholarship, and other criteria stipulated in the announcement.

Further short-listing can be done based on the performance achieved during applicants’ secondary education in the subjects relevant to the area of the undergraduate study.

Applicants from the Republic of Turkey, in addition to the previously mentioned admission criteria, have to pass undergraduate studies entrance exam (LYS – Lisans Yerleştirme SINAV) with the minimal score set by the appropriate government body in charge of higher education in the Republic of Turkey, or they have to achieve at least 1000 points on the SAT (Scholastic Aptitude Test / Scholastic Assessment Test).

Students transferring from other higher education institutions are required to submit application for admission (transfer) along with the official certificate on passed courses (transcript) from previous higher education institution. The request is forwarded to the relevant faculty committee. At the end of transferring process, the faculty Dean decides on application for transfer.

The persons who lose their student status in accordance with the general acts and The Study Rules at the IUS can reclaim their status under the following conditions:

- The University has available infrastructure and human resources to accommodate re-admitted students without any interruption of regular teaching process and everyday operations of the University;
• The student follows the study program curriculum in current use at the time of re-admission;
• The student has no arrears with the University.

Students who want to regain their students status are required to submit a request and explanation to the competent University Authorities. The decision on regaining student’s status is made by the Dean.

1.8.2 RECOGNITION

Bosnia and Herzegovina signed the Convention of the Council of Europe/UNESCO on Recognition of Qualifications in Higher Education in European Region (ETS No. 165, 1997) – The Lisbon Convention („Official Gazette of B&H“, issue 16/03 – International Agreements) in 2003. The Convention entered into force in 2004. This way, Bosnia and Herzegovina took a part in this important instrument for the Bologna Process which aims at creating the “European higher education area” by making academic degree standards and quality assurance standards more comparable and compatible throughout Europe.

In order to improve the implementation of the Convention in our country, the Centre for Information and Recognition of Qualifications in Higher Education (hereinafter CIP/CIR), was established by the Framework Law on Higher Education in Bosnia and Herzegovina („Official Gazette of B&H“, issue 59/07), as an independent administrative organization. According to the given Law, CIP/CIR is in charge of: information and recognition in higher education, coordination and international exchange of members of academia, students, and programs in higher education and representing Bosnia and Herzegovina in international projects in higher education. Also, through the international network of information centers (ENIC/NARIC network), CIP/CIR provides information to the higher education institutions in Bosnia and Herzegovina on foreign higher education institutions and programs and gives opinion about foreign degrees and diplomas in relation to the continuation of education at higher education institutions in Bosnia and Herzegovina. These instruments are regularly used by IUS, in the way that will be thoroughly explained.
latter. Also CIP/CIR issued numerous recommendations for the area of Recognition of Qualifications in Higher Education, available here:


Considering that higher education in the Federation of B&H is in also under the authority of Cantons, very important law for the qualification recognition at IUS is the Cantonal Law on Higher Education (“Official Gazette of Sarajevo Canton” issue 42/13 – Consolidated text) available here:

http://www.ius.edu.ba/sites/default/files/the-law-on-higher-education.pdf

Under this Law, institutions of higher education have authority to validate and carry out procedures of recognition of university degrees (qualifications) from abroad through its organizational units by means of nominating a special committee, in compliance with the Law (Article 36). Two types of qualifications recognition is stipulated, academic and professional recognition.

Recognition of foreign higher education qualification is a formal validation of value of foreign higher education qualifications and periods of study, issued by the competent authorities of IUS for the purposes of access to education or employment. Procedure of recognition of higher education qualifications at IUS has been regulated in detail by the Book of Rules on Recognition of Foreign Educational Qualifications which is adopted by the Senate of IUS and approved by the Ministry of Education, Science and Youth of Canton Sarajevo.

The procedure for the recognition of foreign higher education qualifications for the purpose of access to labor market in Bosnia and Herzegovina is being conducted by the Senate of IUS and procedure for academic recognition of foreign higher education qualifications and access to continuation of education is being carried out by the Council of the organizational unit of IUS which issues the same or equivalent higher education qualifications.

In both cases, the Committee is formed of at least three members of the academic staff in the academic title of assistant professor, associate professor or full professor, from a scientific/artistic areas and disciplines which are taught within the study program for which the recognition of foreign higher education qualifications is requested with obligation to submit Report to authorized body of university or
faculty, that contains their proposal and explanation on requested recognition of higher qualification based on criteria set by the Book of Rules on Recognition of Foreign Educational Qualifications.

Valuation of foreign higher education qualifications is done exclusively on the basis of acquired knowledge, skills and competences. In the process of recognition of higher education qualification for the purpose of employment, level and type of study, as well as professional, academic or scientific title is being determined without comparing the curricula. Foreign higher education qualification will not be recognized if substantial differences between the foreign higher education qualification and the corresponding qualification of IUS are found.

Unified Register of all received and processed applications for academic and professional recognition of foreign higher education qualifications is being processed and kept by the Student Affairs Office.

The deadline for adoption of decision on recognition of higher education qualification is 60 days from the filing of a proper application.

1.9 INTERNSHIP

Standard 1.12–Placements (internship) form an educationally relevant part of the curriculum.

Students of IE program are required to complete minimum 25 full working days of internship during their studies, and this is the condition for graduation. 6 ECTS are allocated for the internship.

The aim of the internship is to provide IE students with some real-world practical experience, so that they can be better prepared for their future jobs once they complete their studies. Internships will give students more practical experience and implementation of some of the theoretical aspects of the knowledge they have acquired during their studies, and provide them with an advantage over their relative competitors from other local universities. The goals of internship are as follows:

- To develop the ability of students’ reasoning
- To improve their ability to process information and critical thinking
- To increase their ability to apply gained knowledge
- To develop their problem solving strategy in various circumstances etc.

Internships are approved only after authorization from the responsible person in the company where the student plans to complete the internship. The place of internship can be chosen upon a consultation with the program coordinator. After completing the internship (min. 25 work days), students are required to write an internship report which is signed by the company’s responsible manager. The responsible manager from the company also needs to fill in the trainee evaluation form where the students work and attitude are evaluated. Signed and stamped internship report and trainee evaluation form need to submitted to the program coordinator in the sealed envelope. Only positive reports will be taken into consideration to validate the internship.

The IE internship opportunities include large companies in Bosnia and Herzegovina, such as BH telecom (telecommunications), Atlant BH, Authority Partners Inc, Mistral, etc. as well as respected companies from Turkey such as ULKER.
CHAPTER 2  STANDARD 2: STAFF

2.1  SCIENTIFIC TEACHING AND RESEARCH STAFF

**Standard 2.1**—A sufficient number of scientific or artistic teaching and research staff is available for the study program, who are scientifically qualified, have adequate vocational experience, and are qualified in terms of their teaching methods.

Recruitment of a qualified staff, both for teaching and research, is based on the Law of Higher Education of the Sarajevo Canton. Certain procedures have to be fulfilled. In addition, the Faculty introduced internal procedures when new staff is to be recruited. For prospective academic staff, with no teaching backgrounds like assistant professors, senior assistants and assistants, approaching lecturers are mandatory, at which a recruiting committee, decides whether they fulfill the requirements of the IE program.

2.1.1  NUMBER OF ACADEMIC STAFF IN THE PROGRAM

Academic staff of IE study program includes 4 full-time professors, 1 part time visiting professor, 1 assistant. (See Table 2.2).

2.1.2  QUALIFICATION OF ACADEMIC STAFF

The aim of the IUS is that, among other things, together with contemporary curricula, achieve a greater compatibility and a clear comparability with higher education systems in Europe, and to improve quality of education and its results as a basic requirement for a comparison with European and the world's education systems. Of course, a prerequisite for these objectives is the fulfillment of all Standards and norms for higher education in Canton Sarajevo (hereinafter: Standards), which establishes the requirements for a minimum infrastructure, personnel and other technical conditions necessary for carrying out teaching and research activities of university.

Standards, among others, stipulates the obligation of higher education institutions to provide teachers and associates who will successfully and in accordance with the curriculum implemented established program, where it is necessary that at least 2/3
of the professors, assistants 2/3 and 2/3 of other associates must be employed full-time at the University, and the rest of the academic staff can be engaged from the economic, scientific and similar environments (up to 1/3 of the academic staff, and, if necessary, and more), or from among the visiting professors (1/3 academic staff).

In parallel, IUS carries out continuous analysis of its own scientific teaching capacity i.e. staff members of academic staff who are appointed for the same or related scientific field.

By decisions on appointment into academic title for a specific scientific field, the right to hold all courses contained within established scientific/artistic field is awarded to particular academic member. No matter given the right to hold a certain number of courses contained in the relevant scientific field, teaching load for each semester and each academic member is separately determined by the decision on teaching responsibilities and workload by faculty council. Therefore, the number of courses given by the Decision on the appointment or curriculum always may be limited and coordinated with the decision on teaching responsibilities and workload by faculty council on the semester basis, depending on special teaching needs.

The majority of the appointed members are young professors who have dedicated much of their adult lives to their academic degree earned in the relevant scientific disciplines. In accordance with the decisions on appointments, as a result of public vacancy for appointment into academic tile, they have concluded their employment relationships and they are actively engaged in continuous scientific research and teaching processes, which is resulting with permanent scientific publications and prominent teaching activities.

IUS and faculties as a whole continuously analyze staffing fulfillment and propose measures for improvement in the areas where it was found a lack of a sufficient number of required staff. In general, this analysis is done at the level of the study program and resulting requirements for new staff if found necessary. Furthermore, these requirements are analyzed by the faculty council and forwarded to the IUS Senate and the Board of Directors for final approval. After approvals, the public vacancies are announced.
2.1.3 ACADEMIC STAFF WORKLOAD

Academic staff members fall into two categories: teachers/lecturers and assistants. There is a universal workload policy, based on the relevant standards and norms and at IUS teachers are supposed to teach nine hours a week and to spend the rest of their working time in other activities, primarily student consultations, research and some administrative duties. Assistants’ workloads are also in line with the existing standards and norms. In order to get academic appointment all the legal and institutional criteria with regard to qualifications and academic/artistic background must be satisfied and the selection process includes introductory lecture which is evaluated by an ad-hoc committee.

2.1.4 ACADEMIC STAFF PROFESSIONAL DEVELOPMENT AND EVALUATION

The professional development policy at IUS is regulated through Program of measures for creation of conditions for promotion of academic staff. This document underlines conditions for promotion of academic staff into higher academic titles and also lists other measures which allow professional development of IUS teaching staff. Hiring process, duties and responsibilities, appointments, promotions, workloads and evaluations of academic staff are regulated by Law, Statute and rulebooks.

There are fair and merit-based procedures for staff recruitment and promotion. Academic staff appointments are publicly announced and open to all the interested candidates. A committee checks the applications and attached files, prepares a shortlist and invites candidates to deliver an introductory lecture for the evaluation purpose. Final decision is brought by Senate voting.

There is a universal workload policy, based on the relevant standards and norms and at IUS teachers are supposed to teach nine hours a week and to spend the rest of their working time in other activities, primarily student consultations, research and some administrative duties. Assistants’ workloads are also in line with the existing standards and norms.
Academic staff members are regularly evaluated by students and institution on a regular yearly basis. Student surveys are performed at the end of each semester and the scores given by students are used in institutional evaluation of academic staff that includes their educational, scientific/artistic and administrative activities. The evaluation is objective with clearly set criteria, identified areas and values for every activity/output. These evaluations are part of the internal QA system and are managed by the Rectorate, as defined in the rulebook.

2.1.5 STUDENT-LECTURER RATIO

Given that the average (admission versus graduation) number of students in the study program in the period of 2017–2018 equals to 8 and the number of full time academic staff is 5 (plus one scholarship assistant), without including the number of faculty staff teaching some university required and elective to our students, the student/teacher ratio is 5.1 (see Table 2.1). Although the study process definitely benefits from provision of more individual attention from the teachers and creating space for more productive class work, it nevertheless seems rational to increase the numbers of students being accepted to the study program without negatively impacting the quality of studies.

<table>
<thead>
<tr>
<th>Study cycle</th>
<th>Number of students</th>
<th>Number of academic staff members</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>I cycle</td>
<td>31</td>
<td>5 Professors (including 1 visiting) 1 Assistant</td>
<td>5.1</td>
</tr>
</tbody>
</table>
2.2 COMPOSITION OF THE FACULTY

**Standard 2.2**—The composition of the faculty meets the requirements of profound scientific and artistic education and ensures adequate student support.

Learning objectives and learning outcomes of the IE program requires diverse and competent academic staff. Its composition is in a line with the teaching and research objectives, as well as students’ needs, wants and demands. Such versatile academic staff profoundly enhances the scholarly and professional development of students. Expertise of the staff, their flexible teaching and research approaches, make students infallible if they decide either industry path career or academia.

Degree, qualifications, and areas of teaching for IE academic staff is provided in the Table 2.2. Due to the nature of IE program, being an interdisciplinary, the program benefits from other Faculty program staff, in particular academicians in the fields of Mathematics, Mechanical Engineering, Electrical Engineering, Management, Economics and Computer Science are teaching variety of the required and elective courses in IE curricula.

<table>
<thead>
<tr>
<th>Name</th>
<th>Academic Degree</th>
<th>Position</th>
<th>Qualification/Academic Discipline</th>
<th>Full/Part time</th>
<th>Area of teaching</th>
<th>No of hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benjamin Durakovic</td>
<td>PhD</td>
<td>Assistant Professor</td>
<td>Industrial Engineering</td>
<td>Full Time</td>
<td>Quality Engineering Project Management Manufacturing systems Design of Experiments</td>
<td>9</td>
</tr>
<tr>
<td>Tahsin Erkan Türe</td>
<td>PhD</td>
<td>Full time Professor</td>
<td>Industrial Engineering</td>
<td>Full Time</td>
<td>Operations Research Statistics</td>
<td>3</td>
</tr>
<tr>
<td>Sencer Yeralan</td>
<td>PhD</td>
<td>Full time Professor</td>
<td>Industrial Engineering</td>
<td>Full Time</td>
<td>Simulation Operations Algorithms, Programming, Computation,</td>
<td>6</td>
</tr>
<tr>
<td>Mehmet Can</td>
<td>PhD</td>
<td>Full time Professor</td>
<td>Mathematics</td>
<td>Full Time</td>
<td>Mathematics Decision Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Name</td>
<td>Academic Degree</td>
<td>Position</td>
<td>Qualification/Academic Discipline</td>
<td>Full/Part time</td>
<td>Area of teaching</td>
<td>No of hours per week</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------</td>
<td>---------------------------</td>
<td>-----------------------------------</td>
<td>----------------</td>
<td>-------------------------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Hazim Bašić</td>
<td>PhD</td>
<td>Full time Professor</td>
<td>Industrial and Manufacturing Engineering</td>
<td>Full Time</td>
<td>Production planning Ergonomics Work analysis and design</td>
<td>6</td>
</tr>
<tr>
<td>Erna Keskinovic</td>
<td>MSci</td>
<td>Visiting Assistant Professor</td>
<td>Industrial Engineering</td>
<td>Part Time</td>
<td>Telecommunication, Networking, Fiber Optics</td>
<td>6</td>
</tr>
</tbody>
</table>

### 2.3 HUMAN RESOURCE DEVELOPMENT

**Standard 2.3—Teaching and research staff have access to human resource development and further education measures.**

Through its mission and vision and strategic plan, IUS supports the professional development of its teaching and research staff. Human resource development and further staff education are implemented by some of the following means:

- IUS organizes conferences and seminars where IE program staff participate as organizers, attendees and/or presenters. (such as the Regional Conference on Soft Computing)
- IUS organizes lectures given by distinguished keynote speakers and experts in the field of IE.
- IUS provides a financial support for: (1) publishing scientific papers in science citation indexed journals; (2) participation of academic staff in conferences, workshops and seminars (regulated by Book of Rule on Incentives Policy and Financial Support for Book Publishing, Conference Participation, and Professional Development). The Book of Rules on Publishing Activities at the IUS SENAT-11-974/16 defines all types of publishing activities at IUS, quality control of publications, as well as financing publishing activities.

The list of academic personnel who received financial support stipulated by Book of Rule on Incentives Policy and Financial Support for Book Publishing, Conference Participation and Professional Development is kept in the Office for Financial and Economic Matters.
The list of published scientific papers, books and book chapters by IUS academic staff is publicly available at IUS web-site. The list is regularly updated.

Staff members of IE Program have a notable record in teaching, research, professional society involvement and experience in practice. They are constantly trying to broaden their research, development and professional activities in all fields of expertise and teaching interests.
CHAPTER 3  STANDARD 3: QUALITY ASSURANCE

3.1 INSTITUTION’S QUALITY MANAGEMENT SYSTEM

**Standard 3.1**—The study program is supported by institution’s quality management system.

IUS formally introduced its internal quality assurance system in 2011. Although this is not the beginning of the quality culture at the University, since 2011 there has been significant progress in terms of institutional approach to the quality assurance.

The following table represents the IUS’s QA framework:

<table>
<thead>
<tr>
<th>IUS Internal Documents for Quality Assurance</th>
<th>What is it about?</th>
</tr>
</thead>
<tbody>
<tr>
<td>IUS Statute (incl. mission and vision)</td>
<td>Demonstrated commitment of the IUS senior leadership towards developing internal quality culture.</td>
</tr>
<tr>
<td>IUS Strategic Plan 2011-2016</td>
<td></td>
</tr>
<tr>
<td>IUS Strategic Plan 2016-2020</td>
<td></td>
</tr>
</tbody>
</table>
| Regulation on Quality Assurance at IUS, IUS- SENAT-11-819/11, 21 June, 2011 | This document defines internal quality assurance system at IUS, its aims, mission, institutional structure, its responsibilities, its activities and its roles, intention statements, quality culture, students’ role in QA, quality assurance policy, and quality assurance procedures. It also establishes IUS QA bodies as follows:
- Quality Assurance Office (at the University level)
- Faculty Quality Assurance Teams (at the Faculty level) |
| Quality Assurance Office Policy, IUS-UO08-32/2011, 22 June, 2011 | This decision establishes Quality Assurance Office as an autonomous body of the IUS within the Rector’s Office. |
Covers procedures related to self-evaluation, external evaluation and contains relevant templates for the processes.

This Book of Rules defines the content, methods of proposing, accepting, monitoring and realization of the study programs at International University of Sarajevo, as well as methods of amending or innovating existing study programs. The Book of Rules also regulates the methods to cancel existing study programs or courses within the study programs. It introduces the Curriculum Committee as a body for monitoring the curricula, appointed by the Rector, which task is to consider proposals for introducing new study programs, as well as proposals for amending existing study programs curricula. The Rule Book prescribes the form of the syllabus as well the forms for different types of curricula changes (see APPENDIX F – STUDENT SURVEY FORM)

**Student Survey Form**

*Student evaluation at the end of a semester*

Evaluation

$5 = $Strongly agree; $4 = $Agree; $3 = $Neutral; $2 = $Disagree; $1 = $Strongly disagree.$

<table>
<thead>
<tr>
<th>General:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I find the study program attractive and fulfilling.</td>
<td>1</td>
</tr>
<tr>
<td>2. I am absolutely satisfied with IUS Library.</td>
<td>1</td>
</tr>
<tr>
<td>3. Student Affairs Office staff members were always helpful.</td>
<td>1</td>
</tr>
<tr>
<td>4. Non-Academic staff members always provided required assistance.</td>
<td>1</td>
</tr>
<tr>
<td>5. Physical/working conditions and resources available were excellent.</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course-related:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Lectures and class discussions were related to assigned course materials.</td>
<td>1</td>
</tr>
<tr>
<td>7. The criteria used in marking had been made clear in advance.</td>
<td>1</td>
</tr>
<tr>
<td>8. Exam questions were related to study materials, lectures and class discussions.</td>
<td>1</td>
</tr>
<tr>
<td>9. Assessment procedures and examinations are fair and transparent.</td>
<td>1</td>
</tr>
<tr>
<td>10. Teaching material indicated in the course outline was available.</td>
<td>1</td>
</tr>
<tr>
<td>11. Overall, I am satisfied with the quality of the course.</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teacher/Assistant-related:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>12. The lecturer enriches assigned material with useful comments, explanations and examples.</td>
<td>1</td>
</tr>
<tr>
<td>13. The lecturer encouraged us to actively participate in the learning process.</td>
<td>1</td>
</tr>
<tr>
<td>14. The lecturer followed course syllabus as given in the course outline.</td>
<td>1</td>
</tr>
<tr>
<td>15. I have been able to contact the lecturer during specified consultation hours.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>16. The lecturer uses appropriate vocabulary.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>17. The lecturer creates a good study atmosphere in the class.</td>
</tr>
<tr>
<td></td>
<td>18. The lecturer treated me and my opinions with respect.</td>
</tr>
<tr>
<td></td>
<td>19. The lecturer did not discriminate students on gender, ethnic, racial, religious or any other ground.</td>
</tr>
<tr>
<td></td>
<td>20. The lecturer came to lectures regularly and on time.</td>
</tr>
</tbody>
</table>

**Final:**

Looking back on the experience, please comment on this course only using the boxes below.

Please ensure that your comments do not identify you individually.

21. Comments:

22. Points for improvement:

---

**Book of Rules on the Work of the Curriculum Committee**

The methods of work and selection of the Committee members is defined in the Book of Rules on the Work of the Curriculum Committee.
This Book of Rules sets out the procedures on evaluation of the academic staff at International University of Sarajevo, the method and procedure of conducting the evaluation, the criteria for defining the evaluation score, as well as the appropriate measures to be taken should the academic staff member be continuously negatively evaluated by the IUS in the period of two years. The evaluation procedure integrates procedures for systematic evaluation of the academic staff by: a) the higher education institution, and b) students (in form of a students’ survey), (see APPENDIX D - CURRICULA FORMS).

