

DOUBLE DEGREE COMPUTER ENGINEERING AND MATHEMATICS

Centre ([see](#)).

ECTS CREDITS	
Basic training (FB)	102
Compulsory (OB)	180
Optional (OP)	54
End-of-degree Project (TFG)	24
Total	360



CLICK ON THE CODE OF EACH SUBJECT TO ACCESS THE COURSE HANDBOOK

FIRST YEAR

Code	Subject	Credits	Type	Semester	Syllabus
16434	CALCULUS I	9	FB	1	Mathematics
16436	SETS AND NUMBERS	9	FB	1	Mathematics
17816	INTRODUCTION TO COMPUTERS	6	FB	1	Computer Science
19951	FUNDAMENTALS OF PROGRAMMING	6	FB	1	Computer Science
17824	LOGIC AND DISCRETE STRUCTURES	6	FB	1	Computer Science
16435	LINEAR ALGEBRA	9	FB	2	Mathematics
16437	CALCULUS II	9	FB	2	Mathematics
19953	PHYSICAL FUNDAMENTALS OF INFORMATICS	6	FB	2	Computer Science
19952	DATA STRUCTURES	6	OB	2	Computer Science
17823	PROGRAMMING PROJECT	6	OB	2	Computer Science

SECOND YEAR

Code	Subject	Credits	Type	Semester	Syllabus
16438	LINEAR ALGEBRA AND GEOMETRY	9	FB	1	Mathematics
16440	LABORATORY I	3	FB	1	Mathematics
17845	TECHNOLOGICAL BUSINESS ADMINISTRATION	6	FB	1	Computer Science
17820	COMPUTER STRUCTURE	6	FB	1	Computer Science
19955	FUNDAMENTALS OF DATABASES	6	OB	1	Computer Science

Code	Subject	Credits	Type	Semester	Syllabus
<u>17827</u>	ALGORITHM ANALYSIS	6	OB	1	Computer Science
<u>16439</u>	NUMERICAL ANALYSIS	9	FB	2	Mathematics
<u>16440</u>	LABORATORY II	3	FB	2	Mathematics
<u>16446</u>	PROBABILITY I	6	FB	2	Mathematics
<u>17831</u>	OPERATIVE SYSTEMS	6	OB	2	Computer Science
<u>17832</u>	SOFTWARE ANALYSIS AND DESIGN	6	OB	2	Computer Science
<u>17833</u>	SOFTWARE ANALYSIS AND DESIGN PROJECT	6	OB	2	Computer Science

THIRD YEAR

Code	Subject	Credits	Type	Semester	Syllabus
<u>16441</u>	ANALYSIS	9	OB	1	Mathematics
<u>16442</u>	ALGEBRAICS STRUCTURES	9	OB	1	Mathematics
<u>16448</u>	STATISTICS	6	OB	1	Mathematics
<u>17834</u>	COMPUTER ARCHITECTURE	6	OB	1	Computer Science
<u>17835</u>	COMMUNICATION NETWORKS I	6	OB	1	Computer Science
<u>16444</u>	DIFFERENTIAL EQUATIONS	9	OB	2	Mathematics
<u>16445</u>	GEOMETRY OF CURVES AND SURFACES	9	OB	2	Mathematics
<u>17830</u>	MICROPROCESSOR-BASED SYSTEMS	6	OB	2	Computer Science
<u>17841</u>	COMMUNICATION NETWORKS II	6	OB	2	Computer Science
<u>17843</u>	SOFTWARE ENGINEERING	6	OB	2	Computer Science

FOURTH YEAR

Code	Subject	Credits	Type	Semester	Syllabus
<u>16447</u>	TOPOLOGY	6	OB	1	Mathematics
<u>17836</u>	COMPUTER SYSTEMS I	6	OB	1	Computer Science
<u>17838</u>	FORMAL LANGUAGES AND AUTOMATA	6	OB	1	Computer Science
<u>17840</u>	ARTIFICIAL INTELLIGENCE	6	OB	1	Computer Science
<u>16449</u>	COMPLEX ANALYSIS I	6	OB	2	Mathematics
<u>16450</u>	MODELIZATION	6	OB	2	Mathematics
<u>17842</u>	COMPUTER SYSTEMS II	6	OB	2	Computer Science
<u>17844</u>	SOFTWARE ANALYSIS AND DESIGN PROJECT	6	OB	2	Computer Science
<u>19956</u>	COMPUTER SYSTEMS PROJECT	6	OB	2	Computer Science

