| Competencies Families | Specific Learning Outcomes (Computer Systems and Networks) | |
|---|---|---|
| **Family 1**<br>*Scientific and Technical Tools* | **SLO1** | Gaining advanced knowledge of computing theories, methods, practices and scientific tools for engineering. |
| | **SLO2** | Applying computing engineering to analyze, solve and optimize complex problems in practical engineering fields. |
| | **SLO3** | Demonstrating advanced proficiency in computer systems infrastructure, security protocols, and network technologies for designing and implementing innovative solutions within appropriate contexts. |
| **Family 2**<br>*Technological Skills* | **SLO4** | Acquiring practical skills in relevant sub-areas of the field of computer systems and networks at Master level. |
| | **SLO5** | Designing a research or project plan on the basis of a realistic problem description in the field of computer science and can contribute to its progress with original solutions. |
| | **SLO6** | Applying complex systems and software development and management principles, methodologies, techniques, and tools to innovatively and creatively analyze, design, implement and evaluate systems and applications at various complexity levels. |
| | **SLO7** | Selecting appropriate hardware, software, tools, and technologies to develop, integrate, test, configure and maintain secure computer infrastructure, networks, systems, and applications that satisfy the users' needs while considering relevant risks and latest technological advances. |
| | **SLO8** | Designing, planning, and implementing resilient network architectures while integrating robust security measures to safeguard data integrity, confidentiality, and availability within diverse computing environments. |

| | | |
|---|---|---|
| | **SLO9** | Conducting experiments on networked applications and distributed systems, and be able to properly interpret data that result from such experiments. |
| | **SLO10** | Designing and implementing of IT infrastructures, secure communication systems and protocols. |
| **Family 3**<br><br>*Communication and Managerial Skills* | **SLO11** | Developing the required soft and foreign language communicative as well as managerial skills. |
| | **SLO12** | Communicating effectively to demonstrate the results, knowledge, skills, and advanced principles in a variety of professional contexts. |
| **Family 4**<br><br>*Self-development, Innovation and Projects* | **SLO13** | Collaborating effectively within teams to manage projects successfully, design, develop, and implement innovative solutions. |
| | **SLO14** | Working with autonomy as a responsible citizen, constructive decision-maker, and cooperative team member based on universal ethics and principles with the ability to develop entrepreneur and leadership skills and actively participating in serving the society. |

| Semester | Subject | Coefficient | ECTS | Total Workload | Lecture / Tutorials | Lab | Project / Self-directed Study | Private Study |
|---|---|---|---|---|---|---|---|---|
| 1 | **Methods / Skills Modules (8 ECTS)** | | | | | | | |
| | Engineering Mathematics | 2 | 4 | 120 | 45 | - | - | 75 |
| | Probability and Stochastic Processes | 2 | 4 | 120 | 45 | - | - | 75 |
| | **Technical CORE Modules (16 ECTS)** | | | | | | | |
| | Algorithms and Programming | 2 | 4 | 120 | 30 | 30 | - | 60 |
| | Computer Networks | 2 | 4 | 120 | 40 | 20 | - | 60 |
| | Operating Systems | 2 | 4 | 120 | 30 | 15 | - | 75 |
| | Electronic System Design | 2 | 4 | 120 | 30 | 30 | 20 | 40 |
| | **Management, Leadership, and Academic Skills Modules (6 ECTS)** | | | | | | | |
| | Engineering Professional Practice | 1,5 | 3 | 90 | 30 | - | - | 60 |
| | Advanced English for the University 1 | 1,5 | 3 | 90 | 30 | - | - | 60 |

