

DOUBLE DEGREE COMPUTER ENGINEERING AND MATHEMATICS

Centre ([see](#))

ECTS CREDITS	
Basic training (FB)	102
Compulsory (OB)	198
Optional (OP)	36
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
17824	LOGIC AND DISCRETE STRUCTURES	6	FB	1	Computer Science
19951	FUNDAMENTALS OF PROGRAMMING	6	FB	1	Computer Science
16435	LINEAR ALGEBRA	9	FB	2	Mathematics
16437	CALCULUS II	9	FB	2	Mathematics
17823	PROGRAMMING PROJECT	6	OB	2	Computer Science
19952	DATA STRUCTURES	6	OB	2	Computer Science
19953	PHYSICAL FUNDAMENTALS OF INFORMATICS	6	FB	2	Computer Science

SECOND YEAR

Code	Subject	Credits	Type	Semester	Syllabus
17820	COMPUTER STRUCTURE	6	FB	1	Computer Science
17827	ALGORITHM ANALYSIS	6	OB	1	Computer Science
17845	TECHNOLOGICAL BUSINESS ADMINISTRATION	6	FB	1	Computer Science
19955	FUNDAMENTALS OF DATABASES	6	OB	1	Computer Science

Code	Subject	Credits	Type	Semester	Syllabus
<u>20567</u>	ALGEBRA I	6	OB	1	Mathematics
<u>20568</u>	NUMERICAL CALCULATION I	6	FB	1	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
<u>20564</u>	LINEAR GEOMETRY	9	FB	2	Mathematics
<u>20565</u>	DISCRETE MATHEMATICS	9	FB	2	Mathematics

THIRD YEAR

Code	Subject	Credits	Type	Semester	Syllabus
<u>16441</u>	ANALYSIS	9	OB	1	Mathematics
<u>16446</u>	PROBABILITY I	6	FB	1	Mathematics
<u>17834</u>	COMPUTER ARCHITECTURE	6	OB	1	Computer Science
<u>17835</u>	COMMUNICATION NETWORKS I	6	OB	1	Computer Science
<u>20566</u>	TOPOLOGY	9	OB	1	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
<u>20570</u>	ALGEBRA II	6	OB	2	Mathematics
<u>20571</u>	CURVES AND SURFACE GEOMETRY	6	OB	2	Mathematics
<u>20572</u>	ORDINARY DIFFERENTIAL EQUATIONS	6	OB	2	Mathematics

FOURTH YEAR

Code	Subject	Credits	Type	Semester	Syllabus
<u>16453</u>	DIFFERENTIAL GEOMETRY	6	OB	1	Mathematics
<u>16457</u>	INTEGRATION AND MEASURE THEORY	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>20573</u>	NUMERICAL CALCULATION II	6	OB	1	Mathematics
<u>16448</u>	STATISTICS I	6	OB	2	Mathematics
<u>16449</u>	COMPLEX ANALYSIS I	6	OB	2	Mathematics
<u>16452</u>	PARTIAL DIFFERENTIAL EQUATIONS	6	OB	2	Mathematics
<u>17842</u>	COMPUTER SYSTEMS II	6	OB	2	Computer Science

Code	Subject	Credits	Type	Semester	Syllabus
<u>17844</u>	SOFTWARE ANALYSIS AND DESIGN PROJECT	6	OB	2	Computer Science
<u>19956</u>	COMPUTER SYSTEMS PROJECT	6	OB	2	Computer Science

FIFTH YEAR

Code	Subject	Credits	Type	Semester	Syllabus
<u>17846</u>	END-OF-DEGREE PROJECT (COMPUTER SCIENCE)	12	TFG	Annual	Computer Science
<u>20790</u>	END-OF-DEGREE PROJECT (MATHEMATICS)	12	TFG	Annual	Mathematics
	2 OPTIONAL SUBJECTS	12	OP	1	Mathematics
<u>19957</u>	HIGH-PERFORMANCE COMPUTING	6	OB	1	Computer Science
	2 OPTIONAL SUBJECTS	12	OP	2	Mathematics
<u>19958</u>	CYBERSECURITY	6	OB	2	Computer Science
	2 OPTIONAL SUBJECTS	12	OP	1 or 2	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>20803</u>	SEARCH ENGINES	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

Code	Subject	Credits	Type	Semester
<u>16450</u>	MODELIZATION	6	OP	1
<u>16458</u>	COMMUTATIVE ALGEBRA	6	OP	1
<u>16459</u>	FUNCTIONAL ANALYSIS	6	OP	1
<u>16462</u>	STATISTICS II	6	OP	1
<u>16465</u>	HISTORY OF MATHEMATICS	6	OP	1

Code	Subject	Credits	Type	Semester
<u>16466</u>	OPERATION RESEARCH	6	OP	1
<u>16471</u>	CRYPTOGRAPHY AND CODING THEORY	6	OP	1
<u>16473</u>	REAL ANALYSIS	6	OP	1
<u>20577</u>	NUMERICAL CALCULATION EXTENSION	6	OP	1
<u>16455</u>	PROBABILITY II	6	OP	2
<u>16461</u>	MATHEMATICAL ECONOMY AND FINANCES	6	OP	2
<u>16467</u>	LOGIC	6	OP	2
<u>16472</u>	COMPLEX ANALYSIS II	6	OP	2
<u>20575</u>	GEOMETRY AND TOPOLOGY EXTENSION	6	OP	2
<u>20576</u>	NUMBER THEORY	6	OP	2
<u>20578</u>	EDP EXTENSION	6	OP	2
<u>20579</u>	MATHEMATICS FOR MACHINE LEARNING	6	OP	2
<u>20580</u>	ADVANCED MATHEMATICS SEMINAR	6	OP	2

CENTRE

Technical College

Campus de Cantoblanco

28049 – Madrid

Phone: + 34 91 497 22 26/ 22 23

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