Changes in the existing Study Program SP-01

**Study program:**  (insert full title in English)

**Estimated % of change:**  (insert your own understanding/estimation of the level of change)

**Motivation for change:**  
(explain aims and motivation for change)

**Existing practice:**  (in BiH, EU, other)

**Changed elements:**  
(copy/paste from the existing study program)

**Changed elements:**  
(copy/paste from the existing study program)

**Effect(s) of change on:**

- **Study program learning outcomes:**  
  (provide information on anticipated or known effects)

- **Courses:**  
  (provide information on anticipated or known effects)

- **Students:**  
  (provide information on anticipated or known effects)

- **IUS resources:**  
  (provide information on anticipated or known effects)

**Alignment with:**

- **EU-level policies and regulations:**  
  (insert one of the following: maintained, increased, reduced)

- **National regulations:**  
  (insert one of the following: maintained, increased, reduced)

- **IUS regulations:**  
  (insert one of the following: maintained, increased, reduced)

**Feasibility:**
### National Institutional Accreditation

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>IUS Post-accreditation Action Plan on Quality System Improvement, November 2014</td>
<td>After receiving the Decision on institutional accreditation, a higher education institution is required by the national law to make an Action Plan on Quality System Improvement, and submit Progress Reports to the competent Ministry. The Action Plan includes the following: - List of activities addressing the recommendations stipulated in the Report of the Committee for External Evaluation; - Timeline for activities’ implementation and - Persons in charge for each activity.</td>
</tr>
</tbody>
</table>

### Teaching and Learning

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book of Rules on the Procedure of Effective Teaching Process of the Academic Staff, IUS-SENAT 11 - 1044-2/14</td>
<td>This Book of Rules defines the procedure of monitoring and recording the proper and regular fulfilling of the teaching obligations. It prescribes the form (B6) to inform Deans and Programme coordinators as to ensure effective teaching processes of the academic staff.</td>
</tr>
<tr>
<td>Methods for Monitoring Academic Staff Activities, IUS-SENAT-11-1044-1/14</td>
<td>This procedure goes hand in hand with the previously mentioned Book of Rules. It defines the role of QA teams.</td>
</tr>
</tbody>
</table>

### Research

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book of Rules of Research and Development Centre, 2016 (under the process of adoption)</td>
<td>Statistics are collected on published articles and regularly updated on the IUS web page. Also, the impact factors of published articles are monitored via Google Scholar.</td>
</tr>
</tbody>
</table>

### ISO9001:2008

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Secretariat Quality Rule Book Quality policy statement, Rector, 11 February 2015</td>
<td>The Quality Policy Statement is a constituent part of the General Secretariat Quality Rule Book whereby ISO9001:2008 were introduced for the IUS administration</td>
</tr>
</tbody>
</table>

There are several documents which are not part of QA policy per se but significantly contribute to the IUS overall QA system.

These are:
- **Code of Ethics** and **Decision on the Establishment of Ethical Committee**;
- **Decision on procedures for Developing, Adopting and Implementation of IUS Strategy**;
- **Regulation on Student Organization and Student Roles at IUS**;

3.1.1 QA BODIES

Specific QA structure at IUS is made of fully functional QA Office at the university level and the QA Teams at faculty level. Student representatives are regularly appointed in Faculty QA Teams. These bodies, as defined in Article 8 of the Regulation on QA at IUS, are fully operational and functional. The roles, responsibilities, and activities are clearly defined in the aforementioned documents. The QA Office is the main QA executive body. It is an independent unit within the University whose Manger is responsible directly to the Rector. The Faculty QA Teams are constituted within each IUS faculties and responsible to the faculty Deans. A 5-member QA Team at Faculty level is made of the major stakeholders’ representatives, including students.

The QA Office regularly:

- follows development of regulation on quality assurance and propose adequate measures to IUS governance structures.
- actively participates and provides assistance in the process of strategic planning
- provides assistance to academic units in setting intended learning outcomes and educational objectives
- conducts student surveys at the end of each semester and prepares reports,
- provides guidance for analyzing study programs at the end of each academic year, processes reviews and improvements,
- provides support and guidance for the processes of self-evaluation at both study program and IUS level,
- organizes educational activities on QA enhancements
- conducts process of academic staff evaluation
- evaluates staff research activities
- conducts alumni surveys.
- processes all curricula revision requests and prepares documentation for Curricula Committee sessions.
- prepares various templates/forms
- ensures correct application of the entire QMS including ISO 9001:2008.

Activities in which QA Office provides assistance and support include, but are not limited to:

Cooperation with Faculty QA Teams, monitoring and recording of the proper and regular fulfilling of the teaching obligations by academic staff, provides updating study programs curricula changes, syllabi updates, award, monitoring, preparation of forms, updates of rulebooks, definition of scientific areas, establishing needs for academic staff, and participation in events and projects, such as workshops organized by the Council of Europe, EU Twinning Project: Strengthening Institutional Capacity for Quality Assurance and Agency for Higher Education and Quality Assurance, BiH, (HEA). IUS evaluates its QA system formally in the process of self-evaluation, but also as the part of strategy monitoring implementation and regular analyses by Board of Trustees IUS quality system is in full compliance with ENQA standards and guidelines, BH standards and guidelines, laws and Acts of the Agency for Development of Higher Education and Quality Assurance, and competent cantonal laws and by-laws.

3.1.2 STAKEHOLDER PARTICIPATION

Internal and external stakeholders are involved in the QA processes in various ways, but not at the same level. Internal stakeholders, such as students and academic staff, are involved in more systemic manner. Self-evaluations, both at university and SP level are done by appointed committees and student representatives are on all these committees.

All the analyses are discussed at Faculty Council and Senate sessions and, as pointed out earlier, students are also full members in these. Alumni association at IUS is created at university level and all the accessible alumni are approached in reasonable manner providing valuable input for improvements and innovations in the existing practices and curricula. Representatives of the labor market and professional associations are approached in the process of major changes and enhancement in SPs
and/or in very specific and individual cases where their contribution is considered most valued. Faculties maintain good contacts with relevant industries on personal and also professional basis through repeating meetings, workshops and partnerships.

Table 3.1 Involvement of Stakeholders in IUS QA processes

<table>
<thead>
<tr>
<th>Through participation in IUS governance bodies with voting rights (e.g. Senate, Faculty Councils, Ethical Committee, QA and SER Teams...)</th>
<th>Academic staff</th>
<th>Admin. Staff</th>
<th>University Management</th>
<th>Faculty/Department/Study Programme Management</th>
<th>Students</th>
<th>External stakeholders (employers, experts...)</th>
<th>Alumni</th>
</tr>
</thead>
<tbody>
<tr>
<td>Through formal participation in consultation bodies (Faculty QA Teams, Curriculum Committee, Research Committee, Strategic Planning Committee, etc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Through formal involvement in self-evaluation activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>By informally providing information on the issues at stake</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>By responding to the surveys on regular basis (e.g. at the end of the semester or academic year)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.2 STUDY PROGRAM QUALITY ASSURANCE AND ENHANCEMENT

**Standard 3.2**– The study program is part of a regular quality assurance and enhancement process which takes into account the curriculum, the study conditions and the program institutions, and which involves all relevant groups as well as external experts.

3.2.1 CURRICULUM AND QUALITY ENHANCEMENT

Study programs curricula for all three cycles are adopted by the Senate on the proposal of the Faculty Council and with a positive opinion of the Curricula Committee. The proposal for introduction of a new study program goes through the review process. Before approval of the Faculty Council, the proposal is shared for
review with other colleagues, professional associations relevant to the proposed program and other interested parties. To approve the proposal, there should be at least one positive review by an internationally recognized professor in the field concerning the program, and approvals by the Quality Assurance Office and the Curricula Committee. Once the proposal is accepted by the Faculty Council, the proposal is submitted for approval to the Senate.

According to the Book of Rules mentioned above, changes in an existing study program can be classified as minor changes, in which approval of the responsible Faculty Council suffices, and major changes where approval of the Faculty Council and the Senate is needed, assuming the positive opinion of the QA Office and the Curricula Committee.

The quality of the curriculum is assured through continuous monitoring and verification of program objectives, outcomes, teaching/learning methods, workload of students, students’ exam pass rates, and by gathering information from students and lecturers as well as other stakeholders.

Course analysis is performed once a year at the end of each academic year (No. IUS-SENAT 11-132/13). The analysis contains information about the number of registered students for a course, a number of students that have withdrawn from the course, average grade of the course and student’s evaluation of the course, which is measured every semester by the online student survey system.

External stakeholders are usually involved in the self-evaluation process and strategic planning or any kind of major changes whereby opinion of external partners is deemed to be of a significant importance. Academic staff members maintain good contacts with relevant industries on personal and also professional basis through repeating meetings, workshops and partnerships. IUS implements several projects with companies, institutions and government bodies as partners.

External stakeholders are mostly involved in manner of informal forums and personal connection. As a good example of cooperation with external stakeholders is the input on IUS Strategic Plan 2016-2020 where a thorough feedback was obtained from:

- Turkish Chamber of Commerce, and
- BH Agency of Higher Education and Quality Assurance (HEA)

3.2.2 THE USE OF INFORMATION

In this section we will provide an overview on what kind of information is being collected by IUS/Faculties/Study Program, how this information is communicated and how they impact decision making processes. It will also address what kind of information IUS displays publicly.

SIS (UNIPA) software, a centralized student information system, enables IUS and Study Programs to monitor their activities related to students and study programs implementation.

Apart from earlier described UNIPA features (i.e., documents issuance, transcripts, various certificates, diploma, diploma supplements, etc., grading and records maintenance, finance issues control, etc.), it also enables collection of different data related to students, such as:

- Student progression and success rates
- Profile of the student population (e.g. age, gender, nationality, education background)
- Number of students in each study program based on study year
- Number of students graduated each year
- Average grade in each study program
- Average duration of study in each study program
- Drop offs, student transfers, etc.
- Student status
- Percentage of graduates per each generation

All these data are further analyzed at different levels and the measures taken are followed up.

One of the tools is preparation of self-evaluation report, which is done on regular basis in accordance with IUS rules and regulations.
Apart from the information mentioned above, IUS/SP collects different types of information via various surveys, such as:

- Student satisfaction with the courses content and the curricula
- Students evaluation of teachers and teaching methods
- Students’ satisfaction with the resources available to them (Library, Student Affairs Office, etc)
- Alumni/employment satisfaction surveys
- Post-exchange student/teacher survey
- Survey on Strategic Plan.

All these data are further analyzed at different levels and the measures taken are followed up.

3.2.3 PUBLIC INFORMATION

IUS has an open and transparent public policy. On the University level an entire Strategic Plan is publically announced via IUS web page.

Information on the Study Program offered publically includes:

- Information on Qualification granted by the study program
- Intended Learning outcomes and educational objectives
- Curricula for the 1st, 2nd, and 3rd cycle
- Specific information for foreign students
- Information on teaching staff
- Information on the teaching and learning methods and assessment procedures
- Learning opportunities (scholarships, exchange and mobility opportunities)
- Available learning and campus resources (IUS library, laboratories, dorms, canteen, gym, etc)
- Exchange opportunities and mobility
- Project and Research Grant Opportunities

3.3 PARTICIPATION OF STUDENTS

**Standard 3.3—The participation of student in reflection on the study program, the study conditions and the program organization has been institutionalized.**
Student surveys are always conducted in the last weeks of the Semester, but before final exams. QA Office processes all the data collected during the survey and prepares usually three types of reports:

- University-wide Report to inform senior university leadership and university governance structures
- Faculty-level Report to inform Faculty/Department/Study Program level
- Individual Report for academic staff per courses they taught.

3.3.1 FEEDBACK LOOP AND COMMUNICATION

The reports mentioned in the previous section are further discussed and analyzed, and serve as the basis for future activities at different levels, from the course, Study Program to at Faculty/Department and university levels. The student surveys are further used in the following manners:

- They are used by the Senior Leadership as an indicator of progress (ANNEX)
- They are taken into consideration in the annual process of assessment of academic staff;
- They are archived in order to inform future assessment of the Study Program;
- They are discussed in the Senate and Faculty Councils and formally adopted by these bodies;
- They are used as input data for self-evaluation processes

This way ensures that any identified deficiency can be properly tackled and resolved by the most competent agents.

Students are informed on the results of student surveys via its representatives in university governance bodies such as Senate, Faculty QA Team and Faculty Council.

**IUS Case Study: Students surveys used as a source of information for revising curricula**

A recent example where the student survey results were taken aboard by the University senior leadership is the revision of the Study Programme Curricula with regard to University courses taught in the first two years of the 1st study cycle.

In the previous curricula (AY 2013-2014) the University courses were awarded with 60 ECTS and they were offered in two categories, as follows: University required and University elective (9 required and 3 elective). In the Student Surveys conducted in the course of the same academic year, students expressed their dissatisfaction with the number of University courses, there “overcrowding” as well as with the specific courses they
deemed as “least beneficial to their particular area of study.” These comments were analysed on the Faculty/Department and Senate level in the process of self-evaluation. This process resulted in the changes of the curricula for AY 2015-2016 in a manner that the category of “University elective” courses was no longer offered, while at the same time the number of University courses was reduced to the total of 8 required University courses or 36 ECTS award for this category of courses. The above described process consequently was followed by refining and redefining learning outcomes for the 1st study cycle.

The established QA structures, procedures and practices, enable collection of objective data that are used for analyses resulting in feasible measures for improvements. Conclusions from the previous SER are always discussed during next round of self-evaluation.
CHAPTER 4 STANDARD 4: FUNDING AND INFRASTRUCTURE

4.1 FUNDING OF THE STUDY PROGRAM

Standard 4.1—Transparent documentation of the funding of the study program is available.

IUS is one of the largest educational projects in the Balkan region. IUS created an open, tolerant and international environment for its students, where young people have the opportunity to acquire new and exchange the existing knowledge and experiences with their fellow students and professors. Therefore the volume of IUS investments is exponentially increasing every academic year, which reinforces the educational and research quality. In Table 4.1, the total volume of IUS investments since academic year 2012-2013 up to 2015-2016 is shown.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOTAL:</strong></td>
<td>979,468.00</td>
<td>1,756,191.00</td>
<td>1,467,751.00</td>
<td>1,485,784.00</td>
</tr>
<tr>
<td>Infrastructure (buildings, parking lots, entrance for disabled persons, labs, classrooms, gyms, libraries, cafeteria)</td>
<td>171,431.00</td>
<td>88,738.00</td>
<td>270,930.00</td>
<td>585,066.00</td>
</tr>
<tr>
<td><strong>Equipment:</strong> IT (hardware and software, i.e. library software, electronic data bases, UNIPA, servers, PCs etc.), laboratory equipment, furniture</td>
<td>326,249.00</td>
<td>533,281.00</td>
<td>454,139.00</td>
<td>169,802.00</td>
</tr>
<tr>
<td>Investment relevant to opening new faculties, study programs</td>
<td>-</td>
<td>10,000.00</td>
<td>20,000.00</td>
<td>35,000.00</td>
</tr>
<tr>
<td>Investment in employees (human resources)</td>
<td>481,788.00</td>
<td>1,124,172.00</td>
<td>722,682.00</td>
<td>695,916.00</td>
</tr>
</tbody>
</table>
IUS finances and income sources are defined by IUS Statute. Income is acquired from: the Founder; tuition fees; scientific research and artistic activities; providing intellectual i.e. scientific, professional and artistic services; non-cyclical study programs; publishing; provision of the verification and equivalence of public documents; copyrights and patents; donations from legal entities and individuals; donations and bequests; payments collected from students in all study cycles for any academic, administrative or other services in compliance with law, the Statute and other acts of IUS; laboratory activities, centers, institutes, sub-organizational units and other organizational structures of IUS; diagnostic and other professional services; and from other sources in compliance with law and within the registered activities of IUS.

The projected financial plan for years 2016-2020, for the IE program is given in Table 4.2. The budget for every item is indicative. In case of need for adjustment, it is possible to rearrange the budget by subtracting up to 10% of a single item and adding the amount to another item where expenses are exceeding the projected ones.

<table>
<thead>
<tr>
<th>PROGRAM TITLE : INDUSTRIAL ENGINEERING</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUDGET PERIOD : From FY 2015 - 2016 to FY 2019 - 2020</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INCOME</th>
<th>Fiscal Year 1</th>
<th>Fiscal Year 2</th>
<th>Fiscal Year 3</th>
<th>Fiscal Year 4</th>
<th>Fiscal Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Tuition Fees</td>
<td>342.270,25</td>
<td>352.538,00</td>
<td>363.114,00</td>
<td>374.007,00</td>
<td>385.227,00</td>
</tr>
<tr>
<td>- Project Grant</td>
<td>75.000,00</td>
<td>77.250,00</td>
<td>79.568,00</td>
<td>81.955,00</td>
<td>84.414,00</td>
</tr>
<tr>
<td>- Donations</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>- Others</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total Income</td>
<td>417.270,25</td>
<td>429.788,00</td>
<td>442.682,00</td>
<td>455.962,00</td>
<td>469.641,00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXPENSES</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational Expenses</td>
<td>45.000,00</td>
<td>46.800,00</td>
<td>48.672,00</td>
<td>50.619,00</td>
<td>52.644,00</td>
</tr>
<tr>
<td>Salary &amp; Benefits and</td>
<td>145.000,00</td>
<td>150.800,00</td>
<td>156.832,00</td>
<td>163.105,00</td>
<td>169.629,00</td>
</tr>
</tbody>
</table>
### Contributions

<table>
<thead>
<tr>
<th>Category</th>
<th>50,000.00</th>
<th>52,000.00</th>
<th>54,080.00</th>
<th>56,243.00</th>
<th>58,493.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory, studio, and workshop equipment purchase expenses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic database and Library expenses</td>
<td>15,000.00</td>
<td>15,600.00</td>
<td>16,224.00</td>
<td>16,873.00</td>
<td>17,548.00</td>
</tr>
<tr>
<td>Office electronic equipment purchase expenses</td>
<td>5,000.00</td>
<td>5,200.00</td>
<td>5,408.00</td>
<td>5,624.00</td>
<td>5,849.00</td>
</tr>
<tr>
<td>Academic program development expenses</td>
<td>3,000.00</td>
<td>3,120.00</td>
<td>3,245.00</td>
<td>3,375.00</td>
<td>3,510.00</td>
</tr>
<tr>
<td>Symposium, conference, panel expenses</td>
<td>4,500.00</td>
<td>4,680.00</td>
<td>4,867.00</td>
<td>5,062.00</td>
<td>5,264.00</td>
</tr>
<tr>
<td>Scientific participation incentive expenses</td>
<td>4,500.00</td>
<td>4,680.00</td>
<td>4,867.00</td>
<td>5,062.00</td>
<td>5,264.00</td>
</tr>
<tr>
<td>Press stationary expenses</td>
<td>5,000.00</td>
<td>5,200.00</td>
<td>5,408.00</td>
<td>5,624.00</td>
<td>5,849.00</td>
</tr>
<tr>
<td>Press Newsletter expenses</td>
<td>1,500.00</td>
<td>1,560.00</td>
<td>1,622.00</td>
<td>1,687.00</td>
<td>1,754.00</td>
</tr>
<tr>
<td>Academic Journal expenses</td>
<td>14,000.00</td>
<td>14,560.00</td>
<td>15,142.00</td>
<td>15,748.00</td>
<td>16,378.00</td>
</tr>
<tr>
<td>Internship, fieldtrip and similar educational expenses</td>
<td>1,500.00</td>
<td>1,560.00</td>
<td>1,622.00</td>
<td>1,687.00</td>
<td>1,754.00</td>
</tr>
<tr>
<td>Publishing incentive expenses</td>
<td>6,000.00</td>
<td>6,240.00</td>
<td>6,490.00</td>
<td>6,750.00</td>
<td>7,020.00</td>
</tr>
<tr>
<td>R&amp;D project incentive expenses</td>
<td>3,500.00</td>
<td>3,640.00</td>
<td>3,786.00</td>
<td>3,937.00</td>
<td>4,094.00</td>
</tr>
<tr>
<td>Representation and hospitality expenses</td>
<td>2,000.00</td>
<td>2,080.00</td>
<td>2,163.00</td>
<td>2,250.00</td>
<td>2,340.00</td>
</tr>
<tr>
<td>Other educational expenses</td>
<td>7,500.00</td>
<td>7,800.00</td>
<td>8,112.00</td>
<td>8,436.00</td>
<td>8,773.00</td>
</tr>
<tr>
<td>General Management And Various Expenses</td>
<td>25,000.00</td>
<td>26,000.00</td>
<td>27,040.00</td>
<td>28,122.00</td>
<td>29,247.00</td>
</tr>
<tr>
<td>Student cultural, social and motivational activities expenses</td>
<td>5,500.00</td>
<td>5,720.00</td>
<td>5,949.00</td>
<td>6,187.00</td>
<td>6,434.00</td>
</tr>
<tr>
<td><strong>Total Expenses</strong></td>
<td>343,500.00</td>
<td>357,240.00</td>
<td>371,529.00</td>
<td>386,391.00</td>
<td>401,844.00</td>
</tr>
</tbody>
</table>

### Revenue / Expense Check

|                     | 73,770.25 | 72,548.00 | 71,153.00 | 69,571.00 | 67,797.00 |

4.2 ROOMS AND FACILITIES

**Standard 4.2**–Adequate rooms and technical facilities required for the study program are available.

IE program is executed at the premises of the IUS campus. The students and staff enjoy the comfort of new and modern buildings, excellent infrastructure and state of
the art hardware equipment and software. IUS continuously invest in improvement of its physical resources. Below are some of the most important aspects of technical facilities.

There is 20,508 m² of premises at IUS campus. IUS optimizes and utilizes all the general facilities and space for all the programs. The details of rooms and technical facilities are given below:

<table>
<thead>
<tr>
<th>Rooms and technical facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IT Network and Communication System</strong></td>
</tr>
<tr>
<td><strong>Network and communication applications and services</strong></td>
</tr>
<tr>
<td><strong>Microsoft</strong></td>
</tr>
<tr>
<td><strong>Computer labs</strong></td>
</tr>
</tbody>
</table>
or open source.

