

## URV Engineering School (ETSE) – Course 2024-25 –

### Subjects taught in English (Bachelor Degrees)

General information for incoming mobility students is available [here](#).

The tables in this document show, from left to right, the name of the course, the semester in which it is taught (*Fall*- September to January, *Spring*-February to June), the number of ECTS and the code of the course. Each study has a link to a web page with extensive information about it, including the Program of Studies and the Teaching Guide, which contains detailed information about each course.

#### Mathematical and Physics Engineering – GEMiF

|                               |        |   |          |
|-------------------------------|--------|---|----------|
| COMBINATORICS AND PROBABILITY | Fall   | 6 | 17274102 |
| CLASSICAL MECHANICS           | Fall   | 6 | 17274106 |
| THERMODYNAMICS                | Spring | 6 | 17274112 |
| QUANTUM PHYSICS               | Spring | 6 | 17274108 |
| STATISTICAL MECHANICS         | Fall   | 6 | 17274116 |
| ALGEBRAIC STRUCTURES          | Spring | 6 | 17274118 |

#### Electronic and Automation Engineering-GEEliA

|                   |        |   |          |
|-------------------|--------|---|----------|
| TECHNICAL ENGLISH | Spring | 6 | 17204102 |
| EMBEDDED SYSTEMS  | Spring | 3 | 17204206 |

#### Electrical Engineering-GEE

|                            |        |   |          |
|----------------------------|--------|---|----------|
| TECHNICAL ENGLISH          | Spring | 6 | 17214102 |
| ENVIRONMENTAL TECHNOLOGIES | Spring | 3 | 17214112 |

#### Computer Engineering – GEI

|                                  |        |   |          |
|----------------------------------|--------|---|----------|
| TECHNICAL ENGLISH                | Spring | 6 | 17234102 |
| MOBILE AND EMBEDDED APPLICATIONS | Fall   | 6 | 17234125 |
| FORMAL LANGUAGES                 | Spring | 6 | 17234110 |

#### Techniques for Developing Web and Mobile Applications – GTDAWIM

No courses taught in English.

### **Biomedical Engineering-GEB**

|   |        |     |          |
|---|--------|-----|----------|
| BIOMEDICAL IMAGE PROCESSING                           | Spring | 4.5 | 17254119 |
| COMPUTATIONAL BIOLOGY AND ANALYSIS OF BIOMEDICAL DATA | Spring | 4.5 | 17254115 |
| BIOMATERIALS ENGINEERING AND TISSUE REGENERATION I    | Spring | 3   | 17254116 |
| BIOMECHANICS II                                       | Fall   | 4.5 | 17254123 |
| MANAGEMENT OF HEALTH INFRASTRUCTURES                  | Fall   | 6   | 17254124 |
| INNOVATION AND ENTREPRENEURSHIP                       | Spring | 4.5 | 17254128 |
| NANOTECHNOLOGIES APPLIED TO BIOMEDICINE               | Spring | 3   | 17254208 |
| BIOCHEMISTRY  | Spring | 6   | 17254011 |

### **Telecommunication Systems and Services Engineering-GESST**

|                                 |        |   |          |
|---------------------------------|--------|---|----------|
| TECHNICAL ENGLISH               | Spring | 6 | 17244102 |
| INNOVATION AND ENTREPRENEURSHIP | Spring | 6 | 17244131 |
| EMBEDDED SYSTEMS                | Spring | 3 | 17244212 |

### **Courses common to all bachelor degrees**

BACHELOR'S THESIS (12 ECTS)

### **Master studies**

Bachelor students may also take Master-level courses to complete their Learning Agreements with subjects that are more specialized (although they should be aware that the academic level is higher). The following Master degrees are presential and are offered fully in English:

- [Master on Computer Engineering Security and Artificial Intelligence](#)
- URV-UB-UPC [Interuniversity Master on Artificial Intelligence](#) (important: Erasmus students can only take the URV courses, not the UB or UPC courses).

