

## Study program Overview: Information and Communication Technologies – MSc (2024-2027)

|   |   |
|---|---|
| Name of the institution                           | University of Prishtina “Hasan Prishtina”                       |
| Faculty/Department:                               | Faculty of Electrical and Computer Engineering                  |
| Main and/or Branch Campus:                        | Main Campus   |
| Name of the study programme:                      | <b>Information and Communication Technologies</b>               |
| Level of qualification according to NQF:          | Level VII   |
| Academic degree or the name of Diploma:           | Master of science in Information and Communication Technologies |
| ECTS:   | 120   |
| Profile of the academic program (specialization): | <b>Information and Communication Technologies – ICT</b>         |
| Minimum duration of studies:                      | 2 years   |
| Number of study places:                           | 20  |

### Year of study: I

#### Semester I

| No | M/E | Subjects                                  | L | NE | LE | ECTS | Lecturer       |
|----|-----|---|---|----|----|------|----------------|
| 1  | M   | Network Planning and Optimization         | 3 | 0  | 1  | 6    | Bujar Krasniqi |
| 2  | M   | Applied Digital Signal Processing         | 3 | 0  | 1  | 6    | Hena Maloku    |
| 3  | M   | Wireless Communications 1                 | 3 | 0  | 1  | 6    | Mimoza Ibrani  |
| 4  | M   | Information theory and coding             | 3 | 0  | 1  | 6    | Zana Limani    |
| 5  | M   | Methodology of Scientific Research in ICT | 3 | 0  | 1  | 6    | Dept.          |

#### Semester II

| No  | M/E | Subjects                             | L | NE | LE | ECTS | Lecturer                   |
|---|-----|--------------------------------------|---|----|----|------|----------------------------|
| 1   | M   | Advanced Networks and Performance    | 3 | 0  | 1  | 6    | Hena Maloku/ Mimoza Ibrani |
| 2   | M   | Wireless Communications II           | 3 | 0  | 1  | 6    | Enver Hamiti               |
| 3   | M   | Machine learning in networking       | 3 | 0  | 1  | 6    | Zana Limani                |
| Elective subjects (select one of the following electives) |     |                                      |   |    |    |      |                            |
| 4-1   | E   | Wireless Communications – LAB        | 2 | 0  | 1  | 6    | Zana Limani                |
| 4-2   | E   | Advanced Communication Networks lab  | 2 | 0  | 1  | 6    | Dept.                      |
| 4-3   | E   | Advanced Programming for ICT         | 2 | 0  | 1  | 6    | Zana Limani                |
| 4-4   | E   | Image Processing and Computer Vision | 2 | 0  | 1  | 6    | Hena Maloku                |
| Elective subjects (select on of the following electives)  |     |                                      |   |    |    |      |                            |

|     |   |                                       |   |   |   |   |                |
|-----|---|---------------------------------------|---|---|---|---|----------------|
| 5-1 | E | Advanced Project Management in ICT    | 2 | 0 | 0 | 6 | Dept./Industry |
| 5-2 | E | Regulation and Standardization in ICT | 2 | 0 | 0 | 6 | Bujar Krasniqi |

## Year of study: II

### Semester III

| No   | M/E | Subjects  | L | NE | LE | ECTS | Lecturer                 |
|--|-----|---|---|----|----|------|--------------------------|
| 1  | M   | Networks and Communications Security                | 2 | 0  | 1  | 6    | Bujar Krasniqi           |
| 2  | M   | Internship  | 1 | 0  | 0  | 6    | Dept.                    |
| <b>Elective subjects (select three of the following electives)</b> |     |   |   |    |    |      |                          |
| 3-1  | E   | Software-defined radio and cognitive radio networks | 2 | 0  | 2  | 6    | Hena Maloku/ Zana Limani |
| 3-2  | E   | Vehicular Communications                            | 2 | 0  | 2  | 6    | Hena Maloku/ Zana Limani |
| 3-3  | E   | Selected Topics in Multimedia Communications        | 2 | 0  | 2  | 6    | Hena Maloku              |
| 3-4  | E   | Selected Topics in Networking and Communications    | 2 | 0  | 2  | 6    | Mimoza Ibrani            |
| 3-5  | E   | mmWave Communications                               | 2 | 0  | 2  | 6    | Dept.                    |
| 3-6  | E   | Satellite Communications                            | 2 | 0  | 2  | 6    | Dept.                    |
| 3-7  | E   | Microwave Systems                                   | 2 | 0  | 2  | 6    | Enver Hamiti             |
| 3-8  | E   | Advanced Optical Communications                     | 2 | 0  | 2  | 6    | Dept./Industry           |
| 3-9  | E   | Innovation and Technology Transfer                  | 2 | 0  | 2  | 6    | Dept./Industry           |
| 3-10   | E   | Next Generation Networks                            | 2 | 0  | 2  | 6    | Dept.                    |
| 3-11   | E   | Strategic Management                                | 2 | 0  | 2  | 6    | Nora Sadiku Dushi        |