**Windows LAB #1 (Building A):**

- Adobe Creative Suite 5.5 Design Premium:
  - Adobe Photoshop CS 5.5
  - Adobe Illustrator CS 5.5
  - Adobe InDesign CS 5.5
  - Adobe Dreamweaver CS 5.5
  - Adobe Flash Professional CS 5.5
  - Adobe Flash Catalyst CS 5.5
  - Adobe Fireworks CS 5.5
  - Adobe Acrobat X Pro
  - Adobe Bridge CS 5.5

Android Studio

- ArchiCAD 17
- Autodesk 3DS Max Design 2014
- Autodesk AutoCAD 2014
- Autodesk Inventor Professional 2014
- CD-Adapco STAR-CCM+
- CodeBlocks C, C++ and Fortran IDE
- Eclipse JAVA development
- Eclipse PHP development
- Eclipse C++ development
- Eclipse EE development
- GIMP 2.8.16
- Inkscape 0.91
- LibreOffice 5
  - Writer (word processor)
  - Calc (spreadsheet app)
  - Impress (presentation app)
  - Draw (drawing/flowcharting)
  - Base (database)
  - Math (editing mathematics)
- MATLAB R2007a
- MS Office 2007 Professional:
  - MS Word 2007
  - MS Excel 2007
  - MS PowerPoint 2007
  - MS Access 2007
- MS Outlook 2007
  - MS Visual Studio 2010 Express
  - MS Visual Studio Community 2015
  - NetBeans IDE 8.1
  - ProjectLibre
  - Rhino 4.0 SR8
  - SketchUp 2016 MAKE
  - Weka 3.6
  - WampServer 2.5
  - Apache 2.4.9
  - MySQL 5.6.17
  - PHP 5.5.12
  - PHPMyAdmin 4.1.14
  - SqlBuddy 1.3.3
  - XDebug 2.2.5

**Windows LAB #2 (Building A):**

Android Studio

- ArchiCAD 17 INT
- Autodesk 3ds Max Design 2014
- Autodesk AutoCAD 2014
- SolidWorks 2014
- Autodesk Inventor Professional 2014
- CD-Adapco STAR-CCM+
- CodeBlocks C, C++ and Fortran IDE
- Eclipse JAVA development
Eclipse PHP development
Eclipse C++ development
Eclipse EE development
GIMP 2.8.16
Inkscape 0.91
LibreOffice 5
- Writer(word processor)
- Calc(spreadsheet app)
- Impress(presentation app)
- Draw(draw/drawing/flowcharting)
- Base(database)
- Math(editing mathematics)
MATLAB R2007a
MS Office 2007 Professional:
- MS Word 2007
- MS Excel 2007
- MS PowerPoint 2007
- MS Access 2007
- MS Outlook 2007
MS Visual Studio 2010 Express
MS Visual Studio Community 2015
NetBeans IDE 8.1
ProjectLibre
SketchUp 2016 MAKE
Weka 3.6
My SQL Workbench 6.3
WampServer 2.5 which include:
- Apache 2.4.9
- MySQL 5.6.17
- PHP 5.5.12
- PHPMyAdmin 4.1.14
- SqlBuddy 1.3.3
- XDebug 2.2.5

Windows LAB #3 (Building B - ECON LAB):
Stata 14
IBM SPSS Statistica 21
MS Office 2007 Professional:
- MS Word 2007
- MS Excel 2007
- MS PowerPoint 2007
- MS Access 2007
- MS Outlook 2007
MATLAB R2007a
Microsoft Mathematics
CodeBlocks C, C++ and Fortran IDE
Python 2.7
R Studio
QM for Windows
Excel QM v4

LINUX LAB (Building A)
- OpenSUSE
- LibreOffice
- Writer(word processor)
- Calc(spreadsheet app)
- Impress(presentation app)
- Draw(draw/drawing/flowcharting)
- Base(database)
- Math(editing mathematics)
KDE GNOME Development Tools
- Development Libraries
- GNOME Software Development
- KDE Software Development
<table>
<thead>
<tr>
<th>Technical laboratories</th>
<th>General purpose laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- 15 oscilloscopes,</td>
</tr>
<tr>
<td></td>
<td>- 15 function generators,</td>
</tr>
<tr>
<td></td>
<td>- 15 power supplies,</td>
</tr>
<tr>
<td></td>
<td>- 7 PLC units,</td>
</tr>
<tr>
<td></td>
<td>- 15 FPGA boards, and many more equipment that are used for practical classes.</td>
</tr>
<tr>
<td>2nd generation GSM laboratory</td>
<td>- for research and practical course work</td>
</tr>
<tr>
<td>Complex systems lab</td>
<td>- with a specific workstation and 6 desktop computers, and large number of data acquisition cards and kits for various purposes from National Instruments.</td>
</tr>
<tr>
<td>Smart grid laboratory</td>
<td>- with 10 protective relays: line and transformer protection</td>
</tr>
<tr>
<td>Basic Physics laboratory</td>
<td>Access to CNC machine, laser cutter and 3D printer</td>
</tr>
</tbody>
</table>

Classrooms

There are more than 90 various size class rooms with projector and white board in every room. Special multimedia rooms with speakers and sound effects are available as well. Two design studios and one CNC laboratory are available, as well as one video hall.

Amphitheaters

Five amphitheaters are available for large classes and for public speeches and conferences. One amphitheater is equipped with cabins for simultaneous translation and other multimedia support. The main amphitheater in the building A is equipped with 280 seats, a lectern, a projector, a projection screen, a microphone system and a booth for simultaneous interpretation. This amphitheater is used primarily for conferences and guest lectures. Other two amphitheaters in the A building feature 160 seats each, as well as lecterns, projectors, projection screens and whiteboards, while one of them is also equipped with a surround sound audio system. Two amphitheaters in the B building of IUS campus feature 153 seats each, projectors, projection screens, lecterns and whiteboards.

Library

The International University of Sarajevo Library is located on the third floor of B building. The library is open from 8:30 till 17:00 to all students. It has a reading room so the students can borrow the books that they need for their classes. The study room has 20 places with classroom style furniture and wireless network. Also, 5 computers with internet connection are on disposal for students to use during the working hours of the library.

Library fund is processed and catalogued in a program that was
developed by IUS IT Department. Acquirement of the books is in harmonization with the Faculty programs. Each semester list of the textbooks needed by professors for their teaching is submitted to the Library Manager who has the obligation to order books. Library has access to the following databases: EBSCOHOST, JSTOR, World Bank – Global Development Finance, World Bank-World Development Indicators (WDI), ASOS-Academia Social Sciences Index, Dart Europe E-theses, National Databases of Turkey by ULAKBIM

<table>
<thead>
<tr>
<th><strong>Sport facilities</strong></th>
<th>One multi-purpose outdoor play ground and one multi-purpose indoor sport hall are available for students use.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dormitories</strong></td>
<td>Two large dormitories with canteens are available; one is for male students and one for female students. Students can choose to stay in the dormitories if they wish for a very reasonable fee.</td>
</tr>
<tr>
<td><strong>Restaurants</strong></td>
<td>There is a large restaurant that satisfies all the students and staff needs at IUS. A couple of coffee stands are installed in order to serve the students and staff during the breaks.</td>
</tr>
<tr>
<td><strong>Print and copy center</strong></td>
<td>A copy center is available for students and they can benefit from its services for a reasonable fee, for printing their work and assignment and any other services provided.</td>
</tr>
<tr>
<td><strong>Offices</strong></td>
<td>There is plenty of space for academic staff of a study program and in general they are located in one floor. The policy is that program coordinators and other PhD holders have their own offices, while assistants and senior assistants share offices. In special cases PhD holders share offices too.</td>
</tr>
</tbody>
</table>
CHAPTER 5 STANDARD 5: RESEARCH AND DEVELOPMENT AND APPRECIATION OF THE ARTS

5.1 OBJECTIVES AND PERSPECTIVES FOR RESEARCH AND DEVELOPMENT OF THE STUDY PROGRAM

**Standard 5.1—The objectives and perspectives for research and development defined for the study program are consistent with the strategic orientation of the institution.**

Objectives of the research and development of IE program are in the line with main strategic stream of the institution (IUS Strategic Plan for Period 2016-2020). The main objectives for research and development of the program are:

- To attract students from Bosnia and Herzegovina and abroad by offering curriculum that includes basic theoretical aspects of computing combined with the practical problem solving and design skills applied in industry, modern computer laboratories and research possibilities.

- To strengthen and create long term cooperation with industry and work on joint research projects.

- To perform multidisciplinary research with other IUS engineering programs, and other universities and institutions in Bosnia and Herzegovina, and abroad.

- To increase the number of qualified academic staff to support teaching, research, and national/international cooperation.

- To increase the number of students who will add the value to the program in terms of their contribution in the research and development.

IE academic staff is committed to providing high-quality teaching where most courses involve practical work, such as weekly sessions in computer or rapid prototyping laboratories where students acquire technical and research skills. The curriculum is regularly optimized in accordance with international standards such as adding multidisciplinary courses as part of the required and elective courses.

As Industrial Engineering is a fast developing field, it requires great agility from IE staff. Staff advancement in educational process is organized through staff exchange and demonstrative lectures among staff. Other forms of advancements are left to individuals, and usually involve conference participation. One of the aims of the IE
program is to increase the number of research and research projects and to recruit staff qualified to carry out such projects.

IE academic staff was successful in securing funding to implement projects that improve education and community. Some examples are shown in the following table:

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Funding Agency</th>
<th>Start Date</th>
<th>Total Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance-aware and resource-aware load balancing and scheduling for virtual machines in cloud</td>
<td>Google Faculty Research Award</td>
<td>2015–2016</td>
<td>48,000 USD</td>
</tr>
<tr>
<td>Access Control Optimization II</td>
<td>The United Technologies Research Centre Ireland, Limited (UTRC-I)</td>
<td>2014 – 2015</td>
<td>20,000 EUR</td>
</tr>
<tr>
<td>Access Control Optimization</td>
<td>The United Technologies Research Centre Ireland, Limited (UTRC-I)</td>
<td>2013 – 2014</td>
<td>20,000 EUR</td>
</tr>
</tbody>
</table>

Program staff is especially aware that academia needs to partner with industry and governmental agencies to address human resources market mismatch and work on various joint projects. To this end IE staff is committed and plans to strengthen cooperation with the industry and governmental agencies. This would at the same time open employment opportunities for students and it would also further develop research and innovation capacities through these partnerships. Some examples of planned collaboration with industry involve strengthening cooperation with BitAlliance (leading software industry association of BiH), Microsoft, Atlant BH, Prevent, Authority Partners and various other leading IT companies in BiH.
5.2 SCIENTIFIC STAFF RESEARCH ACTIVITIES

**Standard 5.2**—*Scientific staff is involved in the institution’s research activities and/or activities regarding the development and appreciation of arts. The interaction between research and teaching is ensured.*

Dedicated, competent and experienced academic staff of the IE program creates a positive research atmosphere. Scientific staff is involved in the research activities to keep up to date on new methodological approaches and on current developments in the engineering. IE faculty has industrial experience at various domestic and international companies. The academic professor's main research areas reflect IE program main courses subjects. This has a beneficial impact on teaching and learning since it stimulates students’ interests and motivation for particular topic.

The program is equipped with modern laboratories where practical knowledge is enforced. Our program is executed at the great premises of IUS campus. It is our pleasure to be located in a new and modern building, with great infrastructure and equipment. The University signed Campus Agreement with Microsoft Company which make us the fully licensed for using their products within our educational process. Within implemented IUS campus network infrastructure there are four well-equipped and high performance computer labs with 95 desktop computers with installed software which is either fully licensed or open source. These facilities give better environment for researches and incorporation with students. Laboratories or tutorials of each course offered create an interactive and direct communication between teaching staff and students. Such communication with students produces capable and prospective researchers.

Table below outlines the short description of research interests and activities of the IE program staff, whereas the detailed information and list of publications can be found on the University website. The list of the selected publications of the IE program staff can be found in APPENDIX I – LIST OF SELECTED PUBLICATIONS.
Assist. Prof. Dr. Benjamin Durakovic, Benjamin Durakovic is an Assistant Professor in the Department of Industrial Engineering at International University of Sarajevo (IUS). He received his PhD in Industrial Engineering from International University of Sarajevo in 2016, while his M.Sci. in Industrial Engineering and Management and B.S. in energy Engineering is from University of Sarajevo.

His research interests include a variety of topics in System Design and Architecture, Modeling and Simulation, CAD/CAM, Product Development, Statistical Process Control, Innovation and Quality. In addition, he has authored several refereed research papers in aforementioned topics. He has long R&D experience acquired through the engagement with industry in the US and Bosnia. As result, he completed or participated in more than 20 R&D innovation projects in fields of heating ventilation; air conditioning systems; energy generation and transmission. His current research focus is thermal energy storage using phase change materials as innovative solution in passive building design.

Assist. Prof. Dr. Emin Tahirovic, received his Ph.D. degree in Biostatistics at the University of Pennsylvania, Philadelphia in 2016. He is currently an Assistant Professor in the Department of Computer Science and Engineering and, Software Engineering Program Coordinator at the International University of Sarajevo, Bosnia.

His research interests include longitudinal and clustered data, sensitivity analysis for non-ignorable missingness, causal inference, machine learning algorithms, financial and organizational incentives for health outcomes, cancer epidemiology, outcomes research. He is currently member of American Statistical Association and International Biometric Society (Eastern North American Region).

Prof. Dr. Mehmet CAN, ia emeritus professor at IUS. He teaches math and statistics based courses. His research interest includes: Integrability theory of differential equations, • Lie group analysis of differential equations, • Local existence of solutions of quasilinear parabolic and hyperbolic partial differential Equations, • Global nonexistence of solutions of quasilinear parabolic and hyperbolic equations, • Painlevé analysis of differential equations, • Lie-Backlund transformations and conservation laws of differential equations, • Nonlinear Dynamical systems, bifurcations, fractals and chaos, • Fuzzy sets, fuzzy linear programming and fuzzy decision making. • Mathematical modeling. • Bioinformatics. • Machine Learning. • Artificial Intelligence.

Erna Keskinovic, is Assistant at Industrial Engineering program. She received her MSc degree in Industrial Engineering from International University of Sarajevo, BiH in 2015. Her research interests include operations research, production planning, quality control, inventory control, supply chain management.

5.3 STUDENT INTEGRATION INTO RESEARCH AND STUDENT PROJECTS
IE study program aims to equip its students with theoretical and practical knowledge in the field of software, hardware and aspects of computing devices, as well as the computer skills of application in engineering, business, science, and other fields. All students, including undergraduate students are also encouraged to participate in research and to publish their work at various conferences and journals.

As part of the undergraduate curriculum students need to submit a graduation project. During the graduation project course students are expected to use most of the skills, competences and information they learned during their study to come out with a research topic upon which they write a report that describes a certain problem and its solution. Students are encouraged to design new applications, and use their skills to develop new tools that will make a difference in their local environment. The graduation project course is a course valued 6 ECTS credits where 10 hours a week student workload is expected to be allocated for the project that include consultation, literature review, experiments in laboratory if needed and writing the final report. Classes that involve presentations of work, communication skills and reports writing are designed to prepare students for graduation project class. Every student is assigned a supervisor, and they meet at least once a week where guidance by the mentor is provided and progress by the student is reported.
CHAPTER 6 STANDARD 6: NATIONAL AND INTERNATIONAL COOPERATION

6.1 NATIONAL AND/OR INTERNATIONAL COOPERATION

| Standard 6.1 | In line with the study program’s profile, national and/or international cooperation projects with higher education institutions or institutions outside higher education sector have been established. |

IE program implements national and international cooperation through the University’s International Relation Office (IRO). This office is in charge of promoting the University via an international exchange of academic non-academic/administrative staff and researchers. One of the institution’s strategic objectives is the strengthening cooperation in teaching and research at national and international level.

IUS signed more than 80 agreements on cooperation with HEIs in BH and abroad. These agreements assume mobility and there is institutional framework that allows student mobility and recognition of study period spent abroad. IUS also supports and encourages its academic staff to visit and spend time in other higher education or research institutions.

The IRO office is devotedly working on establishment of partnership with other foreign universities through the Erasmus+ program and Mevlana exchange program, for all academics, students and administrative staff.

IUS joined Mevlana Exchange Program in August 2013. The Mevlana program aims at the exchange of students and academic staff between the Turkish higher education institutions and higher education institutions of other countries. Among the previously mentioned number of signed cooperation agreements, more than 30 of them are signed within the Mevlana Exchange Program. A number of IUS students and professors have already used this program for their mobility and in case of students, documents almost identical to the European ECTS mobility documents are used, obliging sending institution to recognize the specific courses once the student is
returned. The courses are to be recognized only if successfully passed. Student mobility can last between one semester and one academic year. Teachers’ mobility is of shorter duration and assumes teaching duties, but also other networking activities.

**ERASMUS+**

International Relations Office (IRO) of the International University of Sarajevo (IUS) is actively involved in the Erasmus+ program from June 2014. IRO activities are mainly focused on: meetings, workshops, promotions (web page, FB page, bulletin, flayers, banners..), email exchanges (to offer the cooperation/Erasmus+ program, advising activities provided to potential exchange of students, academic and non-academic staff, researchers, and the inclusion in international educational projects, with the aim of continuous improvement to provide services to students and academic staff, as well as linking with international partners in the world.

Through its promotional materials and through the website and FB page, IRO regularly informs IUS students and staff, as well as business partners from the region and beyond, on all its activities, with the special focus on Erasmus+ program activities.

The following table (Table 6.1) shows signed agreements between IUS and international universities as computer engineering field and information and Communication Technologies field.

<table>
<thead>
<tr>
<th>Signed agreements</th>
<th>Country</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Country</strong></td>
<td></td>
<td><strong>University</strong></td>
</tr>
<tr>
<td>Spain</td>
<td></td>
<td>University of Jaen</td>
</tr>
<tr>
<td>Poland</td>
<td></td>
<td>Uni. of Applied Science in Nysa</td>
</tr>
<tr>
<td>Macedonia</td>
<td></td>
<td>International Balkan University</td>
</tr>
<tr>
<td>Romania</td>
<td></td>
<td>Alexandru Ioan Cuza University</td>
</tr>
<tr>
<td>Latvia</td>
<td></td>
<td>Dimitrie Contemir Christian University</td>
</tr>
<tr>
<td>Bulgaria</td>
<td></td>
<td>University of Economics Varna</td>
</tr>
<tr>
<td>Turkey</td>
<td></td>
<td>YildirimBayazit University</td>
</tr>
<tr>
<td></td>
<td></td>
<td>YalovaUniversity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anadolu University</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Istanbul Sehir University</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CelalBayar University</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TOBB University</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Middle East Technical University (METU)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Selcuk University</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mehmet Akif Ersoy University</td>
</tr>
</tbody>
</table>
6.2 CO-OPERATION PROJECTS

**Standard 6.2**—The cooperation projects encourage and support the advancement of the study program and the mobility of students and staff.

Establishing partnerships with other universities, through the Erasmus+ and Mevlana exchange program, is of a great opportunity to IE program. Besides the teaching opportunities in these partnerships, the IE program sees this as a great milestone for the international cooperation in research activities as well as implementation of funded projects.

Co-operation projects at IUS are done through the Project Management Office (PMO), which is dedicated to applying consistent project management practices that will help IUS fulfill its mission and strategic goals.

**Mission Statement**

The Project Management Office’s mission is to implement and maintain project management standards and processes, increase the number of institutional projects, announce grant opportunities, and encourage faculty and staff to apply for research opportunities/projects. Moreover, the PMO is responsible for the centralized management of IUS projects and archives. It is committed to providing an environment that fosters creativity, communication and inclusion of all departments and project partners throughout each implementation phase of the project life cycle.

**Vision Statement**

- Provide project management best practices, standards and methodology that will consistently deliver successful projects.
- Maintain project alignment to the strategic goals, mission and educational vision of International University of Sarajevo (IUS).
- Build project management maturity at the institutional level.
- Support faculty and staff applying for various grants by providing appropriate tools and information necessary for the facilitation of project management processes.
- Organize and carry out trainings on project management.
- Ensure a wide range of projects varying in scope and size.

Projects

IUS projects have been supported by grants from: Turkish government, Ministries of Bosnia and Herzegovina, Türk İşbirliği ve Koordinasyon Ajansı Başkanlığı (TIKA), Swiss Agency for Development and Cooperation (SDC), Federal Department of Foreign Affairs, EU, EU Commission, Delegation of European Union, United Nations Development Programme (UNDP), United States of America International Development Agency (USAID), main international organizations for advanced research (e.g., ICGEB), major companies (e.g., Siemens).
APPENDIX A - INTERNATIONAL UNIVERSITY OF SARAJEVO

<table>
<thead>
<tr>
<th>Ordinal number</th>
<th>FACULTY/DEPARTMENT / STUDY PROGRAM</th>
<th>Duration of study in accordance with Bologna system of study</th>
<th>PROFESSIONAL/SCIENTIFIC TITLE AQUIRED</th>
<th>Study duration</th>
<th>Study duration</th>
<th>Study duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>INTERNATIONAL UNIVERSITY OF SARAJEVO</td>
<td>4+1+3</td>
<td>Bachelor of Arts (B.A.) in Visual Arts and Visual Communications Design</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Master of Arts (M.A.) in Visual Arts and Visual Communications Design</td>
<td>240 ECTS</td>
<td>+ 60 ECTS</td>
<td>+ 180 ECTS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Doctor of Philosophy (Ph.D.) in Visual Arts and Visual Communications Design</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**FACULTY OF ARTS AND SOCIAL SCIENCES**

**Department of Arts**

- Visual Arts and Visual Communications Design
  - Bachelor of Arts (B.A.) in Visual Arts and Visual Communications Design
  - Master of Arts (M.A.) in Visual Arts and Visual Communications Design
  - Doctor of Philosophy (Ph.D.) in Visual Arts and Visual Communications Design

**Department of Social Sciences**

- Psychology
  - Bachelor of Arts (B.A.) in Psychology
  - Master of Arts (M.A.) in Clinical Psychology
  - Doctor of Philosophy (Ph.D.) in Psychology

- Social and Political Sciences
  - Bachelor of Arts (B.A.) in Political Sciences and Sociology
  - Master of Arts (M.A.) in Political Sciences and Sociology
  - Doctor of Philosophy (Ph.D.) in Political Sciences and Sociology

**Department of Cultural Studies**

- English Language and Literature
  - Bachelor of Arts (B.A.) in English Language and Literature
  - Master of Arts (M.A.) in English Language and Literature
  - Doctor of Philosophy (Ph.D.) in English Language and Literature

- Cultural Studies
  - Bachelor of Arts (B.A.) in Cultural Studies
  - Master of Arts (M.A.) in Cultural studies
  - Doctor of Philosophy (Ph.D.) in Cultural Studies

**FACULTY OF BUSINESS AND ADMINISTRATION**
### Department of Economics and Management

<table>
<thead>
<tr>
<th>Program</th>
<th>Degree Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economics</strong></td>
<td>Bachelor of Arts (B.A.) in Economics</td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td>Bachelor of Arts (B.A.) in Management</td>
</tr>
<tr>
<td><strong>International Business and Finance</strong></td>
<td>Bachelor of Arts (B.A.) in International Business and Finance</td>
</tr>
</tbody>
</table>

### Department of International Relations and Public Administration

<table>
<thead>
<tr>
<th>Program</th>
<th>Degree Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>International Relations</strong></td>
<td>Bachelor of Arts (B.A.) in International Relations</td>
</tr>
</tbody>
</table>

### FACULTY OF ENGINEERING AND NATURAL SCIENCES

#### Department of Natural Sciences

<table>
<thead>
<tr>
<th>Program</th>
<th>Degree Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Genetics and Bioengineering</strong></td>
<td>Bachelor of Science (B.Sc.) in Genetics and Bioengineering</td>
</tr>
</tbody>
</table>

