

## DOUBLE DIPLOMA ON COMMUNICATIONS ELECTRONIC ENGINEERING (B.ENG) AND TELEMATICS ENGINEERING (B.ENG.) (CODE 59ET)

**ACADEMIC YEAR 2023-2024**

### FIRST YEAR

CODE	COURSES	ECTS	TYPE	SEMESTER	DEPARTMENT CODE
595300001	LINEAR ALGEBRA	6	Elem	1 <sup>st</sup>	D540
595300003	CIRCUITS ANALYSIS I	6	Elem	1 <sup>st</sup>	D250
595300002	CALCULUS I	6	Elem	1 <sup>st</sup>	D540
595300005	INTRODUCTION TO TELECOMMUNICATIONS	3	Comp	1 <sup>st</sup>	D250
595300004	PROGRAMMING I	6	Elem	1 <sup>st</sup>	D230
595300000	INTRODUCTORY WORKSHOP ON ENGINEERING	3	Comp	1 <sup>st</sup>	D250
595300007	CIRCUITS ANALYSIS II	6	Elem	2 <sup>nd</sup>	D250
595300009	CALCULUS II	6	Elem	2 <sup>nd</sup>	D540
595300006	PROFESSIONAL COMMUNICATION SKILLS	3	Comp	2 <sup>nd</sup>	D240
595300008	ELECTRONICS I	6	Elem	1 <sup>st</sup> and 2 <sup>nd</sup>	D230
595300010	PROGRAMMING II	6	Elem	1 <sup>st</sup> and 2 <sup>nd</sup>	D230
595300011	SEARCH TECHNIQUES AND INFORMATION SYSTEMS	3	Comp	2 <sup>nd</sup>	D230

### SECOND YEAR

CODE	COURSES	ECTS	TYPE	SEMESTER	DEPARTMENT CODE
595300012	ELECTROMAGNETISM AND WAVES	6	Elem	1 <sup>st</sup> and 2 <sup>nd</sup>	D510
595300014	ELECTRONICS II	6	Comp	1 <sup>st</sup> and 2 <sup>nd</sup>	D230
595300013	STATISTICS AND STOCHASTIC PROCESSES	6	Elem	1 <sup>st</sup> and 2 <sup>nd</sup>	D540
595300015	TELECOMMUNICATIONS NETWORKS AND SERVICES	6	Comp	1 <sup>st</sup>	D230
595300016	SIGNALS AND SYSTEMS	6	Comp	1 <sup>st</sup> and 2 <sup>nd</sup>	D250
595300017	SCIENCE, TECHNOLOGY AND SOCIETY	3	Comp	1 <sup>st</sup> and 2 <sup>nd</sup>	D230
595300020	MICROPROCESSORS	6	Comp	1 <sup>st</sup> and 2 <sup>nd</sup>	D230
595300023	ANALOG ELECTRONICS I	6	Comp	2 <sup>nd</sup>	D230
595300018	WAVE PROPAGATION	4.5	Comp	1 <sup>st</sup> and 2 <sup>nd</sup>	D510
595300222	ADVANCED APPLICATION PROGRAMMING	6	Comp	2 <sup>nd</sup>	D230
595300019	COMPUTER NETWORKS	4.5	Comp	2 <sup>nd</sup>	D230

### THIRD YEAR

CODE	COURSES	ECTS	TYPE	SEMESTER	DEPARTMENT CODE
595300027	DIGITAL DESIGN I	4.5	Comp	1st	D230
595300024	ECONOMICS AND BUSINESS MANAGEMENT	4.5	Comp	1 <sup>st</sup>	D400
595300025	DIGITAL SIGNAL PROCESSING	4.5	Comp	1 <sup>st</sup> and 2 <sup>nd</sup>	D250
595300227	SIGNALLING AND SWITCHING	6	Comp	1st	D230
595300228	TRANSMISSION SYSTEMS	6	Comp	1st	D230
595300026	OPERATING SYSTEMS	4.5	Comp	1 <sup>st</sup>	D230
595300032	ANALOG ELECTRONICS II	6	Comp	2nd	D230
595300232	INFORMATION PROCESSING IN TELEMATIC APPLICATIONS	4.5	Comp	2nd	D230
595300231	ADVANCED NETWORKS AND SERVICES	6	Comp	2nd	D230
595300021	COMMUNICATION THEORY	6	Comp	1 <sup>st</sup> and 2 <sup>nd</sup>	D250
595300033	PRODUCTION TECHNOLOGIES OF ELECTRONICS SYSTEMS	4.5	Comp	2 <sup>nd</sup>	0910
	ELECTIVE SUBJECTS/INTERNSHIP CREDITS	3	Elec	2 <sup>o</sup>	