## URV Engineering School (ETSE) – Course 2024-25

**Subjects taught in Catalan/Spanish in which the lecturers provide personalized tutoring services in English (course material, personalized learning support, exercises, exams, etc.)**

Note: ERASMUS students should check the availability of the English tutoring service in the subjects in which they are interested before starting the mobility process, by sending a message to the [mobility coordinator](#) of the degree.

### Mathematical and Physics Engineering-GEMiF

|   |        |     |          |
|---|--------|-----|----------|
| LINEAR ALGEBRA                          | Fall   | 7.5 | 17274001 |
| MATHEMATICAL ANALYSIS I                 | Fall   | 7.5 | 17274002 |
| PHYSICS I                               | Fall   | 9   | 17274003 |
| MATHEMATICAL ANALYSIS II                | Spring | 7.5 | 17274005 |
| DIFFERENTIAL EQUATIONS I                | Spring | 6   | 17274006 |
| PHYSICS II                              | Spring | 9   | 17274007 |
| GEOMETRY                                | Spring | 7.5 | 17274008 |
| ELECTROMAGNETISM                        | Fall   | 6   | 17274104 |
| ALGEBRAIC COMPUTATION                   | Fall   | 6   | 17274103 |
| DIFFERENTIAL EQUATIONS II               | Spring | 6   | 17274105 |
| STATISTICS                              | Spring | 6   | 17274107 |
| GRAPH THEORY                            | Spring | 6   | 17274111 |
| NUMERICAL METHODS                       | Spring | 6   | 17274109 |
| BIOPHYSICS                              | Fall   | 6   | 17274113 |
| COMPLEX ANALYSIS                        | Fall   | 6   | 17274101 |
| PHYSICS OF FLUIDS                       | Fall   | 6   | 17274114 |
| PHYSICS OF THE SOLID STATE AND SURFACES | Fall   | 6   | 17274115 |
| DYNAMICAL SYSTEMS                       | Spring | 6   | 17274110 |
| PHYSICAL ELECTRONICS                    | Spring | 6   | 17274117 |
| OPTICS AND PHOTONICS                    | Fall   | 6   | 17274121 |
| APPLIED ELECTRONICS                     | Fall   | 6   | 17274120 |

GEMiF also includes, as optional courses, some subjects from other studies such as GEI or GEEIiA. Please check with the GEMIF mobility coordinator the availability of these optional courses.

**Electronic and Automation Engineering-GEEIIA**

|   |               |       |                     |
|---|---------------|-------|---------------------|
| CHEMICAL FUNDAMENTALS OF ENGINEERING                          | Fall          | 6     | 17204010            |
| CIRCUIT THEORY I / CIRCUIT THEORY II                          | Fall / Spring | 6 / 5 | 17204105 / 17204106 |
| STATISTICS AND TRANSFORMED METHODS                            | Fall          | 6     | 17204009            |
| THERMODYNAMICS AND HYDRAULICS                                 | Fall          | 6     | 17204117            |
| FUNDAMENTALS OF ELECTRICAL INSTALLATIONS                      | Spring        | 5     | 17204116            |
| FUNDAMENTALS OF ELECTRICAL MACHINES                           | Spring        | 5     | 17204115            |
| FUNDAMENTALS OF ELECTRONICS                                   | Spring        | 5     | 17204107            |
| MACHINES AND MECHANISMS                                       | Spring        | 5     | 17204121            |
| SCIENCE AND RESISTANCE OF MATERIALS                           | Spring        | 5     | 17204122            |
| ANALOGUE ELECTRONICS  | Fall          | 6     | 17204109            |
| DIGITAL ELECTRONICS   | Fall          | 6     | 17204108            |
| INDUSTRIAL COMPUTER SCIENCE I /INDUSTRIAL COMPUTER SCIENCE II | Fall / Fall   | 6 / 6 | 17204119 / 17204120 |
| POWER ELECTRONICS   | Fall          | 6     | 17204110            |
| AUTOMATIC CONTROL   | Spring        | 6     | 17204123            |
| ELECTRONIC EQUIPMENT  | Spring        | 6     | 17204112            |
| INSTRUMENTATION   | Spring        | 6     | 17204113            |
| MICROCONTROLLERS  | Spring        | 6     | 17204111            |
| AUTOMATION  | Fall          | 6     | 17204103            |
| ELECTRONIC POWER SYSTEMS                                      | Fall          | 6     | 17204114            |
| SYSTEMS MODELLING AND PROCESS CONTROL                         | Fall          | 6     | 17204124            |
| FINAL PROJECT   | Spring        | 3     | 17204126            |
| INDUSTRIAL ORGANISATION                                       | Spring        | 6     | 17204118            |
| ROBOTIZED SYSTEMS   | Spring        | 6     | 17204104            |
| AUDITING OCCUPATIONAL RISK PREVENTION                         | Fall          | 3     | 17204214            |
| CONTROL OF ELECTRICAL MACHINES                                | Fall          | 6     | 17204231            |
| OPTOELECTRONIC MECHANISMS AND SYSTEMS                         | Fall          | 3     | 17204258            |
| AUTOMATION PERIPHERALS  | Spring        | 3     | 17204260            |
| INTRODUCTION TO MOBILE ROBOTS                                 | Spring        | 3     | 17204210            |
| MANAGING THE POWER OF ELECTRIC VEHICLES                       | Spring        | 3     | 17204208            |
| PROJECT MANAGEMENT  | Spring        | 3     | 17204212            |
| RENEWABLE ENERGIES  | Spring        | 6     | 17204223            |