#### Department of Engineering

<table>
<thead>
<tr>
<th>Program</th>
<th>Degree Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Industrial Engineering</strong></td>
<td>Bachelor of Science (B.Sc.) in Industrial Engineering</td>
</tr>
<tr>
<td><strong>Electrical and Electronics Engineering</strong></td>
<td>Bachelor of Science (B.Sc.) in Electrical and Electronics Engineering</td>
</tr>
<tr>
<td><strong>Mechanical Engineering</strong></td>
<td>Bachelor of Science (B.Sc.) in Mechanical Engineering</td>
</tr>
<tr>
<td><strong>Architecture</strong></td>
<td>Bachelor of Science (B.Sc.) in Architecture</td>
</tr>
<tr>
<td>Program</td>
<td>Degree</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Computer Sciences and Engineering</td>
<td>Bachelor of Science (B.Sc.) in Computer Sciences and Engineering</td>
</tr>
<tr>
<td>Software Engineering</td>
<td>Bachelor of Science (B.Sc.) in Software Engineering</td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>Bachelor (B.Eng.) in Civil Engineering</td>
</tr>
<tr>
<td><strong>FACULTY OF LAW</strong></td>
<td></td>
</tr>
<tr>
<td>Law study</td>
<td>Bachelor of Law</td>
</tr>
<tr>
<td><strong>FACULTY OF EDUCATION</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Department of languages and literature</strong></td>
<td></td>
</tr>
<tr>
<td>Turkish language and literature teaching (TLT)</td>
<td>Bachelor of Education (B.Ed.) in Turkish Language and Literature Teaching</td>
</tr>
<tr>
<td>English language and literature teaching (ELT)</td>
<td>Bachelor of Education (B.Ed.) in English Language and Literature Teaching</td>
</tr>
<tr>
<td><strong>Department of Education and Information Technologies</strong></td>
<td></td>
</tr>
<tr>
<td>Computer Education and instructional technologies (CEIT)</td>
<td>Bachelor of Education (B.Ed.) in Computer Education and Information Technology</td>
</tr>
</tbody>
</table>
APPENDIX B - DIPLOMA
APPENDIX C – DIPLOMA SUPPLEMENT
APPENDIX D - CURRICULA FORMS

Changes in the existing Study Program SP-01

<table>
<thead>
<tr>
<th>Study program:</th>
<th>(insert full title in English)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated % of change:</td>
<td>(insert your own understanding/estimation of the level of change)</td>
</tr>
<tr>
<td>Motivation for change:</td>
<td>(explain aims and motivation for change – why do you want change)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Existing practice:</th>
<th>(insert examples of positive practice contributing to the change and your motivation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(in BiH, EU, other)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Changed elements:</th>
<th>(copy/paste from the existing study program)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changed elements:</td>
<td>(insert new text – your proposal)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Changed elements:</th>
<th>(copy/paste from the existing study program)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changed elements:</td>
<td>(insert new text – your proposal)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Changed elements:</th>
<th>(copy/paste from the existing study program)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changed elements:</td>
<td>(insert new text – your proposal)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effect(s) of change on:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Study program learning outcomes:</td>
<td>(provide information on anticipated or known effects)</td>
</tr>
<tr>
<td>Courses:</td>
<td>(provide information on anticipated or known effects)</td>
</tr>
<tr>
<td>Students:</td>
<td>(provide information on anticipated or known effects)</td>
</tr>
<tr>
<td>IUS resources:</td>
<td>(provide information on anticipated or known effects)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Alignment with:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EU-level policies and regulations:</td>
<td>(insert one of the following: maintained, increased, reduced)</td>
</tr>
</tbody>
</table>
National regulations: (insert one of the following: maintained, increased, reduced)
IUS regulations: (insert one of the following: maintained, increased, reduced)

Feasibility:

(Provide information in terms of implementation steps, additional resources, involvement of other departments, etc.)

Submitted by and date: (Name, date and signature)

Verified by QA Office Manager: ________________________

Changes in the existing course syllabus – SP-02
Course Code and Title: (insert course code and full course title in English)
Estimated % of change: (insert your own understanding/estimation of the level of change)
Motivation for change: (explain aims and motivation for change – why do you want change)

Existing practice: (in BiH, EU, other)
Changed elements: (insert examples of positive practice contributing to the change and your motivation)

Changed elements: (copy/paste from the existing course syllabus)

Changed elements: (insert course syllabus section)

Changed elements: (insert new text)

Changed elements: (copy/paste from the existing course syllabus)

Changed elements: (insert course syllabus section)

Effect(s) of change on:
Course and staff: (provide information on anticipated or known effects)
Host study program: (provide information on anticipated or known effects)
Students: (provide information on anticipated or known effects)
IUS resources: (provide information on anticipated or known effects)

Correlation with:
Other courses: (insert one of the following: maintained, increased, reduced)
Host study program: (insert one of the following: maintained, increased, reduced)
Feasibility: (Provide information on in terms of additional resources, involvement of other departments, etc.)

Submitted by and date: (Name, date and signature)

Verified by QA Office Manager: ________________

Termination of the existing Course from the Curriculum and Syllabus SP-03
Course Code and Title: (insert proposed course code and full course title in English)

Course Code and Title: (insert course code and full course title in English)

Course status: (Insert course status as UC, FC, required, or elective
(insert exact statistics)

Short analysis: (for past 4 semesters)

<table>
<thead>
<tr>
<th>Offered in</th>
<th>F2010</th>
<th>S2011</th>
<th>F2011</th>
<th>S2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered students:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withdrawals:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pass rates:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Revised history: (insert date when it was first approved and dates of all subsequent changes)

Motivation: (explain motivation for termination – why)

Is there a replacement proposal: YES [ ] NO [ ]

Brief description of replacement course: (if YES, insert up to 5 lines of text about the replacing course)

Effect(s) of termination on:
  Host study program: (provide information on anticipated or known effects)
  Other study programs: (provide information on anticipated or known effects)
  Current students: (provide information on anticipated or known effects)
  IUS resources: (provide information on anticipated or known effects)

Submitted by and date: (Name, date and signature)

Verified by QA Office Manager: _____________________

NewCourse proposal SP-04

Course Code and Title: (insert proposed course code and full course title in English)
Motivation for proposal:

(explain aims and motivation for new course – why)

Existing practice:  (insert examples of positive practice contributing to your motivation)
(in BiH, EU, other)
Host study program:  (insert name of the host study program)
Study cycle:  (insert study cycle – I, II, III)
ECTS points:  (insert number)
Expected results on:
   Other courses:  (provide information on anticipated or known effects)
   Host study program:  (provide information on anticipated or known effects)
   Students:  (provide information on anticipated or known effects)
   IUS resources:  (provide information on anticipated or known effects)
   Staff:  (provide information on anticipated or known effects)

Course syllabus is attached:
(if not, this proposal is incomplete and will not be considered at all)
YES ☑   NO ☐

Feasibility:  (Provide information on in terms of additional resources, involvement of other departments, etc.)

Submitted by and date:  (Name, date and signature)

Verified by QA Office Manager:  _______________________

Termination of the Study Program SP-05

Study program:  (insert full title in English)
Short analysis:  (insert exact statistics)
Motivation:

(explain motivation for termination – why)

Effect(s) of termination on:
Current students: (provide information on anticipated or known effects)
Other study programs: (provide information on anticipated or known effects)
IUS strategy: (provide information on anticipated or known effects)
IUS resources: (provide information on anticipated or known effects)

Termination steps towards:
Students: (how to deal with enrolled students)
IUS: (how to deal with the existing staff and other resources)
Authorities: (are all legal requirements fulfilled and how)

Notes: (Provide information in terms of resources needed, involvement of other departments, attached documents, etc.)

Submitted by and date: (Name, date and signature)

Verified by QA Office Manager: _____________________
APPENDIX E – ACADEMIC STAFF EVALUATION FORM

ACADEMIC STAFF (SELF) EVALUATION FORM

Overall Weight Distribution:
Research and Scientific Work (30%)  A+B+C+D+E
Teaching (20%)  F
Service (20%)  G
Student Satisfaction Survey (10%)*  H
Administrator Evaluation (20%)  I

• Only the work of the current year will be calculated
• Co-author coefficients: 0.9 for two author, 0.7 for three authors, 0.6 for four authors, 0.4 for five authors and 0.3 for six or more authors
• Degree of Recognition of an institution or journal will be proposed by relevant faculty council and approved by the Senate
• *Weighted Student Satisfaction Survey: Each student's response multiplied by student's CGPA, normalized and then final score is calculated by the cubic function
• Each different duty collects separate points
• Minimum threshold score should be determined for each subgroup
• Projects must be "externally funded, require a teamwork and bring financial contribution to the IUS"

<table>
<thead>
<tr>
<th>A) JOURNALS</th>
<th>Points</th>
<th>Limit</th>
<th>Publication date</th>
<th>Link to IUS database</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Full article in journals cited in AHCI, SSCI, SCI-EXP / Equally recognised Art &amp; Architecture Journals</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Short article, analysis, book review, letter to editor, case report etc. in Journals cited in AHCI, SSCI, SCI-EXP / Equally recognised Art &amp; Architecture Journals</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Each citation by other authors in journals cited in AHCI, SSCI, SCI-EXP / Highly recognised Art &amp; Architecture Journals</td>
<td>3</td>
<td>Max:5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) Full article in journals cited in Registery of Publication</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5) Short article, analysis, book review, letter to editor, case report etc. in journals cited in Registery of Publication</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6) Each citation by other authors in journals cited in journals identified by senate (senate approval is not required for AHCI, SSCI, SCI-EXP)</td>
<td>2</td>
<td>Max:5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7) Articles published in other peer reviewed journals cited in open journal registries</td>
<td>8</td>
<td>Max:5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8) Each citation by other authors in other peer reviewed journals cited in open journal registries</td>
<td>1</td>
<td>Max:5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9) Articles published in in-house journals</td>
<td>9</td>
<td>Max:3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10) Articles published in all other journals including national journals</td>
<td>3</td>
<td>Max:5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11) Each citation by other authors in all other journals including national journals</td>
<td>1</td>
<td>Max:5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12) Conference proceedings in highly respected and recognised international conferences</td>
<td>15</td>
<td>Max:2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13) Other international conference proceedings</td>
<td>5</td>
<td>Max:4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14) In-house Conference Proceedings</td>
<td>3</td>
<td>Max:5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15) National Conference Proceedings</td>
<td>2</td>
<td>Max:5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16) Journal Chief Editor/Co-editor/Editorial Board Membership in journals cited AHCI, SSCI, SCI-EXP</td>
<td>30/20/10</td>
<td>Max:1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17) Journal Chief Editor/Co-editor/Editorial Board Membership in journals cited in Registry of Publication</td>
<td>20/10/5</td>
<td>Max:1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18) Journal Chief Editor/Co-editor/Editorial Board Membership in other international journals</td>
<td>10/5/2</td>
<td>Max:1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

101
<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Journal Chief Editor/Co-editor/Editorial Board Membership in national journals</td>
<td>5/2/1</td>
<td>Max:1</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Refereeing in journals cited AHCI, SSCI, SCI-EXP</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Refereeing in journals cited in Registry of Publication</td>
<td>3</td>
<td></td>
<td></td>
</tr>
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<td>22</td>
<td>Refereeing in other international journals</td>
<td>2</td>
<td>Max:5</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Refereeing in in-house journals</td>
<td>3</td>
<td>Max:5</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Refereeing in national journals</td>
<td>1</td>
<td>Max:5</td>
<td></td>
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</table>

**B) BOOKS**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Books published in the person's scientific area by well known and highly respected international publishers or universities</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>Books published in the person's scientific area by other international publishers or universities</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>Books published in the person's scientific area by national publishers or universities</td>
<td>25</td>
</tr>
<tr>
<td>4</td>
<td>Chapter in a book published in the person's scientific area by well known and highly respected international publishers or universities</td>
<td>40</td>
</tr>
<tr>
<td>5</td>
<td>Chapter in a book published in the person's scientific area by other international publishers or universities</td>
<td>20</td>
</tr>
<tr>
<td>6</td>
<td>Chapter in a book published in the person's scientific area by national publishers or universities</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>Translated academic books published</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>Book Editorship in a book published in the person's scientific area by well known and highly respected international publishers or universities</td>
<td>30</td>
</tr>
<tr>
<td>9</td>
<td>Book Editorship in a book published in the person's scientific area by other international publishers or universities</td>
<td>15</td>
</tr>
<tr>
<td>10</td>
<td>Book Editorship in a book published in the person's scientific area by national publishers or universities</td>
<td>7</td>
</tr>
</tbody>
</table>

**C) ARTISTIC AND CREATIVE WORKS, MEDIA COVERAGE**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Works added to the permanent collections of recognised international institutions of art</td>
<td>150</td>
</tr>
<tr>
<td>2</td>
<td>Works added to the permanent collections of recognised national institutions of art</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>Works added to the permanent collections of other international institutions of art</td>
<td>50</td>
</tr>
<tr>
<td>4</td>
<td>Works added to the permanent collections of other national institutions of art</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>Individual participation in exhibitions/festivals in recognised international venues of art with original work</td>
<td>20</td>
</tr>
<tr>
<td>6</td>
<td>Individual participation in exhibitions/festivals in recognised national venues of art with original work</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>Individual participation in exhibitions/festivals in other international venues of art with original work</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>Individual participation in exhibitions/festivals in other national venues of art with original work</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>Built art/urban planning/architecture design approved for permanent public display</td>
<td>50</td>
</tr>
<tr>
<td>10</td>
<td>Original art work, animation, program, film etc. with IUS affiliation (for artistic or commercial purposes)</td>
<td>20</td>
</tr>
<tr>
<td>11</td>
<td>Architectural Design Studio supervised by a professor and published or exhibited by a publisher or university</td>
<td>15</td>
</tr>
<tr>
<td>12</td>
<td>Serving as a judge, jury member or curator in international activities</td>
<td>10</td>
</tr>
<tr>
<td>13</td>
<td>Serving as a judge, jury member or curator in national activities</td>
<td>5</td>
</tr>
<tr>
<td>14</td>
<td>Individual international shows/exhibitions for public presentation</td>
<td>20</td>
</tr>
<tr>
<td>15</td>
<td>Individual national shows/exhibitions for public presentation</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Serving in an international committee for art and culture</td>
<td>20</td>
</tr>
<tr>
<td>17</td>
<td>Serving in a national committee for art and culture</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>18</td>
<td>Organizing an international event/exhibition/conference which takes place outside of the country: Main Organizer/Member</td>
<td>30/15</td>
</tr>
<tr>
<td>19</td>
<td>Organizing a national, event/exhibition/conference: Main Organizer/Member</td>
<td>14/7</td>
</tr>
<tr>
<td>20</td>
<td>Organizing a national/international in-house event/exhibition/conference: Main Organizer/Member</td>
<td>20/10</td>
</tr>
<tr>
<td>21</td>
<td>TV/Radio program production with IUS affiliation</td>
<td>20/10</td>
</tr>
<tr>
<td>22</td>
<td>Column writing in recognised press with IUS affiliation (periodically)</td>
<td>25</td>
</tr>
<tr>
<td>23</td>
<td>Reviews, Reports, Analyses etc. published in contemporary magazines and newspapers with IUS affiliation</td>
<td>10</td>
</tr>
<tr>
<td>24</td>
<td>Each TV coverage with IUS affiliation</td>
<td>10</td>
</tr>
<tr>
<td>25</td>
<td>Each press coverage with IUS affiliation</td>
<td>5</td>
</tr>
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</table>

**D) PROJECTS AND PATENTS**

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<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>1</td>
<td>International Patent</td>
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</tr>
<tr>
<td>2</td>
<td>National Patent</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>Team Leader/Member in EU projects</td>
<td>100/50</td>
</tr>
<tr>
<td>4</td>
<td>Team Leader/Member in other international projects</td>
<td>70/35</td>
</tr>
<tr>
<td>5</td>
<td>Team Leader/Member in national projects</td>
<td>40/20</td>
</tr>
<tr>
<td>6</td>
<td>Team Leader/Member in international artistic projects</td>
<td>60/30</td>
</tr>
<tr>
<td>7</td>
<td>Team Leader/Member in national artistic projects</td>
<td>30/15</td>
</tr>
</tbody>
</table>

**E) AWARDS AND BURSARIES**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Academic/Artistic Award by a widely recognised international institution for service, academic achievement or work</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>Academic/Artistic Award by other international institutions for service, academic achievement or work</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>Academic/Artistic Award by a widely recognised national institution for service, academic achievement or work</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td>Academic/Artistic Award by other national institutions for service, academic achievement or work</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>In house award for valuable service or academic contribution</td>
<td>10</td>
</tr>
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</table>

**F) EDUCATIONAL ACTIVITIES**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Teaching a graduate course, for each semester course</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>Teaching an undergraduate course with more than 99 students, for each different semester course</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>Teaching an undergraduate course with 50-99 students, for each different semester course</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>Teaching an undergraduate course with less than 50 students, for each different semester course</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>Teaching an extra section of same undergraduate course with more than 99 students, for each semester course</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>Teaching an extra section of same undergraduate course with 50-99 students, for each semester course</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>Teaching an extra section of same undergraduate course with less than 50 students, for each semester course</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>Each completed doctoral thesis advised (within current year) as Mentor/Committee Member</td>
<td>50/4</td>
</tr>
<tr>
<td>9</td>
<td>Each completed master's thesis advised (within current year) as Mentor/Committee Member</td>
<td>20/2</td>
</tr>
<tr>
<td>10</td>
<td>Each ongoing doctoral thesis advised as Mentor</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>Each ongoing master's thesis advised as Mentor</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>Each completed undergraduate thesis advised</td>
<td>3</td>
</tr>
<tr>
<td>13</td>
<td>Teaching without the support of an assistant, for each course (for Ph.D. Holders)</td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>Assisting a professor in Labs/Tutoring hours, for each semester course</td>
<td>7</td>
</tr>
<tr>
<td>15</td>
<td>Assisting a professor in grading and course material preparation, for each semester course</td>
<td>3</td>
</tr>
<tr>
<td>16</td>
<td>Preparing a syllabus, class notes and other materials for a completely new course in the program</td>
<td>3</td>
</tr>
</tbody>
</table>

**G) SERVICE AND ADMINISTRATIVE DUTIES**

<p>| | | |</p>
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<tr>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Vice-Rector</td>
<td>60</td>
</tr>
<tr>
<td>2</td>
<td>Dean</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>Vice Dean</td>
<td>35</td>
</tr>
</tbody>
</table>
4) Program Coordinator

5) Coordinator/Director/Manager

6) Advisor to the Rector/Deputy Director

7) Senate Membership

8) Faculty Council Membership

9) Chair/Member for permanent committees

10) Chair/Member for ad hoc committees

11) Serving in promotional activities, each activity

12) Each activity completed based on the request by the administration (should have written proof of acknowledgement)

13) International Panel/Conference Session Chairmanship

14) National Panel/Conference Session Chairmanship

15) Student Advisor (Half points for only one semester)

16) Manager or Head of a professional association/union with IUS affiliation

H) WEIGHTED STUDENT SATISFACTION SURVEY SCORE

I) DEAN’S SCORE for faculty / RECTOR’S SCORE for Vice-Rectors and Deans

Academic honesty statement:
My signature below constitutes my pledge that all of the information is satisfying all the requirements defined in the Book of Rules on Evaluation of the Academic Staff Procedures at IUS (Number: IUS SENAT-11-3152/13, dated December 6, 2013), in this file, and are fully accurate and truthful.

Signature: __________________________
Date: __________________________

APPENDIX F – STUDENT SURVEY FORM

Student Survey Form

(Student evaluation at the end of a semester)

Evaluation

5 = Strongly agree; 4 = Agree; 3 = Neutral; 2 = Disagree; 1 = Strongly disagree.

<table>
<thead>
<tr>
<th>General:</th>
<th>EVALUATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>23. I find the study program attractive and fulfilling.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>24. I am absolutely satisfied with IUS Library.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>25. Student Affairs Office staff members were always helpful.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>26. Non-Academic staff members always provided required assistance.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>27. Physical/working conditions and resources available were excellent.</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course-related:</th>
<th>EVALUATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>28. Lectures and class discussions were related to assigned course materials.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>29. The criteria used in marking had been made clear in advance.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>30. Exam questions were related to study materials, lectures and class discussions.</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>
31. Assessment procedures and examinations are fair and transparent. 1 2 3 4 5
32. Teaching material indicated in the course outline was available. 1 2 3 4 5
33. Overall, I am satisfied with the quality of the course. 1 2 3 4 5

**Teacher/Assistant-related:**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>
34. The lecturer enriches assigned material with useful comments, explanations and examples. 1 2 3 4 5
35. The lecturer encouraged us to actively participate in the learning process. 1 2 3 4 5
36. The lecturer followed course syllabus as given in the course outline. 1 2 3 4 5
37. I have been able to contact the lecturer during specified consultation hours. 1 2 3 4 5
38. The lecturer uses appropriate vocabulary. 1 2 3 4 5
39. The lecturer creates a good study atmosphere in the class. 1 2 3 4 5
40. The lecturer treated me and my opinions with respect. 1 2 3 4 5
41. The lecturer did not discriminate students on gender, ethnic, racial, religious or any other ground. 1 2 3 4 5
42. The lecturer came to lectures regularly and on time. 1 2 3 4 5

**Final:**

Looking back on the experience, please comment on this course only using the boxes below.

Please ensure that your comments do not identify you individually.