| Semester | Subject | Coefficient | ECTS | Total Workload | Lecture / Tutorials | Lab | Project / Self-directed Study | Private Study |
|---|---|---|---|---|---|---|---|---|
| 2 | **Methods / Skills Modules (8 ECTS)** | | | | | | | |
| | Advanced Mathematics for Engineers | 2 | 4 | 120 | 25 | 20 | 15 | 60 |
| | *Students must complete 1 course by 3 of 4 ECTS from those listed below* | | | | | | | |
| | Numerical Methods | 2 | 4 | 120 | 40 | 20 | - | 60 |
| | Optimization Techniques | 2 | 4 | 120 | 25 | 20 | - | 75 |
| | Discrete Mathematics | 2 | 4 | 120 | 45 | - | - | 75 |
| | **Technical CORE Modules (16 ECTS)** | | | | | | | |
| | Automata, Computability, and Complexity | 2 | 4 | 120 | 45 | - | - | 75 |
| | Databases and Web Services | 1,5 | 3 | 90 | 20 | 25 | 20 | 25 |
| | *Students must complete 3 courses by 6 of 3 ECTS from those listed below* | | | | | | | |
| | Secure and Dependable Systems | 1,5 | 3 | 90 | 30 | - | - | 60 |
| | Computer Systems Architecture | 1,5 | 3 | 90 | 20 | 25 | - | 45 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Web Systems Engineering | 1,5 | 3 | 90 | 15 | 30 | - | 45 |
| | Object Oriented Design and Patterns | 1,5 | 3 | 90 | 45 | - | - | 45 |
| | Paradigms of Programming | 1,5 | 3 | 90 | 25 | 20 | - | 45 |
| | Linear Systems, Signals & Control | 1,5 | 3 | 90 | 30 | 15 | - | 45 |
| | **Management, Leadership, and Academic Skills Modules (6 ECTS)** | | | | | | | |
| | Entrepreneurship and Intrapreneurship | 1,5 | 3 | 90 | 30 | - | 20 | 40 |
| | Advanced English for the University 2 | 1,5 | 3 | 90 | 30 | - | - | 60 |

| Semester | Subject | Coefficient | ECTS | Total Workload | Lecture / Tutorials | Lab | Project / Self-directed Study | Private Study |
|---|---|---|---|---|---|---|---|---|
| 3 | **Technical CORE Modules (20 ECTS)** | | | | | | | |
| | ***Mandatory Modules (16 ECTS)*** | | | | | | | |
| | System Administration and Security | 2,25 | 4 | 120 | 20 | 25 | - | 75 |
| | Network Architectures and Services | 2,25 | 4 | 120 | 30 | 15 | - | 75 |
| | Network and Internet Technology and Design | 2,25 | 4 | 120 | 30 | 15 | - | 75 |
| | Real Time Systems | 2,25 | 4 | 120 | 40 | 20 | 20 | 40 |
| | ***Elective Modules (4 ECTS)*** *Students must complete 1 course by 5 of 4 ECTS from those listed below* | | | | | | | |
| | Stochastic Modeling and Network Simulation | 2 | 4 | 120 | 20 | 20 | 20 | 60 |
| | Software Architecture | 2 | 4 | 120 | 30 | 15 | - | 75 |
| | Artificial Intelligence Techniques | 2 | 4 | 120 | 45 | - | - | 75 |
| | Mobile Applications Development | 2 | 4 | 120 | 15 | 30 | - | 75 |
| | Advanced Databases | 2 | 4 | 120 | 20 | 25 | - | 75 |
| | | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Management, Leadership, and Academic Skills Modules (8 ECTS)** | | | | | | | |
| | Developing, Funding and Commercialising Technology | 2 | 4 | 120 | 60 | - | - | 60 |
| | Academic English for Postgraduates (Engineering) | 2 | 4 | 120 | 45 | - | - | 75 |
| | **Projects and Internships (2 ECTS)** | | | | | | | |
| | Junior Internship | - | 2 | - | - | - | 60 | - |

| Semester | Subject | Coefficient | ECTS | Total Workload | Lecture / Tutorials | Lab | Project / Self-directed Study | Private Study |
|---|---|---|---|---|---|---|---|---|
| 4 | **Technical CORE Modules (24 ECTS)** | | | | | | | |
| | ***Mandatory Modules (16 ECTS)*** | | | | | | | |
| | Cyber Security | 2 | 4 | 120 | 30 | 15 | - | 75 |
| | Distributed Systems | 2 | 4 | 120 | 30 | 15 | - | 75 |
| | Wireless and Mobile Technology | 2 | 4 | 120 | 40 | - | 40 | 40 |
| | Clouds, Grids and Virtualisation | 2 | 4 | 120 | 30 | 15 | 15 | 60 |
| | ***Mandatory Elective Modules (4 ECTS)***<br>*Students must complete 1 course by 5 of 4 ECTS from those listed below* | | | | | | | |
| | Advanced Administration Network Services | 2 | 4 | 120 | 30 | 15 | - | 75 |
| | Advanced Routing | 2 | 4 | 120 | 20 | - | 40 | 60 |
| | Protocols Engineering | 2 | 4 | 120 | 20 | - | 25 | 75 |
| | Performance of Networked Systems | 2 | 4 | 120 | 45 | - | - | 75 |
| | Wireless Sensor Networks | 2 | 4 | 120 | 25 | 20 | - | 75 |
| | | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ***Elective Modules (4 ECTS)***<br>*Students must complete 1 course by 5 of 4 ECTS from those listed below* | | | | | | | |
| | Machine Learning | 2 | 4 | 120 | 45 | - | - | 75 |
| | Web Science & Engineering | 2 | 4 | 120 | 30 | - | - | 90 |
| | Data Analytics | 2 | 4 | 120 | 25 | 20 | - | 75 |
| | Wireless IoT and Local Area Networks | 2 | 4 | 120 | 30 | 15 | - | 75 |
| | Data Acquisition and Sensor Networks | 2 | 4 | 120 | 15 | 30 | - | 75 |
| | **Management, Leadership, and Academic Skills Modules (6 ECTS)** | | | | | | | |
| | IT Project Management | 1,5 | 3 | 90 | 30 | 15 | 15 | 30 |
| | Research, Planning and Communication | 1,5 | 3 | 90 | 30 | - | - | 60 |