**Electrical Engineering-GEE**

|                                      |               |       |                        |
|--------------------------------------|---------------|-------|------------------------|
| CHEMICAL FUNDAMENTALS OF ENGINEERING | Fall          | 6     | 17214010               |
| CIRCUIT THEORY I / CIRCUIT THEORY II | Fall / Spring | 6 / 5 | 17214105 /<br>17214106 |
| STATISTICS AND TRANSFORMED METHODS   | Fall          | 6     | 17214009               |
| THERMODYNAMICS AND HYDRAULICS        | Fall          | 6     | 17214117               |
| FUNDAMENTALS OF ELECTRICAL MACHINES  | Spring        | 5     | 17214115               |
| FUNDAMENTALS OF ELECTRONICS          | Spring        | 5     | 17214107               |
| SCIENCE AND RESISTANCE OF MATERIALS  | Spring        | 5     | 17214122               |
| ELECTRICAL MACHINES                  | Fall          | 6     | 17214120               |
| POWER ELECTRONICS                    | Fall          | 6     | 17214110               |
| DESIGN OF ELECTRICAL MACHINES        | Spring        | 6     | 17214123               |
| FUNDAMENTALS OF AUTOMATIC CONTROL    | Spring        | 6     | 17214104               |
| RENEWABLE ENERGIES                   | Spring        | 6     | 17214109               |
| AUTOMATION                           | Fall          | 6     | 17214103               |
| CONTROL OF ELECTRICAL MACHINES       | Fall          | 6     | 17214124               |
| LIGHTING ENGINEERING                 | Fall          | 3     | 17214113               |
| INDUSTRIAL ORGANISATION              | Spring        | 6     | 17214118               |
| POWER STATIONS                       | Fall          | 6     | 17214108               |
| ELECTRICAL POWER SYSTEMS             | Spring        | 6     | 17214114               |
| TRANSPORT OF ELECTRICAL ENERGY       | Fall          | 6     | 17214127               |