### FORTH YEAR

CODE	COURSES	ECTS	TYPE	SEMESTER	DEPARTMENT CODE
595300226	MODELLING LANGUAGES	4.5	Comp	1st	D230
595300035	ELECTRONIC INSTRUMENTATION	6	Comp	1st	D230
595300030	AUDIOVISUAL SYSTEMS	4.5	Comp	1 <sup>st</sup>	D250
595300028	MICROPROCESSOR-BASED SYSTEMS	6	Comp	1st	D230
595300036	ELECTRONIC POWER SYSTEMS	4.5	Comp	1st	D230
595300235	COMMUNICATIONS SOFTWARE	4.5	Comp	1st	D230
595300031	DIGITAL DESIGN II	6	Comp	2 <sup>nd</sup>	D230
595300037	PROJECT MANAGEMENT	4.5	Comp	2 <sup>nd</sup>	D400
595300038	ELECTRONIC SYSTEMS ENGINEERING	4.5	Comp	2nd	D230
595300230	NETWORKS AND SERVICES SECURITY	6	Comp	2nd	D230
595300237	ADVANCED TELEMATIC APPLICATIONS	4.5	Comp	2nd	D230
	ELECTIVE SUBJECTS/INTERNSHIP CREDITS	4.5	Elec	1 <sup>o</sup>	

## FIFTH YEAR

CÓDIGO	ASIGNATURAS	ECTS	TIPO	PERIODO	COD. DPTO.
595300034	ENGLISH FOR PROFESSIONAL AND ACADEMIC COMMUNICATION (*)	6	Comp	1 <sup>st</sup> and 2 <sup>nd</sup>	D240
595300029	CONTROL SYSTEMS	6	Comp	1st	D230
595300234	MOBILE COMMUNICATIONS NETWORKS	6	Comp	1st	D230
	ELECTIVE SUBJECTS/INTERNSHIP CREDITS	12	Elec	1º	
595300040	FINAL DEGREE PROJECT (**)	12	Comp	1st and 2nd	ALL
595300240	FINAL DEGREE PROJECT (**)	12	Comp	1st and 2nd	ALL
	ELECTIVE SUBJECTS/INTERNSHIP CREDITS	6	Elec	2º	

(\*) A B2 English certificate is required for the enrolment.

### TYPE OF COURSES:

- *"Elem"* – Elementary.
- *"Comp"* – Compulsory.
- *"Elec"* – Elective.