### Semester IV

| No | M/E | Subjects         | L | NE | LE | ECTS | Lecturer                           |
|----|-----|------------------|---|----|----|------|------------------------------------|
| 1  | M   | Diploma thesis + | - | -  | -  | 30   | To be appointed by Faculty Council |

## Mission and objectives

The mission of the master program in ICT follows the mission of faculty and university, educating and providing candidates the knowledge and competencies to solve difficult engineering problems, to implement complex systems, to act as a leader of a team, and to conduct research and development in the field of ICT.

Furthermore, the European Commission Digital Agenda for the Western Balkans calling for capacity building on ICT, aiming training for a new generation of researchers and engineers that will promote

interdisciplinary collaboration across Europe, is still an actual call for investment in ICT education. Investment in the quality of education, teaching, learning and innovation, especially in the area of ICT, increase economic competitiveness and unlock the economic potential of smaller countries, especially for those with high unemployment rates.

([https://ec.europa.eu/commission/presscorner/detail/en/IP\\_18\\_4242](https://ec.europa.eu/commission/presscorner/detail/en/IP_18_4242) ).

The structure of the program is designed so that students can obtain in-depth knowledge in: the field of information theory, advanced digital signal processing and applications, wireless communications and advanced communications networks.

The second semester of master studies provides students with practical and scientific knowledge of wireless networks as well as software-defined radio with the possibility of advancement of their knowledge through the choice of four courses from two different groups of courses. The first group of supplementary courses is mainly composed of lab-oriented courses, while the second group is related to project management, scientific research methodologies, regulation and standardization as well as IoT, and advanced machine learning. In the third semester, students have networks and communications security as a compulsory course, while in the elective group, they can choose up to four courses from specialized and emerging areas of ICT such as vehicular communication, multimedia communications, cloud networking, satellite communications, millimeter wave communications, microwave systems and technology transfer innovation. The proposed master program integrates the theory developed with modern teaching methodology as well as the lab and experimental research assignments carried out in the relevant ICT laboratories.

Therefore, this study program will contribute to the formation of a modern profile of graduates in telecommunications / ICT engineering by meeting the demands of the labor market.

In particular, the proposed MSc ICT program by FECE is the unique study program in Kosovo that offers a combination of Information processing technologies, Communication technologies, Innovation, transfer of technology and research methods courses, fostering the development of a new generation of researchers and ICT engineers that will impact the national and regional technological development.

The definition of objectives for the ICT Master's study program follows the FECE mission as well as labor market requirements and scientific research in this field. The FECE is an academic unit, based on Article 6 of the UP Statute, that supports the three-pronged missions of the University of Prishtina, providing high quality education, advanced professional and scientific knowledge through applications, and scientific research in specific fields. The ICT study program will prepare potential students for a successful career in the modern world. The graduates will be prepared to continue further doctoral studies in ICT and related fields.

**The basic program objectives are:**

- To develop creative and innovative capacities in problem consideration, solution proposals and critical thinking in ICT.
  
- To offer contemporary master's level education in the field of ICT, aiming at a high degree of comparability with those of the EU.
- Continually advance with new knowledge, competencies and skills that are offered to be in line with industry requirements.
- To produce capable candidates for further scientific, research and development work assignments, prepared for 3<sup>rd</sup> cycle studies and other lifelong study patterns.

**The general competencies obtained through the study programme are:**

- Sufficient knowledge of information theory and Information systems, wireless communications and network security.
- Analyze and evaluate platforms and proposed solutions in the field of ICT.
- Solve complex theoretical and practical problems in the field of ICT.
- Achieve a sufficient level of knowledge of radio communication software and communication networks.
- Demonstrates in-depth skills in planning and optimizing wireless networks and RF networks in general.
- Provide professional experience, advice, and expertise on the labour market as well as relevant institutions and organizations.
- Start independent ICT research and/or development projects in one of the emerging ICT subdisciplines.

**Expected learning outcomes**

Upon completion of this program, the student will be able to:

- Identify, define, describe and analyze complex problems in the field of ICT
- Interpret solutions for challenges in ICT by using proper methodologies and tools
- Implement and validate a system to meet requirements of the state of the art in ICT.
- Discuss efficiently and persuasively, in oral and written form with the ICT Community.
- Work efficiently as an individual or in teams
- Implement projects in the field of ICT that bring solutions with benefits to society.
- Track and evaluate the technology advancements and progress in the field of ICT.