# MASTER'S DEGREE IN BIOMEDICAL ENGINEERING

## DEGREE PROGRAMME 2024/25

Course contents are available at this link

**1st year (CAGLIARI)**

| Sem | Teaching course | SSD* | TAF* | Credits | h |
|---|---|---|---|---|---|
| 1 | Advanced Biomedical Signal Processing | ING-INF/06 | B | 6 | 55 |
| | Integrated course: Digital Phenotyping | | | | |
| 1 | - Module: Bioengineering of the Motor System | ING-IND/34 | B | 6 | 45 |
| 1 | - Module: Digital Biomarkers and Processing Techniques | ING-INF/06 | B | 6 | 53 |
| | Integrated Course: Numerical and Statistical Methods for Bioengineering | | | | |
| 1 | - Module: Statistical Methods for Bioengineering | ING-IND/26 | C | 3 | 30 |
| 1 | - Module: Numerical Methods for Bioengineering | MAT/08 | C | 6 | 45 |
| 1 | Ethics and Law of Digital Healthcare | IUS/20 | F | 3 | 24 |
| 2 | Multimodal Bioimaging *(in streaming)* | ING-INF/06 | B | 6 | 50 |
| ***Curriculum on Information Engineering*** | | | | | |
| 2 | Electronic Systems for Precision Medicine | ING-INF/01 | C | 9 | 90 |
| 2 | Microwave Imaging Technologies | ING-INF/02 | C | 6 | 45 |
| ***Curriculum on Industrial Engineering*** | | | | | |
| 2 | Bioengineering of Tissue-Organ Systems and Artificial Organs | ING-IND/24 | C | 6 | 60 |
| 2 | Clinical Applications of Personalized Medicine | ING-IND/34 | B | 9 | 68 |

**2nd year (PAVIA)**

| Sem | Teaching course | SSD* | TAF* | Credits | h |
|---|---|---|---|---|---|
| | Integrated course: Biology and Bioinformatics | | | | |
| 1 | - Module: Advanced Cell Biology and Elements of Genomics *(in streaming)* | BIO/13 | B | 6 | 45 |
| 1 | - Module: Bioinformatics and Synthetic Biology | ING-INF/06 | B | 9 | 76 |
| 1 | Foundations of Telemedicine | ING-INF/06 | B | 6 | 62 |
| 1 | Advanced Sensors for Precision Medicine | ING-INF/06 | B | 6 | 45 |
| 2 | Computational Learning in Biomedicine | ING-INF/06 | B | 9 | 80 |

**Additional credits to be acquired**

| Sem | Teaching course | SSD* | TAF* | Credits | h |
|---|---|---|---|---|---|
| | 1 course from Tab 1 - curriculum on Information Engineering | | C | 6 | |
| | 1 course from Tab 2 - curriculum on Industrial Engineering | | C | 6 | |
| | Elective activities[1] | | D | 9 | |
| | Final Examination | | E | 18 | |

**TOTAL CREDITS 120**

(1) The elective activities must be consistent with the personal educational plan and they need approval by the Degree Programme Board.

**Tab 1. Courses TAF C Curriculum on Information Engineering (1 from the list)**

| Sem | Teaching course | SSD* | TAF* | Credits | h |
|---|---|---|---|---|---|
| | **1st year** | | | | |
| 1 | Cybersecurity | ING-INF/05 | C | 6 | 60 |
| 2 | Nanotechnology for Diagnostic and Therapeutic Applications | CHIM/07 | C | 6 | 60 |
| 2 | Virtual Reality and Neurorehabilitation Models | ING-INF/06 | C | 6 | 55 |
| 2 | Materials and Devices for Innovative Sensors | ING-INF/06 | C | 6 | 45 |
| 2 | Fabrication Technologies for Biosensing | ING-INF/06 | C | 6 | 60 |
| 2 | Radiofrequency Technologies for Therapeutic Treatments | ING-INF/02 | C | 6 | 45 |
| 2 | Management of Investment Projects in the Health Sector | ING-IND/35 | C | 6 | 45 |
| | **2nd year** | | | | |
| 1 | Medical Decision Making and Decision Analysis | ING-INF/06 | C | 6 | 56 |
| 1 | Pharmacometrics | ING-INF/06 | C | 6 | 74 |
| 2 | Design of Telemedicine System | ING-INF/06 | C | 9 | 66 |

**Tab 2. Courses TAF C Curriculum on Industrial Engineering (1 from the list)**

| Sem | Teaching course | SSD* | TAF* | Credits | h |
|---|---|---|---|---|---|
| | **1st year** | | | | |
| 2 | Nanotechnology for Diagnostic and Therapeutic Applications | CHIM/07 | C | 6 | 60 |
| 2 | Risk Assessment And Management In Healthcare Facilities | ING-IND/33 | C | 6 | 50 |
| 2 | Power Electronics For Medical Devices | ING-IND/32 | C | 6 | 60 |
| 2 | Ergonomics For Health Care | ING-IND/34 | C | 6 | 45 |
| 2 | Virtual Reality And Neurorehabilitation Models | ING-INF/06 | C | 6 | 55 |
| | Integrated Course: Materials Technology and Computational Methods | | | | |
| 2 | - Module: Computational Methods | ICAR/08 | C | 3 | 30 |
| 2 | - Module: Materials Technology | ING-IND/22 | C | 3 | 30 |
| 2 | Management of Investment Projects in the Health Sector | ING-IND/35 | C | 6 | 45 |
| | **2nd year** | | | | |
| 1 | Pharmacometrics | ING-INF/06 | C | 6 | 74 |
| | Integrated course: Health Technologies Management | | | | |
| | - Module: Health Technologies Management - Mod. A | ING-IND/35 | C | 3 | 23 |
| | - Module: Health Technologies Management - Mod. B | ING-IND/35 | C | 3 | 23 |

**Other optional activities**

| Sem | Teaching course | SSD | TAF | CFU | Ore |
|---|---|---|---|---|---|
| | **1st year (Cagliari)** | | | | |
| 2 | Radiological Integration in Healthcare Processes | MED/36 | D | 3 | 24 |

***Abbreviations**

| | |
|---|---|
| SSD | Scientific Disciplinary Sector |
| TAF | Type of Educational Activity |