43. Comments:

44. Points for improvement:

---

**APPENDIX G – ALUMNI SURVEY FORM**

---

**IUS ALUMNI SURVEY**

<table>
<thead>
<tr>
<th>Nationality (circle)</th>
<th>Turkish</th>
<th>BH</th>
<th>Other:______________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (shade)</td>
<td>o M</td>
<td>o F</td>
<td></td>
</tr>
<tr>
<td>Year of Graduation (shade)</td>
<td>o 2015</td>
<td>o 2014</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o 2013</td>
<td>o 2012</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o 2011</td>
<td>o 2010</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o 2009</td>
<td></td>
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<table>
<thead>
<tr>
<th>Graduated from Study Program:</th>
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<table>
<thead>
<tr>
<th>Degree (circle)</th>
<th>Bachelor</th>
<th>Master</th>
<th>PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question</td>
<td>Options</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did you continue with your further studies?</td>
<td>Yes, No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you been employed since graduation?</td>
<td>Yes, No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Were you able to find the job related to your studies?</td>
<td>Yes, No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Please provide the following info:</td>
<td>Current Job Title: ___________________________</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Company Type/Sector (e.g. public, private, governmental, non-governmental, education, transport, industry) etc)_________________________</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are you happy you chose this study programme at IUS?</td>
<td>Yes, No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did your coursework prepare you for this job/further education?</td>
<td>Yes, No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### APPENDIX H – LABORATORY EQUIPMENT

#### Computer Labs

| Windows LAB #1 (Building A): | Adobe Creative Suite 5.5 Design Premium: |
|-----------------------------|--|---|
|                            |   - Adobe Photoshop CS 5.5  |   |
|                            |   - Adobe Illustrator CS 5.5 |   |
|                            |   - Adobe InDesign CS 5.5    |   |
|                            |   - Adobe Dreamweaver CS 5.5|   |
|                            |   - Adobe Flash Professional CS 5.5 |   |
|                            |   - Adobe Flash Catalyst CS 5.5 |   |
|                            |   - Adobe Fireworks CS 5.5  |   |
|                            |   - Adobe Acrobat X Pro     |   |
|                            |   - Adobe Bridge CS 5.5     |   |
|                            | Android Studio              |   |
|                            |   - ArchiCAD 17             |   |
|                            |   - Autodesk 3DS Max Design 2014 |   |
|                            |   - Autodesk AutoCAD 2014   |   |
|                            |   - Autodesk Inventor Professional 2014 |   |
|                            |   - CD-Adapco STAR-CCM+     |   |
|                            |   - CodeBlocks C, C++, and Fortran IDE |   |
|                            |   - Eclipse JAVA development |   |
|                            |   - Eclipse PHP development |   |
|                            |   - Eclipse C++ development |   |
|                            |   - Eclipse EE development  |   |
|                            |   - GIMP 2.8.16             |   |
|                            |   - Inkscape 0.91           |   |
|                            |   - LibreOffice 5           |   |
|                            |   - Writer (word processor) |   |
|                            |   - Calc (spreadsheet app)  |   |
|                            |   - Impress (presentation app) |   |
|                            |   - Draw (drawing/flowcharting) |   |
|                            |   - Base (database)         |   |
|                            |   - Math (editing mathematics) |   |
|                            |   - MATLAB R2007a           |   |
|                            |   - MS Office 2007 Professional: |   |
|                            |   - MS Word 2007            |   |
|                            |   - MS Excel 2007           |   |
|                            |   - MS PowerPoint 2007      |   |
|                            |   - MS Access 2007          |   |
|                            |   - MS Outlook 2007         |   |
|                            |   - MS Visual Studio 2010 Express |   |
|                            |   - MS Visual Studio Community 2015 |   |
|                            |   - NetBeans IDE 8.1        |   |
|                            |   - ProjectLibre            |   |
|                            |   - Rhinoceros 4.0 SR8      |   |
|                            |   - SketchUp 2016 MAKE      |   |
|                            |   - Weka 3.6                |   |
|                            |   - WampServer 2.5          |   |
|                            |   - Apache 2.4.9            |   |
|                            |   - MySQL 5.6.17           |   |
|                            |   - PHP 5.5.12             |   |
|                            |   - PHPMyAdmin 4.1.14      |   |
|                            |   - SqlBuddy 1.3.3         |   |
|                            |   - XDebug 2.2.5           |   |

<table>
<thead>
<tr>
<th>Windows LAB #2 (Building A):</th>
<th>Android Studio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ArchiCAD 17 INT</td>
</tr>
<tr>
<td></td>
<td>Autodesk 3DS Max Design 2014</td>
</tr>
<tr>
<td></td>
<td>Autodesk AutoCAD 2014</td>
</tr>
<tr>
<td></td>
<td>SolidWorks 2014</td>
</tr>
<tr>
<td></td>
<td>Autodesk Inventor Professional 2014</td>
</tr>
<tr>
<td></td>
<td>CD-Adapco STAR-CCM+</td>
</tr>
<tr>
<td></td>
<td>CodeBlocks C, C++, and Fortran IDE</td>
</tr>
<tr>
<td></td>
<td>Eclipse JAVA development</td>
</tr>
<tr>
<td></td>
<td>Eclipse PHP development</td>
</tr>
<tr>
<td></td>
<td>Eclipse C++ development</td>
</tr>
<tr>
<td></td>
<td>Eclipse EE development</td>
</tr>
<tr>
<td></td>
<td>GIMP 2.8.16</td>
</tr>
<tr>
<td></td>
<td>Inkscape 0.91</td>
</tr>
<tr>
<td></td>
<td>LibreOffice 5</td>
</tr>
<tr>
<td></td>
<td>Writer (word processor)</td>
</tr>
<tr>
<td></td>
<td>Calc (spreadsheet app)</td>
</tr>
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</table>
- Impress (presentation app)
- Draw (drawing/flowcharting)
- Base (database)
- Math (editing mathematics)
  - MATLAB R2007a
  - MS Office 2007 Professional:
    - MS Word 2007
    - MS Excel 2007
    - MS PowerPoint 2007
    - MS Access 2007
    - MS Outlook 2007
  - MS Visual Studio 2010 Express
  - MS Visual Studio Community 2015
  - NetBeans IDE 8.1
  - ProjectLibre
  - SketchUp 2016 MAKE
  - Weka 3.6
  - My SQL Workbench 6.3
  - WampServer 2.5 which include:
    - Apache 2.4.9
    - MySQL 5.6.17
    - PHP 5.5.12
    - PHPMyAdmin 4.1.14
    - SqI B u dy 1.3.3
    - XDebug 2.2.5

Windows LAB #3 (Building B - ECON LAB):

- Stata 14
- IBM SPSS Statistica 21
- MS Office 2007 Professional:
  - MS Word 2007
  - MS Excel 2007
  - MS PowerPoint 2007
  - MS Access 2007
  - MS Outlook 2007
- MATLAB R2007a
- Microsoft Mathematics
- CodeBlocks C, C++ and Fortran IDE
- Python 2.7
- R Studio
- QM for Windows
- Excel QM v4

LINUX LAB (Building A)

- OpenSuSE
- LibreOffice
  - Writer (word processor)
  - Calc (spreadsheet app)
  - Impress (presentation app)
  - Draw (drawing/flowcharting)
  - Base (database)
  - Math (editing mathematics)
  - KDE GNOME Development Tools
    - Development Libraries
    - GNOME Software Development
    - KDE Software Development
    - X Software Development
    - Legacy Software Development
    - Code::Block C++ development
    - Eclipse C++ / Java development

General Purpose EE Laboratory

<table>
<thead>
<tr>
<th>No.</th>
<th>DEVICE NAME</th>
<th>BRAND (company name)</th>
<th>Quantity</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Desktop Computer</td>
<td>Apolo MS</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Digital Oscilloscope</td>
<td>RIGOL DSO222M</td>
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</tr>
<tr>
<td>3</td>
<td>Digital Oscilloscope</td>
<td>RIGOL DSO42C</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Analog Oscilloscope</td>
<td>HAMEG HM400</td>
<td>12</td>
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<tr>
<td>5</td>
<td>Function Generator</td>
<td>GWINSTEK</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>DC Power Supply</td>
<td>TT-T-ECHNI-C (MCH-305D-II)</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>DC Power Supply</td>
<td>TT-T-ECHNI-C (MCH-305D)</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>DC Power Supply</td>
<td>Voltcraft VLP-1303 PRO</td>
<td>6</td>
</tr>
<tr>
<td>9</td>
<td>Digital Trainer</td>
<td>CE COKESEN</td>
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Control Systems Laboratory

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<th>BRAND (company name)</th>
<th>Quantity</th>
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<tr>
<td>1</td>
<td>Desktop Computer</td>
<td>HP Pro</td>
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<td>2</td>
<td>Workstation</td>
<td>DELL</td>
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<tr>
<td>3</td>
<td>Analog Oscilloscope</td>
<td>HAMEG HM400</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Function Generator</td>
<td>GWINSTEK</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>DC Power Supply</td>
<td>Voltcraft VLP-1303 PRO</td>
<td>4</td>
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<tr>
<td>6</td>
<td>PLC Unit</td>
<td>Schneider Zelio</td>
<td>5</td>
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<tr>
<td>7</td>
<td>PLC Unit</td>
<td>Schneider Twido</td>
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<tr>
<td>8</td>
<td>PCI Expres DAQ</td>
<td>National Instruments</td>
<td>1</td>
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<tr>
<td>9</td>
<td>Noise Rejection Shield</td>
<td>National Instruments</td>
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<td>10</td>
<td>Shielded Cable</td>
<td>National Instruments</td>
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</tr>
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<td>11</td>
<td>USB NI-DAQmx</td>
<td>National Instruments</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>USB NI-DAQmx Accessories</td>
<td>National Instruments</td>
<td>2</td>
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<tr>
<td>13</td>
<td>NI myRIO</td>
<td>National Instruments</td>
<td>5</td>
</tr>
<tr>
<td>14</td>
<td>NI myRIO Starter Kit</td>
<td>National Instruments</td>
<td>5</td>
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<tr>
<td>15</td>
<td>NI myRIO Mechatronics Kit</td>
<td>National Instruments</td>
<td>5</td>
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<tr>
<td>16</td>
<td>NI myRIO Embedded Kit</td>
<td>National Instruments</td>
<td>5</td>
</tr>
<tr>
<td>17</td>
<td>NI myRIO Mount Kit</td>
<td>National Instruments</td>
<td>5</td>
</tr>
<tr>
<td>18</td>
<td>LabVIEW Premium Suite</td>
<td>National Instruments</td>
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<tr>
<td>19</td>
<td>Quanser Servo Motors</td>
<td>QUBE</td>
<td>2</td>
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<tr>
<td>20</td>
<td>Quanser Terminal Board</td>
<td>QUBE</td>
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<td>21</td>
<td>Rapid Control Prototype Toolkit for LabVIEW</td>
<td>National Instruments</td>
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<tr>
<td>22</td>
<td>Solar Pannel</td>
<td>MW GREEN Power</td>
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<tr>
<td>23</td>
<td>Toroid Transformer</td>
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<tr>
<td>24</td>
<td>Consumables</td>
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Smart Grid Laboratory

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<th>No.</th>
<th>DEVICE NAME</th>
<th>BRAND (company name)</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>1</td>
<td>SIPROTEC 7SJ82 Feeder and overcurrent protection</td>
<td>SIPROTEC 5 (SIEMENS)</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>SIPROTEC 7SL87 Combined line differential and distance protection</td>
<td>SIPROTEC 5 (SIEMENS)</td>
<td>4</td>
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<tr>
<td>3</td>
<td>SIPROTEC 7U/T86 Transformer Differential Protection</td>
<td>SIPROTEC 5 (SIEMENS)</td>
<td>2</td>
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<tr>
<td>4</td>
<td>Siglent Function Generator SDG805 5MHz</td>
<td>Siglent</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Voltcraft Energy Monitor 4000 Pro D LCD</td>
<td>Voltcraft</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Axiomet Digital Multimeter AX-582B</td>
<td>Axiomet</td>
<td>5</td>
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<tr>
<td>7</td>
<td>Autotransformer OIEA1 - 230VAC; Uout:0÷260V; 1A; 1.6kg</td>
<td>Brete Tufvassons</td>
<td>6</td>
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</table>

GSM Laboratory

109
<table>
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<th>DEVICE NAME</th>
<th>BRAND (company name)</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>1</td>
<td>Switch</td>
<td>TP-Link</td>
<td>1</td>
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<tr>
<td>2</td>
<td>RBS 2308</td>
<td>Ericsson</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Antenna</td>
<td>Ericsson</td>
<td>2</td>
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<tr>
<td>4</td>
<td>MSC APG40&amp;ETC&amp;RPG</td>
<td>Ericsson</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>MSC&amp;BSC DDF MODUL</td>
<td>Ericsson</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>BSCGEM&amp;ETC&amp;RPG2</td>
<td>Ericsson</td>
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<td>7</td>
<td>BSC APZ 21233 CPB</td>
<td>Ericsson</td>
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<tr>
<td>8</td>
<td>BSC APZ 21223 CPA</td>
<td>Ericsson</td>
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</tr>
<tr>
<td>9</td>
<td>BSC APG 40 C4</td>
<td>Ericsson</td>
<td>1</td>
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<tr>
<td>10</td>
<td>MSC GSS</td>
<td>Ericsson</td>
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<td>11</td>
<td>MSC APZ 212 40 CP</td>
<td>Ericsson</td>
<td>1</td>
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<td>12</td>
<td>MSC&amp;BSC POWER</td>
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<tr>
<td>13</td>
<td>Air condition</td>
<td>LG</td>
<td>1</td>
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<td>14</td>
<td>Telephone power cable</td>
<td>Ericsson</td>
<td>2</td>
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<td>15</td>
<td>Power extension cable</td>
<td>IUS</td>
<td>3</td>
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<tr>
<td>16</td>
<td>Beamer</td>
<td>SANYO</td>
<td>1</td>
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<td>17</td>
<td>Pc Tower</td>
<td>HP</td>
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<td>18</td>
<td>PC Monitor</td>
<td>HP</td>
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<td>19</td>
<td>Keyboard</td>
<td>HP</td>
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<tr>
<td>20</td>
<td>Mouse</td>
<td>HP</td>
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</tbody>
</table>
APPENDIX I – LIST OF SELECTED PUBLICATIONS


APPENDIX J –FIRST CYCLE COURSES

IUS University Courses (required)

CS100 – Computer Skills

Short Content:
This course covers: CLOUD Storage, Word, PowerPoint, Excel.

Objectives:
The course objective is to equipping the students with basic computer skills.

Learning Outcomes:
- Effectively use basic and most common office tools for report writing and presentations.
- Prepare well formatted text documents with tables and graphs.
- Use EXCEL for data entry and simple analysis, spread sheet computations and drawing charts.
- Prepare a presentation file with good formatting and text effects.

MATH101 - Calculus I

Short Content:
This course covers: Functions of one real variable; Limits and continuity; Derivatives; Rules of derivatives; Derivatives of basic functions; Properties of differentiable functions; Derivatives of higher degrees; Graphing, tangents and normal, asymptotes, local and global extreme; Antiderivatives, substitution of variables; Antiderivatives of rational functions, trigonometric functions; Finite sums, algebra rules; The Riemann sums and integral; The Fundamental Theorem of Calculus.

Objectives:
- Explain the concept of limit and its applications.
- Explain the concept of derivative, tangent line and instantaneous rate of change
- Introduce the Riemann integral and the Fundamental theorem of calculus.

Learning Outcomes:
- Explain the concept of limits and calculate limits for various single variable functions.
- Use all rules for computing derivatives well and to be familiar with the definition of derivative and slope of tangent.
- Apply first and second derivatives in finding maxima/minima of functions.
- Apply first and second derivatives to find intervals of monotonicity/concavity.
- Graph polynomial, rational and basic trigonometric functions.

ELIT100 – Academic English and Effective Communication

Short Content:
This course aims to enhance student’s academic writing skills, research skills and public speaking and presentation skills. The first part of the course deals with scanning, skimming, clustering, prewriting, drafting, and revising techniques. Such techniques will be applied to various forms of writing and research. The second part of the course deals with academic research skills, whereby students will learn how to organize research
papers and how to incorporate different types of materials and sources into writings. Public speaking strategies will be explored profoundly by involving student’s in-class presentations. Students will be evaluated on their ability to construct sentences in grammatically correct manner and on their correct use of English vocabulary words.

Objectives:
• To teach students to use prewriting methods that help generate and focus ideas before drafting a paragraph or an essay.
• To enable students to recognize and demonstrate elements of an essay: Introduction, thesis, body/support paragraphs and conclusion.
• To introduce students with basic research skills by locating and selecting pertinent materials in the library, including online library databases.
• To involve students in the social sphere of the writing class and enable them for open discussion and peer feedback by respectfully and clearly expressing questions and suggestions.
• To improve students’ essential English language skills, including reading, writing, listening and speaking.

Learning Outcomes:
• To use prewriting methods effectively and state fundamental principles of academic essay writing.
• To analyze transitions and apply them in their writings.
• To recognize elements of an essay and use that knowledge in writing well structured and organized essays.
• To use basic research skills and develop research papers and essays based on those skills.
• To apply various dynamic presentation skills.
• To write clear and correct sentences in English, and be able to compose paragraphs.

MATH102 - Calculus II

Short Content:
The course covers the following areas: application of final integrals, integration techniques, transcendental functions, infinite rows and arrays, power lines, Taylor and McLaurent lines.

Objectives:
• Provide general education in mathematics at the university level
• Give students a good basis for further study continuation in engineering programs

Learning Outcomes:
• Students will be able to determine the area, volume, and the length of a plane curve by integration.
• Students will be able to integrate trigonometric, hyperbolic, exponential, and logarithmic functions.
• Students will be able to evaluate improper integrals.
• Students will be able to evaluate sequences and series.

NS102 – Physics

Short Content:
This course is calculus-based study of the basic concepts of physics. Topics include vector algebra, kinematics, dynamics of single particle system, energy, momentum, conservation laws, circular and rigid body motion, fluid mechanics, thermal equilibrium, temperature, and the laws of thermodynamics with applications to ideal gases and thermodynamic processes.

Objectives:
• give students an understanding of the fundamental principles of physics and their application to everyday life and technology
• develop an appreciation of physics as a human endeavor, thereby enriching the students’ experience of life
• provide a reasonably broad perspective of physics, thus developing an understanding of the physical environment and of how human beings interact with it
provide a general education in physics for all students, whether or not they proceed to further studies in physics
- develop the ability to observe, to think logically, and to communicate effectively to develop an understanding of the scientific method
- develop an understanding of the beauty, simplicity and symmetry in nature.

**Learning Outcomes:**
- analyze and interpret 1D and 2D kinematics problems that include free fall, projectile motion, relative motion and uniform circular motion by using motion diagrams, vector representation of motion, explicit problem-solving strategy for kinematic problems
- solve dynamics problems in 1D and 2D by applying Newton’s Laws and conservation laws (energy and momentum)
- define Newton’s Laws, work, energy, momentum and impulse, and explain their relationship to motion
- perform basic analysis of oscillating systems
- define basic properties of solids, liquids and gases
- use ideal gas law
- solve problems that involves energy transfers by heat and work by using First Law of Thermodynamics
- define First and Second Law of Thermodynamics
- define electric properties of matter, electric current, voltage, electric field, Coulomb's law, Ohm's law
- calculate basic problems from electricity and magnetism

**ELIT200 – Critical Reading and Writing**

**Short Content:**
The course builds up and expands students’ communicative, critical reading and writing skills. A great emphasis is placed on the need to effectively and efficiently approach and analyze lengthy academic texts and develop critical reading skills. Students will become aware of the importance of thinking critically about diverse issues, analyzing and synthesizing different processes and concepts. The course will improve students’ academic writing skills, whereby the specific steps in the writing process will be analyzed and practiced. Successful completion of this course rounds out the language skills students will need for sustained academic achievement in their undergraduate studies.

**Objectives:**
- Expands students’ communicative, critical reading and writing skills.
- Effectively and efficiently approach and analyze lengthy academic texts and develop critical reading skills.
- Enable students to analyze and synthesize different processes and concepts.
- Improve students’ academic writing skills.

**Learning Outcomes:**
- Apply fundamental principles of rhetorical reading.
- Comprehend, interpret and summarize lengthy academic texts.
- Analyze a variety of texts in terms of content, author’s aim, style, subtext etc.
- Produce quality academic essays with good structure and in clear and correct English.
- Make sustained, logical arguments and express them effectively
- Combine the knowledge or information gathered from several sources for the purpose of an accurate interpretation of a text in English.

**ECON111 – Introduction to Microeconomics**

**Short Content:**
ECON 111 is an introduction course in microeconomics. This course develops students’ theoretical and practical knowledge of the students in the topics of market system, consumer choices, theory of firm and
market failure. The course aims to provide basic understanding of how people and firms make their decisions in the markets.

Objectives:
- Develop students’ theoretical and practical knowledge in the areas of market system, consumer choices, theory of firm and market failure;
- Provide basic understanding of how people and firms make their decisions in the markets;

Learning Outcomes:
- Be able to identify business problem;
- Be able to understand and explain market mechanism;
- Be able to understand how consumer makes their optimal purchasing decisions;
- Be able to understand how firms make their optimal production decisions.
- Be able to understand the impact of government intervention in the market.
- Be able to understand how markets can fail and the remedies for market failure.

ECON112 – Introduction to Macroeconomics

Short Content:
This course covers: Supply and demand: how the market works; market offers and demand; elasticity and its application; consumers, producers and the efficiency of the market; public sector economy; public goods and common resources of balance in competitive markets; monopoly, oligopoly, failure and role of government; services in the market economy, equilibrium in competitive markets; Measuring the cost of living; production and growth, savings, investment and financial system, unemployment and inflation.

Objectives:
- Provide a good foundation for micro and macroeconomics for all students;
- Provide students with a strong foundation for further understanding of economics issues by using graphic representation and mathematical tools for formulation, analysis and problem solving;

Learning Outcomes:
- To demonstrate an understanding of the contemporary world economy and how it differs from past periods of time.
- To discuss the measurement of economic variables and how rises and falls in these variables impact on people.
- To explain the reasons for and consequences of Reserve Bank actions.

ELIT101 – Introduction to Literature

Short Content:
This course aims to introduce the students to the basic terms and concepts related to literature. These terms and concepts (figures of speech, elements of plot structure, genres and subgenres etc.) are essential to students’ ability to understand and interpret literary works. The terms and concepts will be defined and explained to the students and exemplified through works of literature.

Objectives:
- Introduce the students to the basic terms and concepts related to literature.
- The terms and concepts: figures of speech, elements of plot structure, genres and subgenres etc will be defined and explained;

Learning Outcomes:
- Recognize a work of literature and understand how it is different from other forms of artistic expression.
- Show understanding and recognition of basic literary terms and interpret previously unseen literary works.
- Explicate a particular work of literature and form a critical interpretation of it
• Use appropriate critical terminology when discussing literature.

**ENS105 – The Brain**

**Short Content:**
This course represents structural and functional knowledge about human brain during health and disease.

**Objectives:**
- To introduce structural and functional knowledge about human brain during health and disease.

**Learning Outcomes:**
- To explain the "human nature" as a function of human brain that is encoded by human genome.
- To explain neuroanatomical features of human brain and their functions such as, cortex, limbic system.
- To summarize the basic features emotional and cognitive behaviors as brain mechanisms during health.
- To explain the subject of consciousness as an issue of scientific research.

**IR101 – Introduction to International Relations**

**Short Content:**
The purpose of this course is to provide an in depth familiarization with the challenges of operating in an international environment.

**Objectives:**
- To provide foundational knowledge in areas relate to international relations.
- To offer an basic overview of the most important theories, issues as well as recent development in the field;

**Learning Outcomes:**
- Discuss the various analytical and theoretical positions in international relations.
- Distinguish between the three levels of analysis of the international system.
- Interpret the most important problems of international relations.
- Identify major international institutions and describe their roles.

**NS104 – General Chemistry**

**Short Content:**
Course covers: Introduction to chemistry, atoms and atomic theories, Chemical compounds and their chemical reactions, aqueous solutions, principles of gases, liquids and solutions, energy and work, covalent vs. Ionic binding, Carbohydrates and Life essential molecules.

