BIOMEDICAL ENGINEERING, 1st CYCLE (BACHELOR)
SCOPE OF DIPLOMA: MEDICAL INFORMATICS AND ARTIFICIAL INTELLIGENCE

| | | Hours | | | | | I | | | | | | II | | | | | | III | | | | | | IV | | | | | | V | | | | | | VI | | | | | | VII | | | | |
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| | **Basic courses** | **Total** | **W** | **C** | **L** | **P** | **W** | **C** | **L** | **P** | **E** | **ECTS** | **W** | **C** | **L** | **P** | **E** | **ECTS** | **W** | **C** | **L** | **P** | **E** | **ECTS** | **W** | **C** | **L** | **P** | **E** | **ECTS** | **W** | **C** | **L** | **P** | **E** | **ECTS** | **W** | **C** | **L** | **P** | **E** | **ECTS** | **W** | **C** | **L** | **P** | **ECTS** |
| **1** | Physical Education | **60** | | **60** | | | | 30 | | | | | | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **2** | Foreign Language | **120** | | **120** | | | | 30 | | | | 2 | | 30 | | | | 2 | | 30 | | | | 2 | | 30 | | | E | 2 | | | | | | | | | | | | | | | | | |
| **3** | Techniques And Tools For Communication | **30** | **15** | **15** | | | 15 | 15 | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **4** | Introduction To Entrepreneuship | **30** | **30** | | | | | | | | | | 30 | | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **5** | Intellectual Property Protection | **15** | **15** | | | | | | | | | | | | | | | | 15 | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| **6** | Mathematics For Engineers | **30** | | **30** | | | | 30 | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **7** | Mathematics | **150** | **60** | **90** | | | | | | | | | 30 | 60 | | | E | 8 | 30 | 30 | | | E | 3 | | | | | | | | | | | | | | | | | | | | | | | |
| **8** | Informatics And Basics Of Programming | **30** | **10** | | **20** | | 10 | | 20 | | E | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **9** | Engineering Graphics | **30** | | | **30** | | | | 30 | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **10** | Fundamentals Of Biomedical Engineering | **120** | **40** | | **80** | | 40 | | 80 | | E | 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **11** | Physics | **105** | **30** | **60** | **15** | | | | | | | | | 30 | | | | 2 | 15 | 30 | | | | 3 | 15 | | 15 | | | 2 | | | | | | | | | | | | | | | | | |
| **12** | Introduction to Anatomy and Physiology | **30** | | **30** | | | | | | | | | | | | | | | | 30 | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | |
| **13** | Biomedical Data | **60** | | | **60** | | | | | | | | | | 60 | | E | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **14** | Engineering Technologies In Medicine And Sports | **60** | **30** | | **30** | | | | | | | | 30 | | 30 | | E | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **15** | Iintroduction To Problem Based Learning | **45** | | | | **45** | | | | | | | | | | 45 | | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **16** | Elective Course | **150** | **150** | | | | | | | | | | 30 | | | | | 2 | 30 | | | | | 2 | 30 | | | | | 2 | 30 | | | | | 2 | 30 | | | | | 2 | | | | | |
| **17** | Practice | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | | | | | |
| **18** | Bachelor Project | **45** | | | | **45** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 45 | 15 |
| | **MEDICAL INFORMATICS AND ARTIFICIAL INTELLIGENCE** | **1110** | **380** | **405** | **235** | **90** | **65** | **105** | **130** | | | **28** | **120** | **150** | **90** | **45** | | **32** | **90** | **120** | | | | **13** | **45** | **30** | **15** | | | **6** | **30** | | | | | **2** | **30** | | | | | **6** | | | | **45** | **15** |
| **M1** | **Fundamentals of Human Sciences** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **1** | Introduction to Medical Sciences | **15** | **15** | | | | | | | | | | | | | | | | 15 | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| **2** | Radiological Anatomy | **15** | **15** | | | | | | | | | | | | | | | | | | | | | | 15 | | | | | 1 | | | | | | | | | | | | | | | | | |
| **M2** | **Informatics** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **3** | Computer Programming | **60** | **30** | | **30** | | | | | | | | | | | | | | 30 | | 30 | | E | 5 | | | | | | | | | | | | | | | | | | | | | | | |
| **4** | Algorithms and Data Structures | **30** | **15** | | **15** | | | | | | | | | | | | | | 15 | | 15 | | | 3 | | | | | | | | | | | | | | | | | | | | | | | |
| **5** | Numerical Methods | **60** | **30** | | **30** | | | | | | | | | | | | | | | | | | | | 30 | | 30 | | E | 5 | | | | | | | | | | | | | | | | | |
| **6** | Object-Oriented Programming | **75** | **15** | | **30** | **30** | | | | | | | | | | | | | | | | | | | 15 | | 30 | | | 3 | | | | | | | | | | 30 | | 2 | | | | | |
| **7** | Computer-Aided Calculations | **60** | | | **30** | **30** | | | | | | | | | | | | | | | | | | | | | 30 | | | 2 | | | | 30 | | 2 | | | | | | | | | | | |
| **8** | Databases and Medical Data Archiving | **45** | **15** | | **30** | | | | | | | | | | | | | | | | | | | | | | | | | | 15 | | 30 | | | 3 | | | | | | | | | | | |