| Semester | Subject | Coefficient | ECTS | Total Workload | Lecture / Tutorials | Lab | Project / Self-directed Study | Private Study |
|---|---|---|---|---|---|---|---|---|
| 5 | **Technical CORE Modules (16 ECTS)** | | | | | | | |
| | ***Mandatory Modules 1 (8 ECTS)*** | | | | | | | |
| | Network Security | 2,5 | 4 | 120 | 30 | 15 | - | 75 |
| | Audit and Security | 2,5 | 4 | 120 | 20 | 20 | 20 | 60 |
| | ***Mandatory Elective Modules 1 (4 ECTS)***<br>*Students must complete 1 course by 5 of 4 ECTS from those listed below* | | | | | | | |
| | Cyber Risk Management | 2,5 | 4 | 120 | 45 | - | - | 75 |
| | Cyber Data Analytics | 2,5 | 4 | 120 | 30 | 15 | - | 75 |
| | Penetration Testing | 2,5 | 4 | 120 | 20 | 20 | 20 | 60 |
| | Advanced Threat Protection | 2,5 | 4 | 120 | 20 | - | 40 | 60 |
| | Next Generation Networks | 2,5 | 4 | 120 | 20 | - | - | 100 |
| | ***Elective Modules (4 ECTS)***<br>*Students must complete 1 course by 5 of 4 ECTS from those listed below* | | | | | | | |
| | Neural Networks and Deep Learning | 2 | 4 | 120 | 30 | 15 | - | 75 |
| | Multi-Agent Systems | 2 | 4 | 120 | 45 | - | - | 75 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | DevOps | 2 | 4 | 120 | 30 | 15 | 15 | 60 |
| | Blockchain Engineering | 2 | 4 | 120 | 30 | - | 30 | 60 |
| | Quantum Informatics | 2 | 4 | 120 | 25 | 20 | - | 75 |
| | **Management, Leadership, and Academic Skills Modules (6 ECTS)** | | | | | | | |
| | ***Mandatory Modules 2 (3 ECTS)*** | | | | | | | |
| | Legal and Ethical Aspects of Computer Science | 1,5 | 3 | 90 | 45 | - | - | 45 |
| | ***Mandatory Elective Modules 2 (3 ECTS)***<br>*Students must complete 1 course by 4 of 3 ECTS from those listed below* | | | | | | | |
| | Agile Leadership and Strategic Management | 1,5 | 3 | 90 | 30 | - | 20 | 40 |
| | Strategic Management of Technology and Innovation | 1,5 | 3 | 90 | 30 | - | 20 | 40 |
| | Transformational Change Management | 1,5 | 3 | 90 | 30 | - | 20 | 40 |
| | Organizational Behavior | 1,5 | 3 | 90 | 30 | - | 20 | 40 |
| | **Projects and Internships (8 ECTS)** | | | | | | | |
| | ***Mandatory Modules 3 (3 ECTS)*** | | | | | | | |
| | Senior Internship | - | 3 | 90 | - | - | 90 | - |
| | | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ***Mandatory Elective Modules 3 (5 ECTS)***<br>*Students must complete 1 course by 4 of 5 ECTS from those listed below* | | | | | | | |
| | Literature Survey | 2,5 | 5 | 150 | - | - | 150 | - |
| | Research Project Computer Science | 2,5 | 5 | 150 | - | - | 150 | - |
| | Joint Interdisciplinary Project (JIP) | 2,5 | 5 | 150 | - | - | 150 | - |
| | Interdisciplinary Advanced AI Project | 2,5 | 5 | 150 | - | - | 150 | - |

| Semester | Subject | Coefficient | ECTS | Total Workload | Lecture / Tutorials | Lab | Project / Self-directed Study | Private Study |
|---|---|---|---|---|---|---|---|---|
| 6 | **Projects and Internships (30 ECTS)** | | | | | | | |
| | Final Graduate Project | - | 30 | 900 | - | - | 900 | - |