**Objectives:**
- To build a basic knowledge of the structure of chemistry
- To analyze scientific concepts and think critically
- To review the importance and relevance of chemistry in our everyday lives
- To be able to utilize the methods of science as a logical means of problem solving in regards to chemistry

**Learning Outcomes:**
- Define the basic concepts of chemistry (the structure of atoms, electronic configuration, chemical bonds, properties of elements etc...).
- Classify matter by its state and binding behavior using the Periodic table as a reference.
- Understand and explain basic equilibrium chemistry and the principle behind four main classes of reaction, e.g., acid-base, oxidation-reduction, complex metric and precipitation reactions.
- Recognize in real live organic compounds and understand their functions and structures.
• Compare and contrast the chemical behavior and physical properties of common substances.
• Understand the importance of metabolic reactions
• Define the molecules of life

NS103 – Biology

Short Content:
The purpose of this course is to provide students with the introductory level principles, mechanisms, and methodology of biological sciences with special emphasis on molecular and cellular aspects of living systems.

Objectives:
• To provide students with the introductory level principles, mechanisms, and methodology of biological sciences.
• To emphasize molecular and cellular aspects of living systems

Learning Outcomes:
• To explain the principles of scientific methodology.
• To define biological terms and explain associated mechanisms using these terms.
• To communicate biological concepts clearly and accurately.
• To explain biology as a creative activity in variety of research and application fields

POLS102 – Introduction to Political Sciences

Short Content:
This course opens with the recent history of political sciences. We further enable students to compare major political science theories and to be able to apply these in order to explain events and developments in the world.

Objectives:
• To give students an understanding of the recent history of political sciences.
• To enable students to compare and contrast the major Political sciences theories and to be able to apply them to explain events and developments.
• To help students understand how these seemingly abstract debates actually deal with experiences in our everyday lives.
• To give students and understanding of major institutions and issues in political sciences.
• To cultivate students’ ability to think critically.

Learning Outcomes:
• To analyze basic concepts and approaches to the study of political science.
• To apply them towards the analysis of current political issues, disputes and trends.
• To comprehend functioning of institutions, the state and government and its branches, political parties and party systems.
• Compare and contrast different branches within political sciences.
• Demonstrate some familiarity with the specific recent developments within the political sciences.
• Use a range of published materials in engaging with the conceptual challenges of cross-cultural study of politics and apply an understanding of politics to other social sciences.

PSY103 – Introduction to Psychology

Short Content:
This course is conceived as a broad, conceptual introduction to modern psychology. It delineates major principles, issues, and approaches to psychological phenomena and processes and to behavior from a variety of perspectives, offering insights into specificities of scientific reasoning and discovery in psychology as it relates to other scientific disciplines. Psychology is portrayed as a live and dynamic subject, which can be easily related to students' experiences.

Objectives:
To give students broad, conceptual introduction to modern psychology.
To delineate major principles, issues, and approaches to psychological phenomena and processes;
To offer insights into specificities of scientific reasoning and discovery in psychology as it relates to other scientific disciplines.
To portray psychology as a live and dynamic subject.

Learning Outcomes:
- To have sufficient knowledge about the key issues and approaches in psychology.
- To understand how psychology developed in relation to other branches of science.
- To understand the dynamic nature of scientific discovery and reasoning with regard to matters of psychology.
- To have a clear idea about the scope of psychology and its main subdisciplines.
- To relate selected principles of psychology to their everyday life.

SPS120 – Critical Thinking

Short Content:
The main objective of this course is to establish a well-articulated understanding of critical thinking skills. These skills play a crucial role in everyday life reasoning and scientific methodology, not to mention their significance in constructing philosophical arguments.

Objectives:
- To establish a well-articulated understanding of critical thinking
- To emphasize students’ ability to critically assess information, including perspectives contrary to their own ones.

Learning Outcomes:
- To analyze arguments into premises and conclusions of critical analyzing.
- To evaluate deductive arguments for validity and soundness in life.
- To evaluate inductive arguments for strength of brain and critical thinking.

SPS150 – World History

Short Content:
The aim of this course is to teach the historical significance of global interconnections between the world’s civilizations and peoples from 1000 C.E. to the present. It provides a chronological cross-cultural overview of world history from ancient to modern times. The course has the objective of exploring crucial themes of human activity from a global perspective. The diversity of human civilizations will be traced in terms of their historical, cultural, political, and economic formation with a focus on their interactions, similarities and differences. Examining the broad patterns of change and continuity, as well as the turning points in world history, students will develop a greater understanding of today’s global environment.

Objectives:
- To teach the historical significance of global interconnections between the world’s civilizations and peoples from 1000 C.E. to the present.
- To provide a chronological cross-cultural overview of world history from ancient to modern times.
- To explore crucial themes of human activity from a global perspective.
- To examine the broad patterns of change and continuity, as well as the turning points in world history.

Learning Outcomes:
- To reason historical events chronologically.
- To compare/contrast and contextualize historical events.
- To evaluate inductive arguments for strength of brain and critical thinking.
- To comparatively analyze, synthesize, and evaluate historical content, contexts, and perspectives.
SOC102 – Introduction to Sociology

Short Content:
The course will offer a broad introductory survey to Sociology.

Objectives:
- The course will offer a broad introductory survey to Sociology.
- The course will engage with core concepts, foundational scholars, and emerging theories in sociology.
- This course will provide introductory students the necessary tool for critically evaluating social reality today.

Learning Outcomes:
- To define and explain what the sociological method is.
- To understand the social construction of many different aspects of reality.
- To engage with scientific and empirical methods for data collection and analysis in sociology.
- To competently evaluate the foundations of different cultures.

VA121 – History of Art I

Short Content:
This first, broad survey course aims to familiarize students with the history of the arts in Western and some non-Western cultures. It aims to develop student skills in observation, analysis and interpretation of historical forms and cultural layers.

Objectives:
- To familiarize students with the history of the arts in Western and some non-Western cultures.
- To develop student skills in observation, analysis and interpretation of historical forms and cultural layers.

Learning Outcomes:
- Identify authors and artworks.
- Recognized style of periods from Antiquity through the middle Ages.
- Identify and understand the common themes and links between art and architecture.
- Analyze and discuss major works of art from Antiquity through the middle Ages.

ARCH107 – Understanding Art and Architecture

Short Content:
This course will introduce students to the basic concepts of art and architectural practice, through an analysis of the production of art and architecture drawn form a range of historical periods and contexts.

Objectives:
- To introduce students to the basic concepts of art and architectural practice

Learning Outcomes:
- Identify key art and architectural styles and movements.
- Understand the contexts in which art and architectural practices have been undertaken.
- Identify and understand the common themes and links between art and architecture.
- Understand the meaning of art and architecture through acquiring the analytic tools allowing them to read and analyze the production of art and architecture.

NS111–Understanding Nature and Knowledge

Short Content:
The focus of this course is to introduce students to the history and philosophy of science, particularly in the Islamic and the Western worlds.

Objectives:
- Assemble the born of science in assumptions about the nature of reality.
- Discuss connections between early philosophy and science.
- Define the perception of the world and interaction in science.
- Discuss the impact of recent scientific breakthroughs on modern life.

Learning Outcomes:
- To assemble the born of science in assumptions about the nature of reality.
- To discuss connections between early philosophy and science.
- To define the perception of the world and interaction in science.
- To discuss the impact of recent scientific breakthroughs on modern life.

NS112 – Understanding Science and Technology

Short Content:
The aim of the course is to expose students to various issues and opinions on the development, the current state and the role of the science and technology in the development of human societies. The goal is not to give definitive answers but rather to provoke discussion and initiate further learning.

Objectives:
- To expose students to various issues and opinions on the development, the current state and the role of the science and technology.
- To teach students to be comfortable with non-definitive answers, and to initiate discussion from which all involved would build up their knowledge about the world and technology.

Learning Outcomes:
- Demonstrate critical thinking of the current state and the role of the science and technology in the development of human societies.
- Analyze the issues related to the science and technology impact on the sustainable development.

CULT101 – Understanding Cultural Encounters

Short Content:
This course aims to present an overview of the cultural - historical relationships emerged in Near Eastern Islamic countries and their neighbors between 11th and 17th centuries C.E. By comparative analysis of observational narratives from remarkable Muslim travelers such as Ibn Battuta (Moroccan-Berberi), and Evliya Celebi (Turkish-Ottoman), this course is going to give a clear, understandable frame of cultural - intellectual relations for the Islamic world in the classical ages. Thus, the course aims to present the historical picture with the help of travel accounts, including daily life practices, legends, and colorful stories which will make the students enjoy intellectual history of that era.

Objectives:
- To present an overview of the cultural - historical relationships emerged in Near Eastern Islamic countries.
- To give a clear, understandable frame of cultural - intellectual relations for the Islamic world in the classical ages.
- To present the historical picture with the help of travel accounts, including daily life practices, legends, and colorful stories.

Learning Outcomes:
- Explain the frame of cultural - intellectual relations for the Islamic world in the classical ages.
- Identify the medieval ages as golden ages for Muslims, then argue about it with opponent views.
- Identify some key historical places and events in the modern maps in accordance with old maps.
- Present an overall discussion of cultural relations, and global connections in the Islamic world of classical ages, by the eyes of Muslim travelers.
SPS140 – Understanding Religion

Short Content:
The main objective of this course is to establish a cross-cultural understanding of worlds' religions. A special attention will be paid to religions within the diverse and global changing world. The students will be taught to: understand the importance of religion in relation to their society, culture and history; globalization and religion; gender and religion; science and religion; interfaith dialogue; and sociology and psychology of religion.

Objectives:
• To establish a cross-cultural understanding of worlds' religions.
• Understand the importance of religion in relation to their society, culture and history.
• Understand globalization and religion; gender and religion; science and religion; interfaith dialogue.
• To understand psychology of religion.

Learning Outcomes:
• Demonstrate understanding of major world religions.
• Use cross-cultural religious themes as to promote religious understanding and dialogue.
• Differentiate an academic and scholarly versus missionary study and interpretation of religion.
• Recognize the significance of religions as inevitable for shaping our society, culture and institutions.
• Define methods and approaches to the study of religions.

TURK111 – Spoken Turkish I

Short Content:
In the beginning of this course students will learn about Ural-Altaic Language group to which Turkish Language belongs too. They will also learn some differences between Ural-Altaic Language group and Indo-European Language group. After phonetics, phonetics rules and sentence writing, students will complete their basic knowledge of Turkish phrases and expressions. In the second part of the semester students will be focused on Present Continuous Tense. This will enable students to understand tenses in Turkish language. At the end of the semester students will be focused on the topics of daily life, and will meet one big metropolis such as Istanbul.

Objectives:
• To teach students about the most important fundamentals in the Turkish language
• To enable students to introduce their self, their family and the environment in which they live and study.
• To form class environment in order to develop reading, writing, listening and speaking skills
• To involve students in dialogues and enable them to have conversation in Turkish language.

Learning Outcomes:
• Introduce their self, their daily activities, their family, and environment in which they live and study.
• Fill in job applications, scholarship applications and registration applications at the university.
• Have a conversation about daily life topics.
• Use Turkish language in day-to-day conversation

BOS111 – Spoken Bosnian I

Short Content:
The course covers topics such as: Introduction and historical background of the language; Language basics-greetings and introduction; Basic grammar-part I.

Objectives:
• The course aims at equipping the students with the basic listening, reading, writing and speaking skills of the foreign language chosen.

Learning Outcomes:
• Read and understand basic sentences from a Bosnian language
• Respond to questions and participate in a conversation
• Write simple essays

**TURK112 – Spoken Turkish II**

**Short Content:**
During this semester students learn Possessive suffixes (pronouns), Genitival Possessive Construction, Shortened Genitival Possessive Construction, Past Tense, Future Tense, Telling time in Turkish language. Each of these components will be practiced by corresponding text and audio – video materials.

**Objectives:**
• Introduce themselves to their friends;
• Compare life in town and village;
• Speak about holiday from the past, or events from past;
• Have conversation about past or future events.

**Learning Outcomes:**
• To teach students grammar rulers which are important for daily communication;
• To enable students to compare life in town and village;
• To enable student to speak about events from past and future;
• To develop student’s speaking, reading, listening and understanding skills;
• To evolve students in dialogues and conversations.

**BOS112 – Spoken Bosnian II**

**Short Content:**
Spoken Bosnian II (the first level - intermediate course of the Bosnian language) is a continuation of the basic elementary course and is intended to improve overall communicative competence of the Bosnian language as a foreign language. First, through the repetition of the basic characteristics of the initial rate, review the main points of the Bosnian grammar and basic vocabulary to be made. With frequent repetition and new knowledge (in accordance with the initial program of the intermediate course), students will: build and nurture acquired vocabulary, grammar and spelling, and further develop listening, reading, speaking and compositional skills as well as more detailed introduction to Bosnian culture. Specifically, students will improve their ability to understand and share ideas with native speakers. Students will also express original ideas, report on different types of events, etc. The course includes a range of activities, including regular dialogues and reading texts, language games, the cultivation of grammar and phonetic exercises, dictations, translations, discussion topics, etc.

**Objectives:**
• Introduce students to basic features of the Bosnian language as a foreign language at the level of initial intermediate course that represents a basic knowledge of the characteristics of the Bosnian spoken and written language;
• Teach students how to follow intermediate course within the initial focus on the active use of the four basic skills of mastering a foreign language: listening reading, writing and speaking;
• Instruct students how to self-educate using appropriate literature as well as an active process of speaking with native speakers;
• Actively use the Bosnian language as a foreign language in the understanding of and fostering intercultural differences and similarities between Turkish and Bosnian culture

**Learning Outcomes:**
• Usage Bosnian provided the initial framework middle course;
• Understand the basic features of the Bosnian language in the process of listening, reading, writing and speaking;
• Write clear and correct sentences in Bosnian language;
• Participate in the processes of their own self through the use of appropriate literature, and the active voice with native speakers;
Nurture intercultural differences and similarities, and speak and feel as the Bosnian link Turkish and Bosnian culture.

FENS Faculty Courses

ARCH100 – Introduction to Architectural Design

Short Content:
This course introduces fundamental concepts and methods in architecture which includes: sites analyze and analyses by drawing, 3 concepts (sketches and diagrams), 3 concept propositions & study models, Furnished plans and sections.

Objectives:
• To further develop students’ critical ability to describe and articulate thoughts and experiences, as well as to transform them into first project ideas
• To gain confidence in manipulating a variety of forms in two and three dimensions
• To familiarize students with the cultural context within which design takes place (site, site analysis, etc.).
• To introduce materiality and human scale in the design process
• To experiment with a wide variety of presentation techniques (written, verbal and graphic).

Learning Outcomes:
• Identify simple elements of architectural design and their relationships in three-dimensional space and apply this knowledge to their design proposals.
• Associate the cultural context within which design takes place with architectural proposals.
• Discuss of the concept of dwelling in relation to social, economic, environmental issues.
• Examine issues of scale and body, materiality, comfort, flexibility in design.

ARCH101 – Basic Design Communication

Short Content:
This course introduces terms such as: role of architect, type of drawings, line types, proportion, scale, paper format, projection types, and perspective drawing.

Objectives:
• Development and demonstration of essential graphic communication skills;
• Integrate the principles of sketching, 2D orthographic projection and perspective drawings, written and verbal communication within the design process and communication; and
• Introduce students to simple model-making principles.

Learning Outcomes:
• Represent the design idea graphically
• Create diagrams to graphically analyze and interpret objects, buildings and design processes.
• Develop freehand sketching skills to represent building elements
• Develop graphic skills to represent buildings and related elements.

ARCH108 – Introduction to Architectural Design II

Short Content:
This course introduces terms such as: Design methodology and design project, urban /site/ analysis and synthesis, daily critics, historic overview of the development of individual housing, functional elements of the individual house; entrance, staircases, corridors etc.

Objectives:
Objective is to introduce students with the fundamentals of individual design and develop the students' capability to design a weekend house using architectural standards, regulations and architectural language.
Learning Outcomes:
- Successfully demonstrate knowledge about individual housing.
- Demonstrate the understanding of architectural and urban context.
- Demonstrate the understanding of basic human needs for living and working in specific living unit. Family
- To perform the ability to present the work using architectural language.

ARCH106 – Introduction to Building Technology

Short Content:
This course introduces terms such as: building materials, processes and systems, vertical elements of structure, horizontal elements of structure, foundations and slab on grade, building performance and enclosure, thermal protection methods and techniques.

Objectives:
The course aims to introduce students to fundamental concepts and principles of building construction, materials and techniques, to get students acquainted with elements of construction technologies, and to introduce students to technical presentation of small buildings.

Learning Outcomes:
- Understand fundamental terms in architecture and building construction.
- Describe basic facts about building materials
- Explain elementary impacts on building
- Apply basic drawing techniques in technical presentation in architecture

BIO310 – Bioinformatics

Short Content:
This course introduces fundamental concepts and methods for structural bioinformatics and the advanced applications.

Objectives:
The goal of this course is to introduce students to the application of biological databases and software to address and analyze biological phenomena.

Learning Outcomes:
- Use online databases to study various aspects of biology
- Analyze and compare gene and protein sequences,
- Model and analyze protein's secondary and tertiary structure
- Identify and predict protein interactions and docking sites using bioinformatics software.

ENS210 – Computational Biology

Short Content:
The course deals with fundamental concept of computational biology, biological databases, DNA, RNA and protein sequences, sequence alignment techniques, gene and promoter prediction, protein structure prediction, secondary and tertiary structure prediction algorithms.

Objectives:
The course aims are to provide the student major issues concerning analysis of genomes, sequence and structures. Various existing computational approaches will be critically described and the strengths and limitations of each will be discussed.

Learning Outcomes:
- explore the biological database and to learn how to use them
- relate main point for usage computer vision algorithms to biological problems
- discuss and elaborate sequence similarity and homology
• analyze the structural and functional features of proteins with using bioinformatics tools

ENS203 – Electrical Circuits II

Short Content:
The course deals with; AC circuits analysis techniques; power in AC circuits, poly-phase circuits, Laplace transform and its application in electrical circuits, Frequency dependant circuits, mathematical models and differential equations of AC circuits and various software tools for analysis of AC circuits.

Objectives:
• To introduce to students AC electric circuits and systems with AC power concepts
• To explain the concepts of impedance, phasor and frequency response
• To study passive and active analogue filters
• To introduce the Laplace transform and its application in electrical circuits
• To analyse polyphase circuits and two port networks

Learning Outcomes:
• Use circuit analysis methods to solve electrical circuits problems that involve AC power sources and AC power
• Use different software tools for the analysis of single and polyphase AC circuits
• Explain frequency response of circuit elements and solve problems involving active and passive filters
• Explain and use Laplace transform for AC circuit analysis
• Perform Laboratory tests and measurements that involve AC circuits.

EE305 – Instrumentation and Measurements

Short Content:
Basic measurement concepts, basic electronic measurement, signal generators and analyzers, sensors, digital instruments, acquisition systems and optical measurements.

Objectives:
• introduce students to the principles of measurement
• provide students with hands-on laboratory experiences with a variety of transducers and instruments (including ‘virtual instruments’)
• provide students with the opportunities to write substantial, professional, computer-generated technical reports.

Learning Outcomes:
• Explain different standards and units of measurement, the conversion between standards and the importance of the measurement process and its various stages.
• Understand the different characteristics of measurement instruments and their effect on the performed measurements
• Perform measurements of different physical variables using measurement instruments
• Explain how various values of pressure and temperature are measured and to the basic principles of the instruments used in their measurement
• Explain the process of transmitter calibration, its importance and how it’s done as well as the usage of these transmitters in the measurement process.

EE321 – Electrical Machines

Short Content:
The course provides a deep look to electrical machines and the major physical principles that govern them. The course reviews basic principles of phasor analysis, three phase circuits, Ideal and practical transformers. The course studies AC machinery fundamentals and DC machinery fundamentals. Detailed look to synchronous machines and induction motors is presented. Finally, and introduction to power electronics and machine drive is provided.

Objectives:
• The physical and mathematical principals that govern electromechanical motion
• The analysis of broad range of electrical machines.
Using software to study different electrical machines
The concept of power electronics and machine drives.

**Learning Outcomes:**
- Explain the theory of electromechanical energy conversion
- Explain the construction and principles of operation of various AC and DC electrical motors and generators
- Explain the construction and operation of ideal and practical transformers
- Solve simple problems related to operation of DC and AC electrical machines as well as various electrical transformer types
- Use software tools to analyze and solve problems related to various types of electrical machines.

**ENS201 – Electromagnetics**

**Short Content:**
Review of vector analysis, electrostatics, electric potential, electric fields in matter, magnetostatics, magnetic fields in matter, electrodynamics, Maxwell’s Equations.

**Objectives:**
- To introduce students to the foundations in electromagnetism for any future academic and professional work in this area
- To develop skills for practical solutions to various electromagnetic problems
- To achieve a better understanding of vector algebra, differential calculus, and their applications in the field of electromagnetic
- To understand electromagnetic properties of different materials
- To become familiar with Maxwell’s equations

**Learning Outcomes:**
- Describe the concepts of electric and magnetic fields
- Analyze potentials due to static fields
- Demonstrate understanding of how materials affect electric and magnetic fields
- Demonstrate understanding of the relation between the fields under time varying situations
- Become familiar with Maxwell’s equations.

**ENS202 – Thermodynamics**

**Short Content:**
This course is an introduction to the concept of energy. It provides the basic tools necessary for the analysis of any engineering system in which energy transfer or energy transformations occur; thus, thermodynamics is an important part of the training of almost all engineering disciplines.

**Objectives:**
- Analyze energy transfer and transformation in systems by using fundamental concepts of properties of materials, work, heat, internal energy, entropy, equilibrium
- To study and analyze relations derived from the First and Second Laws of Thermodynamics.

**Learning Outcomes:**
- State and explain the 1st and 2nd Law of Thermodynamics.
- Apply the 1st and 2nd Law of Thermodynamics to calculate heat, work and energy for both closed and open systems.
- Calculate the boundary work for a variety of processes for closed systems
- Plot processes on both P-v and T-s diagrams.

**ENS206 – System Modelling and Control**

**Short Content:**
Course contains topics such as: Fundamental concepts in control systems with feedback; Formulation of models of physical systems; Examples of physical and abstract systems and their mathematical models. Tools of analysis for linear systems: transform techniques, input-output analysis, block diagrams, frequency response representation; Differential equations, Laplace transformation and transfer functions. Root locus and frequency analysis; Introduction to stability and closed loop system design; Stability; PID controllers

**Objectives:**
- Familiarize students with the concept of modeling, analysis, and control of electrical, mechanical, and electromechanical systems with realistic steady-state and transient specifications
- Introduce students to system description using transfer functions and learn about the main components of a closed loop control system including PID regulator
- Introduce students how to determine the system stability using mathematical and graphical tools.