## ELECTIVE COURSES

TYPE	SPEC	SEMESTER	CODE	COURSES	ECTS	REQUIREMENTS	DEPT. CODE	
A	EC	1 <sup>st</sup>	595310044	PRODUCT ENGINEERING	4.5	--	D510	
			595310048	HARDWARE FOR INTERNET OF THINGS (IoT)	4.5	028	D230	
			595040049	PROGRAMMING IN LABVIEW	4.5	--	D510/D230	
	TL			595310248	INTERACTION SYSTEMS FOR SOCIAL ROBOTICS	4.5	222	D230
				595040253	MULTI-PARADIGM PROGRAMMING FOR ICT	4.5		D230
	EC	2 <sup>nd</sup>		595040041	INDUSTRIAL AUTOMATION	4.5	--	D230
				595040047	EMBEDDED SYSTEMS DESIGN WITH RASPBERRY PI	4.5	--	D230
	TL			595010242	NETWORK AND SYSTEM ADMINISTRATION	4.5	--	D230
				595040254	EMERGING ICT FOR SUSTAINABILITY			D230
	EC			595040050	FUNDAMENTALS OF ENERGY HARVESTING	4.5		D230
				595040042	PHOTOVOLTAIC ENGINEERING	4.5	--	D510
	TL			595010252	INTRODUCTION TO ARTIFICIAL INTELLIGENT IN THE CLOUD	4.5	--	D230
				595010243	MOBILE APPLICATIONS DEVELOPMENT	4.5	--	D230
B	SC	1 <sup>st</sup>	595024327	WAVE TRANSMISSION AND PROPAGATION	6	--	D250	
			595024328	COMMUNICATIONS ELECTRONICS I	6	--	D250	
		2 <sup>nd</sup>	595024322	ANALOG ELECTRONICS	6	--	D250	
			595024331	COMMUNICATIONS ELECTRONICS II	6	20328	D250	
	SO	1 <sup>st</sup>	595024126	AUDIO ENGINEERING I	4,5	20122	D250	
			595024128	IMAGE AND VIDEO TECHNOLOGIES	6	20122	D250	
		2 <sup>nd</sup>	595024122	SOUND AND IMAGES FUNDAMENTALS	6	--	D250	
			595024131	AUDIO ENGINEERING II	6	20122/ 20126	D250	
C		1 <sup>st</sup> / 2 <sup>nd</sup>	595040064	AIMING AT B2 IN ENGLISH	3	--	D240	
		1 <sup>st</sup>	595040341	COMMUNICATION SYSTEM ARCHITECTURE	4.5	--	D250	
			595040066	INTRODUCTION TO MACHINE LEARNING	3	--	D230	
			595040060	RENEWABLE ENERGY	3	--	D510	
			595040061	SMART HOME	3	--	D230	
			595040062	TELECOMUNNICATION COMMON INFRASTRUCTURES	3	--	D250	
		2 <sup>nd</sup>	595330074	CIS TO DEFENCE	3	--	D250	
			595330072	DISCRETE MATHEMATICS	3	--	D540	
			595040073	DYNAMICAL SYSTEMS	3	--	D540	
			595040537	INTRODUCTION TO QUANTUM COMPUTING	4,5	--	D540	
			595040070	MANAGEMENT OF TECHNOLOGICAL INNOVATION	3	--	D230	
			595040065	WOMEN IN SCIENCE AND TECHNOLOGY	3	--	D510	

TIPO	PERIODO	CÓDIGO	ASIGNATURAS	ECTS
PE	1º y 2º	595330075	P1 PRÁCTICAS EXTERNAS	3
		595040090	P1B PRÁCTICAS EXTERNAS	3
		595330076	P2 PRÁCTICAS EXTERNAS	4,5
		595040091	P2B PRACTICAS EXTERNAS	4.5
		595330077	P3 PRÁCTICAS EXTERNAS	6
		595040092	P3B PRACTICAS EXTERNAS	6
		595330078	P4 PRÁCTICAS EXTERNAS	9
		595330079	P5 PRÁCTICAS EXTERNAS	12
		595330087	P6 PRÁCTICAS EXTERNAS	15

## ELECTIVE COURSES

- Each student must pass at least 25.5 elective ECTS to complete the double degree.

### TYPES OF ELECTIVE COURSES

Each academic year, the School Board will establish the range of optional courses.

**A Type** - Elective courses to strengthen the specialty.

**B Type** - Elective courses to strengthen other specialties.

**C Type** - Elective courses for the four degrees.

**PE** - Internship credits.

### ADMISSION REQUIREMENTS FOR ELECTIVE COURSES

To enroll on an elective course, every student must have taken or passed the course(s) shown in the **REQUIREMENTS** box.

#### SPEC.:

EC: Electronics for Communications.

SC: Telecommunications Systems.

SO: Image and Sound.

TL: Telematics.

#### DEPARTMENT CODES

D230: Telematics and Electronic Engineering.

D240: Linguistics Applied to Science and Technology.

D250: Audiovisual and Communications Engineering

D400: Organization Engineering, Business Management and Statistics.

D510: Physical Electronics, Electrical Engineering and Applied Physics.

D540: Mathematics Applied to Information and Communication Technologies.