**Computer Engineering – GEI**

|  |        |   |          |
|--|--------|---|----------|
| PROGRAMMING                            | Fall   | 6 | 17234114 |
| DISCRETE MATHEMATICS II                | Spring | 6 | 17234010 |
| COMPUTER STRUCTURE                     | Spring | 6 | 17234108 |
| ANALYSIS AND DESIGN OF APPLICATIONS    | Spring | 6 | 17234105 |
| COMPUTER ARCHITECTURE                  | Fall   | 6 | 17234109 |
| ARTIFICIAL INTELLIGENCE                | Spring | 6 | 17234134 |
| COMPILERS                              | Fall   | 6 | 17234127 |
| REAL-TIME SYSTEMS                      | Fall   | 6 | 17234124 |
| COMPUTERIZED VISION                    | Spring | 6 | 17234130 |
| ELECTRONIC COMMERCE SYSTEMS            | Spring | 6 | 17234121 |
| INFORMATION SYSTEMS IN ORGANIZATIONS   | Fall   | 6 | 17234122 |
| NETWORK SECURITY                       | Spring | 6 | 17234120 |
| DATA NETWORKS                          | Fall   | 6 | 17234118 |
| STATISTICS                             | Fall   | 6 | 17234011 |
| DISTRIBUTED SYSTEMS                    | Spring | 6 | 17234106 |
| ADVANCED PROGRAMMING TECHNIQUES        | Fall   | 6 | 17234117 |
| MOBILE APPLICATIONS AND SERVICES       | Spring | 6 | 17234267 |
| ADVANCED PROGRAMMING OF MOBILE DEVICES | Fall   | 6 | 17234268 |

**Techniques for Developing Web and Mobile Applications – GTDAWIM**

|  |      |   |          |
|--|------|---|----------|
| ADVANCED PROGRAMMING TECHNIQUES          | Fall | 6 | 17264117 |
| ADVANCED PROGRAMMING OF MOBILE DEVICES   | Fall | 6 | 17264138 |
| ADVANCED DEVELOPMENT OF WEB APPLICATIONS | Fall | 6 | 17264121 |

**Biomedical Engineering-GEB**

|   |               |       |                        |
|---|---------------|-------|------------------------|
| PROGRAMMING   | Fall          | 6     | 17254013               |
| FUNDAMENTALS OF COMMUNICATION I /<br>FUNDAMENTALS OF COMMUNICATION II | Fall / Spring | 6 / 6 | 17254015 /<br>17254106 |
| ANALYSIS OF LINEAR CIRCUITS AND SYSTEMS                               | Fall          | 6     | 17254014               |
| DATA ANALYSIS AND BIOSTATISTICS                                       | Fall          | 6     | 17254105               |
| BIOFLUID MECHANICS  | Fall          | 6     | 17254010               |
| PHYSIOLOGY  | Spring        | 7.5   | 17254107               |
| ANALOGUE ELECTRONICS  | Spring        | 4.5   | 17254109               |
| BIOPHYSICS  | Spring        | 6     | 17254012               |
| DIGITAL ELECTRONICS   | Fall          | 6     | 17254108               |
| DIGITAL TREATMENT OF BIOSIGNALS                                       | Fall          | 6     | 17254113               |
| DATA NETWORKS AND INTERNET  | Fall          | 6     | 17254114               |
| PHYSIOPATHOLOGY   | Fall          | 4.5   | 17254111               |
| ADVANCED MEDICAL PHYSICS  | Fall          | 3     | 17254110               |
| SENSORS AND INSTRUMENTS FOR BIOMEDICINE                               | Spring        | 4.5   | 17254120               |
| BIOMECHANICS I  | Spring        | 3     | 17254117               |
| TECHNOLOGIES FOR SENSOR NETWORKS, THE IOT<br>AND SMART CITIES         | Spring        | 4.5   | 17254121               |
| BIG DATA INFRASTRUCTURES  | Spring        | 6     | 17254118               |
| BIOMATERIALS ENGINEERING AND TISSUE<br>REGENERATION II                | Fall          | 3     | 17254122               |
| SENSORS AND MOBILE TECHNOLOGIES<br>LABORATORY FOR BIOENGINEERING      | Fall          | 3     | 17254125               |
| MEDICAL ROBOTICS  | Fall          | 4.5   | 17254126               |
| TELEMEDICINE  | Spring        | 4.5   | 17254129               |
| EQUIPMENT FOR MONITORING, DIAGNOSIS AND<br>THERAPY                    | Spring        | 3     | 17254127               |
| SMART HEALTH  | Spring        | 3     | 17254209               |
| OMICS TECHNOLOGY AND DATA HANDLING                                    | Fall          | 4.5   | 17254112               |