**Learning Outcomes:**
- Derive models of simple systems and present them on common mathematical form, including block diagram form
- Model and analyze a linear system in the frequency domain by reducing a complex multi-block control system to a standard form using block diagram algebra; deriving the input-to-output transfer function; and computing the impulse response, output response and steady-state error for a given test input signal
- Model and analyze a linear system computing the characteristic roots and assessing the stability of the system from the location of these roots in the complex domain using the Routh-Hurwitz (R-H) stability criterion
- Model electrical, mechanical, and electromechanical systems using state-space variables in the time domain and to solve the state equations for standard inputs (step response or impulse response)
- Design and tune a three-term (PID) controller for a physical system to achieve desired steady-state and transient specifications.

**ENS209 – Statics**

**Short Content:**
Force vectors, equilibrium of particle, equilibrium of rigid body, structural analysis and internal forces, friction, center of gravity and centroid, moments of inertia, virtual work.

**Objectives:**
- To provide students with a basic understanding of forces and force systems acting and equilibrium conditions for particle or rigid body
- To give students the ability to perform analysis of forces developed in structural members
- To perform structural analysis similar to those they will encounter in industry.

**Learning Outcomes:**
- Construct free-body diagrams and to calculate the reactions necessary to ensure static equilibrium.
- Analyze distributed loads.
- Demonstrate understanding of the internal forces and moments in members.
- Conduct force analysis on structures.
- Calculate centroids and moments of inertia.
- Solve static equilibrium problems involving friction.

**ME312 – Machine Elements**

**Short Content:**
Machine elements and design principles, stress concentration, safety factor; Connections and fasteners: threads, power screws, screws, bolts, and nuts; Connections and fasteners: rivets; Elastic connections: springs; Axles, spindles, shafts; Welding, brazing and other connections.

**Objectives:**
- To get familiar with the classification of a variety of machine elements, their aim and proper or improper use
- To command the fundamental principles of design of engineering systems and their mechanical parts
- To apply the methods of statics, strength of materials and kinematics in analysis of practical engineering problems
- To assess behavior and the effects of shape, dimensions and material of an element, or type and level of load
Learning Outcomes:
- know the principles of the modern design methods of mechanical parts and their combinations
- understand, describe and interpret the role and working principles of a number of machine elements
- evaluate the fundamental properties and assess behavior or work of a machine part or of their combinations
- recognize and identify problems and offer a solution regarding the design of an element and its assembly

ME210 – Strength of Materials

Short Content:
Average Normal Stress, Strain; Mechanical Properties of Materials Solving Problems; Axial Load, The Force Method of Analysis for Axially Loaded Members, Thermal Stress; Torsion, Power Transmission; Bending, Bending Solving problems; Thin Walled Pressure Vessels, Stress caused by Combined Loadings; Stress Transformation, Plane-stress formation, Principal Stresses and Maximum In-Plane Shear Stress

Objectives:
- to grasp the basics about structural members and their strength, stiffness and stability
- to solve practical engineering problems involving stress and strain analysis in elementary structural members, such as bars and beams.
- to understand issues on strength, stiffness and stability of structures in order to guide practical design.
- to check the safety of existing structures or to design new structural members.

Learning Outcomes:
- Analyze relationships between stress, strain and displacement in deformable bodies.
- Find the stress state of bodies subjected to axial, torsional, transverse, and/or bending loads.
- Transform plane stresses into a different coordinate system.
- Calculate the stability limits of members subjected to axial compressive loads.

ENS221 – Introduction to Engineering

Short Content:
The course explores the different disciplines of engineering and providing participants with a broad background in different areas of engineering.

Objectives:
- Introduces students to the range of engineering disciplines and the engineering method of problem-solving.
- Motivates the students toward the future engineering careers.
- Develop skills on improving core engineering communication skills.

Learning Outcomes:
- Demonstrate the basic principles of the engineering method.
- Recognize the need for lifelong learning and for continuous professional development
- Write and speak in a style appropriate to academic and professional contexts
- Apply the key concepts of design, ethics, safety and sustainability.
- Explain the nature of the role of engineers in a global society
- Describe the non disciplinary-specific aspects and open-ended nature of engineering problems.

ENS302 – Engineering Optics

Short Content:
This course concerns the basic of optical methods in engineering and system design, with an emphasis on diffraction, statistical optics, holography, and imaging.

Objectives:
The objectives of this course are to teach the student about basic optical mechanisms and components within sensing, diagnostics and instrumentation with emphasis on bio-medical applications.

Learning Outcomes:
- Name different light sources and explain their principle of operation, and explain the principle of laser action
- Describe basic light-matter and light-tissue interactions and calculate energy exchange in those interactions
- Apply and describe spectroscopic techniques like fluorescence, Raman spectrometry, microscopy
- Explain how light is used in different fields of science and engineering.

**ME208 – Dynamics and Vibrations**

**Short Content:**
This course is designed to teach solution techniques for rigid body kinematics. Conservation of momentum and energy are employed to analyze two and three dimensional problems. The use of vectors and free body diagrams for the analysis of dynamic mechanical systems is stressed. Kinematics of particle: force and acceleration, work and energy, impulse and momentum. Kinematics of rigid body: force and acceleration, work and energy, impulse and momentum.

**Objectives:**
- To provide students with basics of three-dimensional motion of particles and two-dimensional motion of rigid bodies
- To provide students with basic principles of work-energy applications in dynamic problems
- To give students ability to analyze various forms of vibration

**Learning Outcomes:**
- Derive equations for the kinematics and kinetics of particles in three-dimensional motion
- Derive and use equations for the kinematics of rigid bodies in two-dimensional motion
- Set up and solve equations of motion for rigid bodies in two-dimensional motion
- Apply work-energy principles in the solution of rigid-body dynamics problems in two dimensions
- Analyze damped and undamped vibration as well as forced damped vibration.

**ME304 – Fluid Mechanics**

**Short Content:**
The course covers the topics of fluid mechanics, fluid dynamics and their applications in various engineering areas.

**Objectives:**
The course aims to give students fundamental knowledge in fluid mechanics, to teach them basic problem solving skills in hydrostatics and fluid dynamics, and make them aware of role of fluid mechanics in various engineering applications and design.

**Learning Outcomes:**
- apply integral relations for a control volume to compute various fluid mechanics problems.
- define the physical properties of a fluid and to explain the consequence of such properties on fluid flow.
- apply the conservation principles of mass, linear momentum, and energy to fluid flow systems.
- compute various problems of fluid flow in ducts.
- compute the lift, drag, and moments acting on simple aerodynamic profiles and shapes, steady fluid flows.
- apply CFD software to compute fluid dynamics problem with moderate level of complexity.

**CS105/204 – Advanced Programming**

**Short Content:**
This course covers: Methods and Instance Variables Information Hiding and Encapsulation, Constructors; Static Methods, Static Variables, Wrapper Classes References and Class Parameters References, Copy Constructors; Inheritance; Polymorphism and Abstract Classes; Bag Implementations That Uses Arrays; Stack and Stack Implementation

**Objectives:**
The aims of this course are to: teach students main object-oriented concepts and practices, introduce students to one object-oriented programming language, and teach students some of the fundamental data structures and algorithms

**Learning Outcomes:**
- solve moderately complex real-world problems using object oriented programming language
- verify the performance and correctness of your solutions, and effectively debug the software you have
- define, explain, and use the various data structures discussed in class
- identify which abstract data structure could be useful in representing or solving a problem and why

**ME306 – Heat and Mass Transfer**

**Short Content:**
The course provides an introduction to heat and mass transfer and introduces practical application in industry. Basic tools to design process operations involving heat transfer and mass transfer are covered.

**Objectives:**
The course aims to introduce basic concepts and principles of heat transfer encountered in mechanical engineering practice. It covers analytical, empirical and numerical techniques for the solution of heat transfer problems. At the end of course diffusion mass transfer will be introduced.

**Learning Outcomes:**
- Identify the mechanisms of heat transfer that occur simultaneously in practice.
- Solve one-dimensional heat conduction problems and obtain the temperature distributions within a medium.
- Solve steady conduction problems that involve multilayer rectangular, cylindrical, or spherical geometries.
- Analyze transient heat transfer problems and solve it when lumped system approach is applicable.
- Understand the limitations of analytical solutions of conduction problems, and the need for computation-intensive numerical methods.
- Calculate various characteristics of internal and external convection heat transfer problems.

**MATH204 – Discrete Mathematics**

**Short Content:**
Set theory; Relations and functions; Combinatorics; Induction; Recursion; Graph Theory.

**Objectives:**
- To extend student’s mathematical maturity and ability to deal with abstraction.
- To introduce most of the basic terminologies used in computer science courses.
- To train students how to apply ideas to solve practical problems.
- To provide students with the basic language and problem solving tools of discrete mathematics so they can use these in further study

**Learning Outcomes:**
- Translate statements and arguments into symbolic form and construct truth tables to evaluate these statements and arguments.
- Apply basic logic to the analysis of digital logic circuits.
- Construct direct proofs, proofs by contradiction, and proofs by mathematical induction.
- Classify types of graphs, find paths, circuits.
- Use combinations and permutations to find probabilities.

**CS302 – Algorithms and Data Structures**

**Short Content:**
Course is designed to present students the algorithmic toolbox for solving problems. The main goal of the course is for students to learn the algorithmic paradigms and data structures that enable them to solve computational problems in any field. At the end of the course, a student should be able to take a computational problem from any field and know what data structure and/or algorithm is applicable in that problem. The course develops data structures and relevant algorithms in parallel. Topics include: stacks, queues, arrays, sorting and searching, binary search trees, hashing, heaps, graphs and graph algorithms.

Objectives:
- The course presents to students how to design, implement and analyses data structures and algorithms for computer programs.
- Demonstrates and discusses computational complexity of algorithms and their comparative analysis.

Learning Outcomes:
- Define basic types of data structures like stacks, queues, sets, arrays, etc.
- Define, explain and use various algorithmic paradigms for problem-solving
- Modify existing and develop new efficient algorithms.
- Analyze complexity of algorithms
- Be able to recognize the appropriate algorithmic method to solve a newly given problem.

CS305 – Programming Languages
Short Content:
Course describes the fundamental concepts of programming languages by discussing the design issues of the various language constructs, examining the design choices for these constructs in some of the most common languages, and critically comparing design alternatives.

Objectives:
- Understand the principal goals and to introduce the main constructs of contemporary programming languages
- Provide students with the tools necessary for the critical evaluation of existing and future programming languages
- Prepare the student for the study of compiler design

Learning Outcomes:
- Identify the similarities and differences of various programming languages
- Implement different programming language for the same code solution
- Understand design PL methodology.
- Evaluate existing programming languages on their core concepts
- Identify various programming language design and construction

REQUIRED Courses for IE

ENS205 – Material Science
Short Content:
Discuss what is Materials Science and its basic concepts such as atomic structure of materials, atomic arrangements, crystal structure defects, atomic diffusion, mechanical and thermal behavior. Use phase diagrams to understand the microstructure-sensitive properties. Learn about failure due to plastic deformation beyond elastic limit under the loading and prevention of the system. Discuss application of Materials Science in production life in order to understand the environmental degradation and prevent it via selecting the suitable materials for the applied forces.
Objectives:
- Improve student's skills to analyze used materials
- Improve student's understanding of mechanical, thermal, and electrical factors on materials
- Use knowledge of materials in design and selection of work-parts

Learning Outcomes:
- Compare the Coulomb forces forming strong and weak bonds and keeping atoms and ions together
- Categorize the general arrangement type of atoms according to crystalline or amorphous structure
- Calculate the amount of diffusion according to whether the time is constant or not during diffusion process
- Analyze on phase diagram and properties, interpreting the microstructure variation gained from this phase diagram
- Relate each corrosion and protection methods
- Select suitable materials for the used area

ENS207 – Engineering Graphics
Short Content:
The course provides a background in descriptive geometry, orthographic projection, engineering drawing techniques, and computer-aided engineering graphics for undergraduate students. Point line and plane relationships in projection; multi-view engineering drawings; auxiliary and section views; basic dimensioning; engineering applications.

Objectives:
- Comprehend general projection theory, with emphasis on orthographic projection to represent three-dimensional objects in two-dimensional views (principal, auxiliary, sections).
- Introduce dimensioning and annotate two-dimensional engineering drawings.
- Introduce application of industry standards and best practices applied in engineering graphics.
- Emphasize freehand sketching to aid in the visualization process and to efficiently communicate ideas graphically.
- Introduce CAD software for the creation of 3D models and 2D engineering drawings.

Learning Outcomes:
- Describe and utilize both the scientific and empirical foundations for engineering design.
- Recognize basic geometrical relationships; parallelism, perpendicularity, angularity, co-linearity and concentricity.
- Use standard units of length used in industry, inches and millimeters, and the expression of fractional and decimal values.
- Use industry-standard Computer Aided Design (CAD) software to model solid objects proceeding from basic sketching techniques to the creation of solid features through the use of extrusions, cuts, rotations, patterns and sweeps.
- Communicate clearly and completely a multi-component, conceptual design by creating drawings that follow good engineering conventions and practices.

MATH201 – Linear Algebra
Short Content:
This course covers the following main areas: linear systems, their representation and their solution. Vector spaces, subspaces and linear transformations, the various concepts encountered in a classical linear algebra class, like independence, orthogonality, null space, solution space, kernel, dimensions... etc. Toward the end of the course, all the learned concepts are applied in different engineering fields: biology, statics, and electrical circuits.

Objectives:
- Explain the concepts of linear equations and matrices,
- Introduce various methods of solving linear equations
To provide students with good understanding of vector space, inner product spaces and linear transformation.

Explain the various use of determinants, independence, orthogonality and other concepts in linear systems and their solutions.

To connect linear algebra to other fields both within and without mathematics.

**Learning Outcomes:**
- Identify and represent linear systems in matrix form
- Solve linear systems of equations using various techniques
- Explain vector spaces and inner product spaces
- Identify linear transformation and extract transformation matrix for them
- Solve various linear algebra problems in abstract form and within applications in other fields like biology, mechanical engineering, electrical engineering and others.

**MATH203 – Introduction to Probability and Statistics**

**Short Content:**
This course covers the following topics: Axioms of probability, discrete and continuous probability distributions, conditional probability and Bayes theorem, discrete and continuous random variables, expectation, variance and standard deviation, binomial distribution, normal distribution, exponential, uniform and Poisson-distribution, Central limit theorem, sampling, confidence intervals, hypotheses testing (time permitting), Chebyshev inequality (time permitting).

**Objectives:**
- To give students a deep understanding of the fundamental principles of probability
- To provide students with counting skills necessary for computing discrete probabilities
- To illustrate a number of applications of probability and statistics in many sciences
- To give a good overview of common types of random variables: uniform, binomial, exponential, normal
- To give a basic understanding of sampling, confidence intervals and applications of the Central Limit Theorem.

**Learning Outcomes:**
- To understand the basic axioms of probability, conditional probability, independence of events and Bayes theorem and perform basic counting techniques (combinations, permutations).
- To compute probabilities, probability distributions, expectation and variance.
- To have a good understand of common types of random variables: uniform, exponential, normal etc.
- To understand the Central limit theorem and its applications
- To find confidence intervals for means with known standard deviation.

**MATH205 – Numerical Analysis**

**Short Content:**
Topics include the standard algorithms for numerical computation: root finding for nonlinear equations, interpolation and approximation of functions by simpler computational building blocks, numerical differentiation and divided difference, numerical quadrature and integration, numerical solutions of ordinary differential equations and boundary value problems, symmetric matrix eigenvalue problems, introduction to optimization.

**Objectives:**
- To develop numerical algorithms to provide solutions to common problems formulated in science and engineering
- To develop the basic understanding of the construction of numerical algorithms, and perhaps more importantly, the applicability and limits of their appropriate use
- To understand the guaranteed accuracy that various methods provide, the efficiency and scalability for large scale systems and issues of stability.

**Learning Outcomes:**
- Solve systems of linear and non-linear algebraic equations by using a range of methods.
- Apply numerical interpolation, approximation, integration and differentiation techniques in solving different kind of engineering problems.
- Use techniques for solving ordinary differential equations.
- Use MATLAB packages for solving problems by numerical methods.

**MATH202 – Differential Equations**

**Short Content:**
The course covers: First-order differential equations and solution methods; Modeling with Linear Equations. Second and higher order linear differential equations, undetermined coefficients, variation of parameters, Applications of Second Order Equations. series solutions, series solution around an ordinary point, series solution around a regular singular point, Euler equations and Bessel’s equations, Laplace transformation, models with second order equations, linear systems, numerical methods, nonlinear systems, boundary value problems, partial differential equations, separation of variables; heat conduction problem the wave equation; vibration of elastic strings and membranes, Laplace equation: steady state heat conduction further remarks on separation of variables; series of orthogonal functions Bessel and Legendre expansions.

**Objectives:**
- The goal of the course is to explain the main concepts and fundamental processes of differential equations, their solution techniques, and modeling engineering problems using differential equations.
- The course also provides also and modeling engineering problems using partial differential equations. Wave equation; vibration of elastic strings and membranes, diffusion equation, and Laplace equation are used in modeling.

**Learning Outcomes:**
- Solve first, second, and higher order differential equations
- Model engineering problems using first and second order ordinary differential equations
- Solve engineering problems formulated by the use of second order linear using partial differential equations.

**ENS213 – Programming for Engineers**

**Short Content:**
This course covers: Mechanics, Measurements, Importance and Applications; MATLAB Environment, Matrices and Operators, Plotting, Scripts; Functions, Scope, Selection; MATLAB and Math Applications.

**Objectives:**
The course aim is to provide students with knowledge about algorithms, codes, programming environment and programming concepts.

**Learning Outcomes:**
- To solve various engineering problems using computers and solutions of their own
- Write an algorithm for solving engineering problems
- Use MATLAB to visualize data sets and analyze them
- Document, implement and test solutions for programming problems

**MATH306 – Statistical Modeling**

**Short Content:**
The emphasis will be upon the understanding and use of statistical methodology, and the written communication of the results of data analysis.

**Objectives:**
The aims of this course are to study common statistical techniques. Students should gain practical experience in elementary data management and analysis techniques.

**Learning Outcomes:**
- Demonstrate ability to decide on appropriateness and the type of descriptive statistical techniques, tools and statistics software
• Estimate the important characteristics (parameters) of populations using data from properly selected
• Write a report about findings that will clearly/visually explain the results, attach all relevant output, and guide decision maker.
• Apply regression and correlation analysis techniques correctly using popular software.

ENS208 – Introduction to Manufacturing Systems

Short Content:
Introduction to Manufacturing Systems course focuses on analyses of work and its environmental circumstances in all engineering discipline. During the course basic concepts of Introduction to Manufacturing Systems such as casting, forming, machining, and joining processes for metals and non-metals will be discussed. Based on this knowledge, one of the main goals of this course is to understand machining fundamentals, processes and machines. Joining Processes such as Welding, Assembly with mechanical fasteners, will be discussed and surface finishing will also be considered.

Objectives:
• Introduce most used manufacturing processes to students
• Develop skills and give practical training for use of laser cutter and milling machine
• Provide basic knowledge of manufacturing

Learning Outcomes:
• Present basic manufacturing processes to colleagues
• Compare the basic manufacturing processes and gain the ability to classify the engineering materials and their behavior under various manufacturing processes.
• Calculate production rates, required powers and exposed forces and select suitable machines and presses.
• Evaluate manufacturing process plans
• Analyze the relation between manufacturing tolerances, surface quality and cost of those.
• Discuss how to plan manufacturing resources as material, machine, and tool.

IE301 – Production Planning I

Short Content:
This course will introduce students to materials management by learning the planning production process, master scheduling, material requirement and forecasting material demands and inventory levels.

Objectives:
This course equips students with knowledge of fundamental issues in production and inventory planning and control in manufacturing firms, at the same time, developing the students’ modeling and analytical skills. The course is targeted toward engineering students planning careers in technical consulting, business analysis in operations, logistics and supply-chain, positions in general management and future entrepreneurs. The students will be able to apply the techniques using MS EXCEL.

Learning Outcomes:
• Apply forecasting methods
• Understand the concept of dependent and independent demand
• Apply aggregate planning and Master Production Scheduling approaches
• Apply the capacity planning methodologies
• Understand the logic and applications of order release mechanisms such as MRP and JIT –based systems

IE303 – Operations Research I

Short Content:
This course covers how to formulate, analyze, and solve mathematical models that represent real-world problems and how to use EXCEL and other software packages for solving optimization problems.
Objectives:
Operations research (OR) have many applications in science, engineering, economics, and industry and thus the ability to solve OR problems are crucial for both researchers and practitioners. Being able to solve the real life problems and obtaining the right solution requires understanding and modeling the problem correctly and applying appropriate optimization tools and skills to solve the mathematical model. The goal of this course is to teach you to formulate, analyze, and solve mathematical models that represent real-world problems. We will also discuss how to use EXCEL and other software packages for solving optimization problems.

Learning Outcomes:
- Formulate a real-world problem as a mathematical programming model
- Understand the theoretical workings of the simple method for linear programming and perform iterations of it by hand
- Perform sensitivity analysis to determine the direction and magnitude of change of a model's optimal solution as the data change
- Understand the applications of, basic methods for, and challenges in integer programming
- Learn optimality conditions for single- and multiple-variable unconstrained and constrained non-linear

IE303 – Ergonomics

Short Content:
This course covers the use of ergonomic principles to recognize, evaluate, and control work place conditions that cause or contribute to employee safety and productivity issues.

Objectives:
Course emphasis is on office and foundry “shop floor” examples, covering analysis and design of workstations, equipment and workflow.

Learning Outcomes:
- Define ergonomics and its three major components
- Outline the components of an ergonomics program
- Describe how to evaluate, select and implement ergonomic solutions.

IE302 – Production Planning II

Short Content:
This course is about analytical methods used to support the production management function. For the beginning the course targets the MRP and JIT concepts. It will also cover stochastic scheduling techniques and their relation to the queuing theory.

Objectives:
To understand, develop and analyze production and inventory planning/control systems, and scheduling techniques by using engineering techniques for a complete production facility.

Learning Outcomes:
- Understand and apply the concept of dependent and independent materials demand
- Design, develop, and analyze a Master Production Schedule and a resultant Materials Requirement Plan (MRP) for a complete production facility
- Perform and analyze methods of evaluating operations location alternatives
- Apply classical statistical methods and control charts

IE304 – Operations Research II

Short Content:
This course covers how to formulate, analyze, and solve mathematical models that represent real-world problems and analyze problems that are uncertain in nature.

