

JOINT DEGREE IN COMPUTER ENGINEERING AND MATHEMATICS

Plan 2009. It will only be taken by those who have yet to pass 30 credits or less of the Computer Engineering degree, in addition to the TFG in Computer Science

Centre [\(see\)](#)

ECTS CREDITS	
Basic training (FB)	102
Compulsory (OB)	174
Optional (OP)	60
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	COMPUTER BASICS	6	FB	1	Computer Science
17817	PROGRAMMING I	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
17820	COMPUTER ARCHITECTURE AND ORGANIZATION	6	FB	2	Computer Science
17821	PROGRAMMING II	6	OB	2	Computer Science
17822	ELECTROMAGNETISM	6	FB	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
17823	PROGRAMMING PROJECT	6	OB	1	Computer Science
17825	ELECTRONICS) (ELECTRONIC CIRCUITS	6	FB	1	Computer Science
17826	DATA STRUCTURES	6	OB	1	Computer Science
17827	ALGORITHM ANALYSIS	6	OB	1	Computer Science
16439	NUMERICAL ANALYSIS	9	FB	2	Mathematics

Code	Subject	Credits	Type	Semester	Syllabus
<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>17840</u>	ARTIFICIAL INTELLIGENCE	6	OB	2	Computer Science
<u>17841</u>	COMMUNICATION NETWORKS II	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>17837</u>	COMPUTER SYSTEMS PROJECT	3	OB	1	Computer Science
<u>17838</u>	FORMAL LANGUAGES AND AUTOMATA	6	OB	1	Computer Science
<u>17839</u>	FORMAL LANGUAGES AND AUTOMATA PROJECT	3	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>17843</u>	SOFTWARE ENGINEERING	6	OB	2	Computer Science
<u>17844</u>	SOFTWARE ANALYSIS AND DESIGN PROJECT	6	OB	2	Computer Science
	3 OPTIONAL GROUP A	18	OP	1 or 2	Mathematics

FIFTH YEAR

Code	Subject	Credits	Type	Semester	Syllabus
<u>17845</u>	TECHNOLOGICAL BUSINESS ADMINISTRATION	6	OB	1	Computer Science
	OPTIONAL GROUP A	6	OP	1 or 2	Mathematics
	OPTIONAL GROUP B (OR A)	6	OP	1 or 2	Mathematics
	2 OPTIONAL GROUP B	12	OP	1 or 2	Mathematics
	3 OPTIONAL	18	OP	1 or 2	Computer Science
<u>16451</u>	END-OF-DEGREE PROJECT MATHEMATICS	12	TFG	Annual	Mathematics

Code	Subject	Credits	Type	Semester	Syllabus
<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>18767</u>	ADVANCED PROGRAMMING	6	OP	1
<u>18768</u>	MULTIMEDIA SIGNAL PROCESSING I: IMAGE AND VIDEO	6	OP	1
<u>18776</u>	FUNDAMENTALS OF MACHINE LEARNING	6	OP	1
<u>18771</u>	MOBILE APP DEVELOPMENT	6	OP	2
<u>18773</u>	NEUROCOMPUTATION	6	OP	2
<u>18774</u>	INFORMATION SEARCH AND MINING	6	OP	2
<u>18775</u>	COMPLEXITY AND COMPUTATION	6	OP	2
<u>18780</u>	MULTIMEDIA NETWORKS	6	OP	2
<u>18781</u>	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>16470</u>	ALGEBRAIC 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

Code	Subject	Credits	Type	Semester
<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

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