**Telecommunication Systems and Services Engineering-GESST**

|  |               |       |                        |
|--|---------------|-------|------------------------|
| PROGRAMMING  | Fall          | 6     | 17244010               |
| ANALYSIS OF CIRCUITS AND LINEAR SYSTEMS                                      | Fall          | 6     | 17244009               |
| FUNDAMENTALS OF COMMUNICATION I /<br>FUNDAMENTALS OF COMMUNICATION II        | Fall / Spring | 6 / 6 | 17244103 /<br>17244108 |
| DIGITAL ELECTRONICS  | Fall          | 6     | 17244105               |
| DATA NETWORKS AND THE INTERNET   | Fall          | 6     | 17244104               |
| INFRASTRUCTURES FOR BIG DATA   | Spring        | 6     | 17244106               |
| ANALOGUE ELECTRONICS   | Spring        | 5     | 17244107               |
| WAVE TRANSMISSION AND PROPAGATION  | Spring        | 5     | 17244110               |
| RADIO-FREQUENCY ENGINEERING  | Spring        | 5     | 17244111               |
| TELECOMMUNICATIONS LABORATORY  | Spring        | 3     | 17244109               |
| DIGITAL SIGNAL PROCESSING  | Fall          | 6     | 17244113               |
| DIGITAL COMMUNICATIONS   | Fall          | 6     | 17244112               |
| EMITTERS AND RECEIVERS   | Fall          | 6     | 17244116               |
| ANTENNAS AND RADIOPROPAGATION  | Fall          | 6     | 17244119               |
| MICROCONTROLLERS AND EMBEDDED SYSTEMS  | Fall          | 6     | 17244117               |
| TECHNOLOGIES FOR SENSOR NETWORKS, THE<br>INTERNET OF THINGS AND SMART CITIES | Spring        | 4.5   | 17244121               |
| TELEPHONY AND MOBILE COMMUNICATIONS  | Spring        | 6     | 17244120               |
| SENSORS AND INSTRUMENTATION  | Spring        | 4.5   | 17244118               |
| TELECOMMUNICATION PROJECTS   | Fall          | 6     | 17244128               |
| BROADBAND AND OPTICAL COMMUNICATIONS   | Fall          | 6     | 17244134               |
| MOBILE SENSORS AND TECHNOLOGIES<br>LABORATORY                                | Fall          | 3     | 17244132               |
| INDUSTRIAL TELECOMMUNICATIONS AND<br>ELECTROMAGNETIC COMPATIBILITY           | Spring        | 3     | 17244135               |
| TELEMEDICINE   | Spring        | 3     | 17244219               |
| NETWORK MANAGEMENT   | Spring        | 6     | 17244136               |
| MOBILE APPLICATIONS AND SERVICES<br>LABORATORY                               | Fall          | 3     | 17244228               |
| ADVANCED PROGRAMMING OF MOBILE DEVICES                                       | Fall          | 6     | 17244138               |
| ENERGY MANAGEMENT IN<br>TELECOMMUNICATION SYSTEMS                            | Fall          | 3     | 17244129               |
| NETWORK DESIGN / NETWORK SECURITY  | Fall / Spring | 6 / 6 | 17244130 /<br>17244123 |
| DISTRIBUTED TELEMATIC SYSTEMS  | Spring        | 6     | 17244223               |
| NETWORK APPLICATION ARCHITECTURES  | Fall          | 6     | 17244213               |
| NETWORK MODELLING  | Fall          | 6     | 17244124               |
| WEBSITE ENGINEERING  | Fall          | 6     | 17244125               |
| MOBILE APPLICATIONS AND SERVICES   | Spring        | 6     | 17244115               |
| MULTIMEDIA SERVICES  | Spring        | 6     | 17244114               |