Objectives:
This is an undergraduate course, mostly on nondeterministic models in Operations Research. The primary objective is to present and study OR methods that can be applied to analyze and solve problems that are stochastic or uncertain in nature.

**Learning Outcomes:**

- Analyze and interpret solution results, and report in plain language.
- Construct models of such problems, and solve manually or using computer software.
- Develop the ability to recognize the nature of many uncertain or nonlinear real-world processes.
- Abstract from such real-world situations appropriate operations research models.

**IE306 – Simulation**

**Short Content:**
This course covers Monte Carlo methods and spreadsheet applications, generating random numbers and varieties, specifying input probability distributions, emphasizing stochastic simulation software. Applications address operations in manufacturing, distribution, transportation, communication, computer, health care, military, and service systems.

**Objectives:**
Objective of this course is to prepare students for the application of stochastic simulation where they will use it as a method for the design and analysis of systems.

**Learning Outcomes:**
- to construct logical simulation models and implement computational experiments using current software tools
- to analyze simulation output and correctly infer performance measures, to analyze and compare the performance of alternative designs
- to acquire and reduce input data required to calibrate simulation models
- to use the results of a simulation to verify the appropriateness of the probability model
- to use a simulation software to perform simulation

**IE307 – Quality and Reliability Engineering**

**Short Content:**
This course covers quality concepts and basic knowledge of quality and reliability in engineering.

**Objectives:**
- Introduce analyses of quality concepts
- Develop skills to analyze quality culture in companies
- Provide basic knowledge of quality and reliability in engineering

**Learning Outcomes:**
- apply continuous improvement techniques and basic quality concepts in analysis
- analyze a manufacturing process using appropriate control charts
- develop software for SPC analysis

**SPS103 – Law and Ethics**

**Short Content:**
The course will offer a broad introductory survey to Law and Ethics.

**Objectives:**
- To help students understand the complexities and “pros and cons” of moral, ethical and legal decision making, and to coherently present both sides of the argument.
- To emphasize students’ ability to critically assess information, including perspectives contrary to their own ones.
- To assist students to think beyond their geographic, social and religious borders.
• To ensure that students know the historical and geographic context of morals, ethics and law as well as the search for moral and ethical universality.
• To increase students’ ability to apply ethical theory to practical personal and professional decision-making.
• To increase students’ awareness and recognition that ethics is not just a matter of opinion.

Learning Outcomes:
• To examine and use basic ethical terms and concepts.
• To relate ethical concepts to different courses.
• To understand the interplay between law, ethics, and public policy.
• To demonstrate historical, analytical and comparative skills.

IE408 – Project Management

Short Content:
Project selecting, structuring, scheduling, budgeting, resource management and project control are the main topics.

Objectives:
This course introduces project management issues and techniques, which the students are required to apply to real-world projects.

Learning Outcomes:
• Explain the fundamentals of projects and the project management process.
• Demonstrate the use of project planning tools such as Gantt Charts, Critical Path Method, ProjectLibre, etc.
• Critically review a project plan with particular emphasis on identifying project risk.
• To learn how to use a computer software to manage the projects.

IE412 – Financial Engineering

Short Content:
This course is introducing the main terms in financial engineering such as: the time value of money, the investment setting, stock market analysis and financial ratio and earnings per share.

Objectives:
The focus of the course is to introduce students with the main terms in financial engineering such as: Quantitative methods; Corporate Finance; Debt investments.

Learning Outcomes:
• Understand financial engineering terms
• Derive alternative investment scenarios
• Combine different derivative instruments
• Construct financial portfolios

IE405 – Decision Analysis

Short Content:
This course cover: making decisions strategically, structure objectives, developing alternatives, thinking about uncertainty, decisions with uncertainty, multiple objectives and uncertainty, resource allocation

Objectives:
After finishing the course successfully, the IUS student shall be able to make decisions strategically, structure objectives, developing alternatives, multiobjective value analysis, thinking about uncertainty, decisions with uncertainty, multiple objectives and uncertainty, resource allocation.

Learning Outcomes:
• Understand how and where to use and how to present the descriptive statistical techniques, tools and statistics software.
• Estimate the important characteristics (parameters) of populations using data from properly selected samples.
• State, test and interpret hypotheses about parameters of common population models.
• Apply regression and correlation analysis techniques correctly using popular software.
• Use the one-way analysis of variance model, perform multiple comparisons, and interpret the results for decision makers.
• Write a report about findings that will clearly/visually explain the results, attach all relevant output, and guide decision

**IE413 – Manufacturing systems**

**Short Content:**
This course will provide an introduction to the design and analysis of manufacturing systems by introducing topics such as: Introduction to engineering drawing, Sheet-Metal Forming and Equipment, Rapid Prototyping, Machining Processes, Assembling: Manual and Automated assembly lines.

**Objectives:**
To develop knowledge in three areas: manufacturing processes and computer-integrated manufacturing systems, manufacturing system design and analysis, and modern manufacturing management strategies.

**Learning Outcomes:**
- To design and analyze manufacturing systems
- To design and analyze production and assembly lines
- To use software in design of conventional and non-conventional manufacturing processes

**AREA ELECTIVE / PROGRAM Courses**

**CS306 – Database Management**

**Short Content:**
The course introduces students to the topics in the field of database management and provides an opportunity to gain theoretical and practical understanding of the relational algebra and the concepts behind the relational model. Different data modeling concepts are discussed and students are able to demonstrate their knowledge in the task of database creation using complex SQL queries of relational databases.

**Objectives:**
- to introduce the field of database management.
- to introduce the concepts behind the relational model
- to introduce the relational algebra
- be familiar with data modelling concepts (E-R and Class diagrams) used in database development
- be able to create databases and complex SQL queries of relational databases.
- be familiar with a broad range of data management issues including data integrity and security.

**Learning Outcomes:**
- Draw ER Diagrams for databases and implement databases
- Develop commands to create database schemas, insert and manipulate data records and extract information from stored data.
- Apply the theoretical foundations of query languages to real-life problems
- Use SQL database language in MySQL
- Critically analyze and evaluate database designs in real-life contexts

**MAN231 – Financial Accounting**

**Short Content:**
This course covers next topics: Accounting and Business Environment, Recording Business Transactions, Completing the Accounting cycle, Merchandising Operations, Internal Control and Cash, Accounting of Plant Assets and Intangibles, Corporations, Statement of Cash Flow.
Objectives:
The course has an objective to offer students the knowledge of the main accounting principles, concepts as well as to offer the basic understanding why financial statements are created and published. Moreover this course helps students progress and understand other finance-based courses, and make a solid foundation for further accounting based courses.

Learning Outcomes:
- Record all basic business transactions that affect major business positions such as revenues and expenses, merchandising operations, inventory, cash and others
- Understand accounting terminology and be able to create and interpret financial statements
- Get a solid foundation for other accounting based courses such as Managerial Accounting

ECON301 – Econometrics

Short Content:
This course covers next topics: The Nature of Econometrics, Single Equation Regression Model, Two-Variable Regression Analysis, Classical Normal Linear Regression Model, Multiple Regression Analysis, Dummy Variable Regression Model, Multicollinearity.

Objectives:
This course emphasizes both the theoretical and the practical aspects of statistical analysis, focusing on techniques for estimating econometric models of various kinds and for conducting tests of hypothesis of interest to economists. The goal is to help you develop a solid theoretical background in introductory level econometrics, the ability to implement the techniques and to critique empirical studies in economics.

Learning Outcomes:
- Able to critically evaluate and analyze economic theories and phenomena by using empirical evidence
- Able to use econometric software
- Able to present results of analysis in a clear and concise manner

IE305 – Work Analysis and Design

Short Content:
This course contains: Introduction, defining work systems, Manual work and worker-machine system, Work flow and batch processing, Logistic operations, Service operations and office work, Methods engineering and operations analysis, Charting and diagramming techniques, Motion study and work design, Facility layout planning and design, Direct time study

Objectives:
- Understand work systems
- Be able to analyze work and working systems
- Draw general principles which can be applied to any type of work in order to recommend the best practice in terms of productivity, quality, safety, reliability by designing machine, equipment, space, workers etc.

Learning Outcomes:
- Understand the classification of work systems and how they work
- Collect data about work systems, analyze them and then offer the best practice worker and machine requirements
- Able to conduct line balancing
- Understand motion study and work design
- Apply methods engineering techniques
IE318 – Engineering Economics

Short Content:
This course contains topics such as: Time Value of Money, Equivalence Calculations Under Inflation, Present – Worth Analysis, Annual Equivalence Analysis, Rate of Return Analysis, Accounting for Depreciation and Income Taxes, Project Cash Flow Analysis, Handling Project Uncertainty, Replacement Decisions, Benefit – Cost Analysis, Understanding Financial Statements

Objectives:
Objective is to understand the principles of engineering economics and cost analysis and to develop an awareness of contemporary economic analysis methodologies relevant to systems engineering.

Learning Outcomes:
• To build a true understanding of the theoretical and conceptual basis upon which the practice of financial project analysis is built.
• To satisfy the very practical needs of the engineer toward making informed financial decisions when acting as a team member or project manager for an engineering project.
• To appeal to the full range of engineering disciplines for which this course is often required, as well as engineering technology

IE401 – Manufacturing Processes

Short Content:
Course explains various conventional and non-conventional manufacturing processes and their applications in industry: casting, metal forming, forging, extrusion, rolling, joining and welding, EDM, ECM, laser machining, abrasive flow processes.

Objectives:
This course aims to give students overview of modern manufacturing technology and introduce them with manufacturing processes, inspection methods and quality.

Learning Outcomes:
• Understand which are the capabilities, limitations, and potential of manufacturing
• Understand the competitive aspects of manufacturing processes
• Adopt the fundamentals of materials and processes
• Apply an analytical approach in manufacturing systems

IE402 – Integrated Manufacturing

Short Content:
Course introduce topics related to investigation of the product design process, automated transfer lines, automated assembly lines, assembly line balancing, flexible manufacturing systems, automated material handling, general scheduling theory and shop floor control.

Objectives:
This course equips students with knowledge about methods and practices in industrial design, prototyping, and manufacturing.

Learning Outcomes:
• Understand what is the integrated approach to manufacturing systems
• Recognize cutting edge technologies in manufacturing
• Understand the automation processes and material handling
• Compare the prototyping and manufacturing

IE404 – Logistics

Short Content:
Course introduce topics related to supply chain and logistics, strategic fit and scope, drivers and metrics, distribution networks and applications to e-Business, uncertain environment, demand forecasting, aggregate planning, economy of scale, optimal level of product availability, transportation, sourcing decisions.

Objectives:
This course equips students with knowledge of strategic importance of good supply chain management and logistics design, planning and operations for every firm.

Learning Outcomes:
- Understand the main components of Supply Chain
- Apply fit and scope strategy
- Design distribution networks
- Understand the applications of e-Business
- Recognize the uncertain environment

IE406 – Financial Analysis

Short Content:
This course introduce students with knowledge of quantifying alternatives for easier decision-making, encourage them to compare alternative proposals, and explains the main terms in finance such as benefit-cost analysis, project investments, depreciation, inflation.

Objectives:
This course aims to equip students with knowledge about main terms and processes for easier decision making in financing processes.

Learning Outcomes:
- Analyze and apply investment projects
- Understand financial statements
- Use financial statements properly
- Analyze financial statements and derive financial ratios

IE407 – Management Information Systems

Short Content:
The aim of the course is to introduce students with importance of IT in today business environment

Objectives:
Main objective is to introduce students with different types of information systems that are highly used by different types of business in order to help them recognize opportunities, make decision and eventually gain competitive advantage. Course also provides information which help students to recognize when it is necessary for the business to adopt new information system and which developmental approach to use.

Learning Outcomes:
- Elaborate the importance of IT in business environment.
- Understand the differences of applying different information systems
- Match business strategies and application of different information systems.
- To make differences between the approaches of developing information systems for particular needs of business.

IE409 – Reliability Analysis

Short Content:
Course covers topics related to design and assessment of engineering systems and processes for assuring reliability of performance; life distributions; life testing procedures; estimating system reliability; maintenance
and replacement models; data collection, storage and analysis for maintenance; computerized maintenance systems; total productive maintenance.

**Objectives:**
The focus of the course is on the key concepts of components and system reliability.

**Learning Outcomes:**
- Understand critical drivers of value in technology products, including reliability and durability
- Implement a process model and roadmap for improving reliability and robustness
- Understand and manage customer-driven requirements
- Improve the stability of production performance under stress conditions
- Use tools including descriptive and inferential statistics and DOE-based empirical models
- Assess both organizational and process capabilities for delivering robust and reliable products

**IE410 – Design of Experiments**

**Short Content:**
Course covers topics related to simple comparative experiments, factorial design, fitting regression model, and response surface method.

**Objectives:**
To provide the theoretical and applied framework needed to plan, design and conduct experiments, and analyze the results to obtain objective conclusions. Students will use standard statistical software packages for analyses (Excel, Stata, SPSS...).

**Learning Outcomes:**
- Ability to make engineering decisions about design, implementation, and analysis of an experiment.
- To conceive and conduct a designed experiment to characterize a process.
- To exhibit ability to write and present detailed information about the Design of Experiment project to others.
- To learn how to use a computer software to analyze experimental data

**IE411 – Forecasting**

**Short Content:**
Course covers topics such as: simple and multiple regression models; relaxing the assumptions of the classical model: multi-collinearity, heteroscedasticity, autocorrelation, model specification, demand patterns and filtering, horizontal models, trend models, quadratic models, regression, discounting and adaptive smoothing models, trigonometric models, seasonal models, adaptive control models, Box-Jenkins models.

**Objectives:**
The focus of the course is to encourage students to understand and research different topics which describes the main purpose of forecasting

**Learning Outcomes:**
- predict long-term forecasts
- integrate forecasting techniques for business applications
- distinguish different forecasting methods
- propose ARIMA models for time series

**IE414 – Stochastic Models**

**Short Content:**
Course covers topics such as: Markov chains: classification, recurrence, transience, limits theory. Renewal theory, Markov processes, birth-death processes, Applications to queuing, branching, and other models in science, engineering and business, Topics drawn from semi-Markov processes, martingales, Brownian motion.
Objectives:
The focus of the course is to encourage students to understand and research different terms related to stochastic models and discover the difference between simple and multiple regression models.

Learning Outcomes:
- Understand the basic model stochastic problems
- Apply they knowledge on stochastic processes
- Understand the main concept of randomness
- Realize the connection between stochastic theory and industrial engineering topics

IE415 – Scheduling and Sequencing

Short Content:
Course covers topics related to scheduling and sequencing problems such as single machine scheduling, parallel machine scheduling, flow shop scheduling, and job shop scheduling, sequence scheduling in a stochastic environment, and line balancing.

Objectives:
The focus of the course is on to cover deterministic scheduling and sequencing problems such as single machine scheduling, parallel machine scheduling, flow shop scheduling, and job shop scheduling, sequence scheduling in a stochastic environment, and line balancing.

Learning Outcomes:
- Assess sequencing rules
- Apply sequencing theory for a single machine
- Apply sequencing algorithms for multiple machines
- Balance an assembly line

IE416 – Supply Chain Management

Short Content:
Course covers topics related to supply chain performance, supply chain drivers and metrics, network design, demand forecasting, aggregate planning, planning demand and supply coordination in a supply chain, cycle inventory, safety inventory, optimal level of product availability, and transportation.

Objectives:
Main objectives of this course are to teach what creates a competitive advantage in SCM, to give understanding of global supply chain management, to identify facilities, inventory, transportation, information, sourcing, and pricing as the key drivers of supply chain performance and to evaluate supply chain decisions under uncertainty.

Learning Outcomes:
- understand supply chain management issues and what creates a competitive advantage
- identify supply chain management issues
- assess supply chain management decisions under uncertainty

IE417 – Facilities Design and Planning

Short Content:
Course covers topics related to design of production, distribution and inventory systems, process design, materials handling, work area design, storage and warehousing, service area planning, machine scheduling; number, size and location of facilities in a system; capacity planning; design of delivery routes.

Objectives:
Main objectives of this course is to cover the main concepts and techniques for analyzing, designing, and selecting facilities and material handling systems.
Learning Outcomes:
- Understand the basics of facility design
- Convey a comprehensive modeling approach covering different disciplines needed for facility design and planning
- Apply their knowledge to a real life projects
- Put their focus on theory-reality comparison

IE418 – Queuing Theory

Short Content:
Course covers topics related to Markovian queues and Jackson networks, Steady-state behavior of general service time queues. Priority queues. Approximation methods and algorithms for complex queues. Simulation, Dynamic programming; applications to inventory and queuing

Objectives:
The focus of the course is to present students the main terms related to Queuing Theory and encourage them to research and discover interesting new topics.

Learning Outcomes:
- Understand the basics about queuing theory
- Convey a comprehensive modeling approach for systems with queue
- Apply their knowledge to a real life projects
- Understand the advanced topics of industrial engineering

IE419 – Managerial Economics

Short Content:
Course covers topics related to Demand theory and analysis, Production and cost analysis, Perfect/imperfect competition, Product differentiation and markets, Pricing techniques and analysis, Human resource management and incentives, Business and economic forecasting.

Objectives:
The focus of the course is on to introduce students to analytical tools and theoretical economic concepts relevant to firm management.

Learning Outcomes:
- Understand the basics about managerial economics
- Understand theoretical economic concept
- Apply analytical tools in managerial economics
- Understand the economic concept relevant to firm management

IE420 – Technology and R&D Management

Short Content:
Course covers topics related to R&D management, New product and process development, Aggregate project planning, Innovation Management, Pre-project planning, Integrating technology and strategy, Design and evolution of technology strategies.

Objectives:
To combine management skills and leadership theories essential to generating products and excelling in today's global economy. To convey ability how to design jobs, organize hierarchies, resolve conflicts, motivate employees, and create an innovative work environment. Discover how superior management skills can increase funding, generate profit, and improve the effectiveness of technologically based organizations. To outline the challenging issues related to diversity in science and technology organizations and provides insights as to how diversity can be used to enhance creativity.

Learning Outcomes:
- Understand technology life cycle as well as technology transfer and sourcing
• Understand approaches to innovation and distinguish closed innovation from open innovation principles.
• Understand approaches of new product and process development

**IE421 – Total Quality Management**

**Short Content:**
Course covers topics related to Total Quality Approach to Quality Management, Quality and Global Competitiveness, Strategic Management, Ethics, and Corporate Social Responsibility, Partnering and Strategic Alliances, Quality Culture: Changing Hearts, Minds, and Attitudes, Customer Satisfaction, Retention, and Loyalty, Employee Empowerment, Leadership and Change.

**Objectives:**
The focus of the course is on the key concepts, models, and methods that enable managers to effectively manage the development and utilization of technologies. The goal is to develop an awareness of the range, scope, and complexity of the phenomena, issues, and problems related to economics and management of technology and technological innovations.

**Learning Outcomes:**
• Understand the complex issues surrounding the managerial tasks with respect to technology
• Effectively manage the development and utilization of technologies
• Understand the integration of technology, operations and business strategy

**IE425 – Computer Aided Design and Manufacturing**

**Short Content:**
Course covers topics related to Product development process, Basics of computer graphics and geometric representations, Solid modeling, Assembly modeling, Dimensioning, parameterization, constraints, CNC machining.

**Objectives:**
To introduce students with a general understanding of fundamental CAD/CAM concepts; learned how to use commercial CAD/CAM software for engineering design; and learned how CAD/CAM can be used in the different stages of design and manufacture of a product.

**Learning Outcomes:**
• take active role in product design and development process as well as prototyping
• model 3D part and assemblies using SolidWorks program
• understand the concepts of computer-aided manufacturing and a number of applied associated processes
• analyze the part design using one of the computational methods (e.g. stress analysis)

**IE430 – Special Topics in Industrial Engineering**

**Short Content:**
This course is interdisciplinary and covers many main topics in industry such as design, manufacturing, supply and systems aspects of sustainability engineering.

**Objectives:**
The course will introduce students with the case for global sustainability, Life Cycle Assessment (LCA), energy management, design for the environment, carbon footprint analysis, degradation studies, ethical consumerism, and computer modeling.

**Learning Outcomes:**
• Evaluate life cycle analyses of products and/or processes and propose strategies for addressing environmental impact while still meeting design and economic requirements.
• Conduct a material selection with a goal of reducing the environmental impact of a product and/or process while simultaneously reducing material costs.
• Propose design changes to a product to enhance recycling, reuse and/or remanufacturing capability with consideration of the economics of these activities.

**IE440 – Current Topics in Industrial Engineering**

**Short Content:**
This course is interdisciplinary and covers many main topics in industry such as Integration of multinational part fabrication into uniform products, Embedded and emergent intelligence, Control architectures, Global supply and distribution chains; data management decision making, Autonomy and self-optimization.

**Objectives:**
The main objective of this course is to review and discuss the latest trends and developments in Industrial and Manufacturing Engineering, such as investigating new, intelligent, and agile control architectures and decision making approaches to deal with disturbances and risks.

**Learning Outcomes:**
• Apply the techniques, skills and modern engineering tools necessary for engineering practice
• Communicate effectively
• Understand and formulate modern engineering problems

**IE450 – Seminars in Industrial Engineering**

**Short Content:**
This course is interdisciplinary and covers many main topics from industry.

**Objectives:**
To give students specialist knowledge in their field of study as well as basic knowledge in a broader area, with a focus on research assignments that are suggested by the academic supervisor. This includes developing of the students’ skills such as literature search and analysis, mapping techniques, and techniques for collecting, analyzing, and assessing data, but also to acquire linguistic proficiency and comprehension skills as well as the ability to present ideas and arguments effectively through discussions, presentations and writing.

**Learning Outcomes:**
• Acquire professional expertise for identifying technical issues related to industrial engineering
• Identify the trends in R&D and an international grasp of the field
• Acquire skills in solve problems and provide creative ideas
• Acquire skills to explain concepts, develop arguments

**PSY311 – Organizational Psychology**

**Short Content:**
This course includes topics like: Roots and History of organizational psychology, Motivation, Job satisfaction, Work stress and Well being, Counterproductive Work Behaviors (fluctuation and absenteeism), Communication, Work Groups & Teams.

**Objectives:**
To understand the basic concepts of organizational psychology, theory, research and practice in organizational psychology, to understand the basic principles of selection and evaluation of staff performance and expand understanding of motivation and leadership

**Learning Outcomes:**
• evaluate the work performance of employees
• describe the motivating factors of employees
• compare and contrast models of motivation and leadership
• identify important psychological issues that affect employees - motivation to work, job satisfaction, stress
• evaluate and enhance job satisfaction