| **9** | Computer Networks and Communication in Medicine | **60** | **15** | | **30** | **15** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 15 | | 30 | 15 | | 4 | | | | | |
| **10** | Design of Applications with Graphical User Interface | **90** | **30** | | **30** | **30** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 30 | | 30 | 30 | 4 |
| **11** | Graphical Programming | **45** | **15** | | **15** | **15** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 15 | | 15 | 15 | 3 |
| **12** | Computer Graphics | **30** | **15** | | **15** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 15 | | 15 | | 2 |
| **M3** | **Biomedical Data Processing** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **13** | Statisitics in Data Analysis | **30** | **15** | | **15** | | | | | | | | | | | | | | 15 | | 15 | | | 3 | | | | | | | | | | | | | | | | | | | | | | | |
| **14** | Biomedical Data Acquisition | **30** | | | | **30** | | | | | | | | | | | | | | | | 30 | | 2 | | | | | | | | | | | | | | | | | | | | | | | |
| **15** | Medical Imaging Techniques | **60** | **30** | | **15** | **15** | | | | | | | | | | | | | | | | | | | 30 | | 15 | 15 | E | 5 | | | | | | | | | | | | | | | | | |
| **16** | Medical Signal Processing | **30** | **15** | | **15** | | | | | | | | | | | | | | | | | | | | 15 | | 15 | | | 2 | | | | | | | | | | | | | | | | | |
| **17** | Medical Image Analysis | **90** | **30** | | **30** | **30** | | | | | | | | | | | | | | | | | | | | | | | | | 30 | | 30 | | E | 5 | | | | 30 | | 2 | | | | | |
| **18** | Data Mining | **75** | **15** | | **30** | **30** | | | | | | | | | | | | | | | | | | | | | | | | | 15 | | 30 | | | 3 | | | | 30 | | 2 | | | | | |
| **19** | Bioimage Informatics | **60** | **15** | | **15** | **30** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 15 | | 15 | 30 | | 3 | | | | | |
| **M4** | Artificial Intelligence | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **20** | Introduction to Artificial Intelligence | **30** | **15** | | **15** | | | | | | | | | | | | | | | | | | | | 15 | | 15 | | | 2 | | | | | | | | | | | | | | | | | |
| **21** | Machine Learning | **60** | **15** | | **15** | **30** | | | | | | | | | | | | | | | | | | | | | | | | | 15 | | 15 | 30 | E | 5 | | | | | | | | | | | |
| **22** | Text Mining | **60** | **15** | | **15** | **30** | | | | | | | | | | | | | | | | | | | | | | | | | 15 | | 15 | 30 | | 5 | | | | | | | | | | | |
| **23** | Deep Learning | **60** | **15** | | **15** | **30** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 15 | | 15 | 30 | E | 4 | | | | | |
| **24** | Introduction to Computational Oncology | **60** | **15** | | **15** | **30** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 15 | | 15 | 30 | E | 4 | | | | | |
| **M5** | Medical Equipment | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **25** | Circuit Theory | **30** | **15** | | **15** | | | | | | | | | | | | | | 15 | | 15 | | E | 3 | | | | | | | | | | | | | | | | | | | | | | | |
| **26** | Introduction to Electronics | **45** | **30** | | **15** | | | | | | | | | | | | | | | | | | | | 30 | | 15 | | | 4 | | | | | | | | | | | | | | | | | |
| **27** | Embedded Systems | **45** | **15** | | **30** | | | | | | | | | | | | | | | | | | | | | | | | | | 15 | | 30 | | | 3 | | | | | | | | | | | |
| **28** | Electronic Medical Equipment | **45** | **30** | | | **15** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 30 | | | 15 | | 3 | | | | | |
| **29** | Reliability of Biomedical Systems | **30** | **15** | | **15** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 15 | | 15 | | 2 |
| **30** | Artificial Organs | **30** | **15** | | **15** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 15 | | 15 | | 2 |
| **M6** | Other courses | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **31** | Scientific Text Typesetting | **30** | **15** | | **15** | | | | | | | | | | | | | | | | | | | | | | | | | | 15 | | 15 | | | 2 | | | | | | | | | | | |
| **32** | Foreign Language in Biomedical Engineering | **30** | | **30** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 30 | | | 2 |
| | | **1515** | **540** | **30** | **555** | **390** | | | | | | | | | | | | | **90** | | **75** | **30** | | **17** | **150** | | **150** | **15** | | **24** | **120** | | **165** | **90** | | **28** | **90** | | **75** | **210** | | **24** | **90** | **30** | **90** | **45** | **15** |
| | **Total** | **2625** | **920** | **435** | **790** | **480** | **65** | **105** | **130** | | | **28** | **120** | **150** | **90** | **45** | | **32** | **180** | **120** | **75** | **30** | | **30** | **195** | **30** | **165** | **15** | | **30** | **150** | | **165** | **90** | | **30** | **120** | | **75** | **210** | | **30** | **90** | **30** | **90** | **90** | **30** |
| | | **Total/Hours per week** | | | | | **300** | | | | | **20** | **405** | | | | | **27** | **405** | | | | | **27** | **405** | | | | | **27** | **405** | | | | | **27** | **405** | | | | | **27** | **300** | | | | **20** |

**Programme valid from the academic year: 2023/2024**