Code	Subject	Credits	Type	Semester	Syllabus
	3 OPTIONAL SUBJECTS	18	OP	1 or 2	Mathematics

FIFTH YEAR

Code	Subject	Credits	Type	Semester	Syllabus
<u>19957</u>	HIGH-PERFORMANCE COMPUTING	6	OB	1	Computer Science
<u>19958</u>	CYBERSECURITY	6	OB	2	Computer Science
	4 OPTIONAL SUBJECTS	24	OP	1 or 2	Mathematics
	2 OPTIONAL SUBJECTS	12	OP	1 or 2	Computer Science
<u>16451</u>	END-OF-DEGREE PROJECT (MATHEMATICS)	12	TFG	Annual	Mathematics
<u>17846</u>	END-OF-DEGREE PROJECT (COMPUTER SCIENCE)	12	TFG	Annual	Computer Science

OPTIONAL SUBJECTS COMPUTER SCIENCE

Code	Subject	Credits	Type	Semester
<u>18765</u>	FUNDAMENTALS OF CRYPTOGRAPHY AND COMPUTER SECURITY	6	OP	1
<u>18776</u>	FUNDAMENTALS OF MACHINE LEARNING	6	OP	1
<u>18780</u>	MULTIMEDIA NETWORKS	6	OP	1
<u>20270</u>	INTRODUCTION TO QUANTUM COMPUTING	6	OP	1
<u>20271</u>	INTRODUCTION TO ARTIFICIAL VISION: ANALYSIS OF VISUAL SIGNALS	6	OP	1
<u>20486</u>	SOFTWARE TESTING	6	OP	1
<u>18771</u>	MOBILE APP DEVELOPMENT	6	OP	2
<u>18773</u>	NEUROCOMPUTATION	6	OP	2
<u>18775</u>	COMPLEXITY AND COMPUTATION	6	OP	2
<u>18781</u>	EXTERNAL INTERNSHIP	12	OP	1 or 2
<u>19959</u>	FURTHER TOPICS IN TECHNOLOGIES AND INFORMATION SYSTEMS 1	6	OP	1 or 2
<u>19960</u>	FURTHER TOPICS IN TECHNOLOGIES AND INFORMATION SYSTEMS 2	6	OP	1 or 2

OPTIONAL SUBJECTS MATHEMATICS

GROUP A:

Code	Subject	Credits	Type	Semester
<u>16454</u>	NUMERICAL METHODS FOR ODE	6	OP	1
<u>16456</u>	GALOIS THEORY	6	OP	1
<u>16457</u>	INTEGRATION AND MEASURE THEORY	6	OP	1
<u>16452</u>	PARTIAL DIFFERENTIAL EQUATIONS	6	OP	2
<u>16453</u>	DIFFERENTIAL GEOMETRY	6	OP	2
<u>16455</u>	PROBABILITY II	6	OP	2

GROUP B:

Code	Subject	Credits	Type	Semester
<u>16462</u>	STATISTICS II	6	OP	1
<u>16465</u>	HISTORY OF MATHEMATICS	6	OP	1
<u>16467</u>	LOGIC	6	OP	1
<u>16468</u>	NUMERICAL METHODS FOR PDE	6	OP	1
<u>16460</u>	COMBINATORIAL AND ANALYTIC NUMBER THEORY	6	OP	1
<u>16471</u>	CRYPTOGRAPHY AND CODING THEORY	6	OP	1
<u>16473</u>	REAL ANALYSIS	6	OP	1
<u>16458</u>	COMMUTATIVE ALGEBRA	6	OP	2
<u>16459</u>	FUNCTIONAL ANALYSIS	6	OP	2
<u>16461</u>	MATHEMATICAL ECONOMY AND FINANCES	6	OP	2
<u>16463</u>	GEOMETRY AND TOPOLOGY	6	OP	2
<u>16466</u>	OPERATION RESEARCH	6	OP	2
<u>16469</u>	DIFFERENTIAL EQUATIONS AND APPLICATIONS	6	OP	2
<u>16472</u>	COMPLEX ANALYSIS II	6	OP	2
<u>16474</u>	SEMINAR	6	OP	

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