



Universidad Autónoma
de Madrid

JOINT DEGREE IN COMPUTER ENGINEERING AND MATHEMATICS

ACADEMIC YEAR 2020/2021

Studies Joint Degree in Computer Engineering and Mathematics

Centre Technical College
Campus de Cantoblanco
28049 – Madrid
Phone: 91 497 22 26/ 22 23

[Web Page](#) ↗

Knowledge Branch Engineering and Architecture

ECTS Credits 360

ECTS CREDITS

Basic training (FB)	102
Compulsory (OB)	174
Optional (OP)	60
External practical (PE)	-
End-of-degree Project (TFG)	24
Total	360

FIRST YEAR

Code	Subject	Credits	Type	Semester	Syllabus
<u>16434</u>	CALCULUS I	9	FB	1	Mathematics
<u>16436</u>	SETS AND NUMBERS	9	FB	1	Mathematics
<u>17816</u>	INTRODUCTION TO COMPUTERS	6	FB	1	Computer Science
<u>17817</u>	PROGRAMMING I	6	FB	1	Computer Science
<u>17824</u>	LOGIC AND DISCRETE STRUCTURES	6	FB	1	Computer Science
<u>16435</u>	LINEAR ALGEBRA	9	FB	2	Mathematics
<u>16437</u>	CALCULUS II	9	FB	2	Mathematics



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Code	Subject	Credits	Type	Semester	Syllabus
<u>17820</u>	COMPUTER ARCHITECTURE AND ORGANIZATION	6	FB	2	Computer Science
<u>17821</u>	PROGRAMMING II	6	OB	2	Computer Science
<u>17822</u>	ELECTROMAGNETISM	6	FB	2	Computer Science

SECOND YEAR

Code	Subject	Credits	Type	Semester	Syllabus
<u>16438</u>	LINEAR ALGEBRA AND GEOMETRY	9	FB	1	Mathematics
<u>16440</u>	LABORATORY I	3	FB	1	Mathematics
<u>17823</u>	PROGRAMMING PROJECT	6	OB	1	Computer Science
<u>17825</u>	ELECTRONICS) (ELECTRONIC CIRCUITS	6	FB	1	Computer Science
<u>17826</u>	DATA STRUCTURES	6	OB	1	Computer Science
<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>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



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Code	Subject	Credits	Type	Semester	Syllabus
<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 o 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 o 2	Mathematics
	OPTIONAL GROUP B (O A)	6	OP	1 o 2	Mathematics
	2 OPTIONAL GROUP B	12	OP	1 o 2	Mathematics
	3 OPTIONAL	18	OP	1 o 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>18763</u>	DEVELOPMENT OF APPLICATION-SPECIFIC PROCESSORS AND SYSTEMS	6	OP	1
<u>18764</u>	INTRODUCTION TO VIDEOGAME PROGRAMMING AND GRAPHICS	6	OP	1
<u>18765</u>	FUNDAMENTALS OF CRYPTOGRAPHY AND COMPUTER SECURITY	6	OP	1
<u>18766</u>	ALGORITHM DESIGN AND ANALYSIS	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>18777</u>	COMPUTER SIMULATION METHODS	6	OP	1
<u>18762</u>	PARALLEL SYSTEMS ARCHITECTURE	6	OP	2
<u>18770</u>	PLATFORMS FOR EMBEDDED SYSTEMS	6	OP	2
<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>18778</u>	AUTOMATED SOFTWARE DEVELOPMENT	6	OP	2
<u>18780</u>	MULTIMEDIA NETWORKS	6	OP	2
<u>18781</u>	INTERNSHIP	12	OP	1 o 2



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OPTIONAL SUBJECTS COMPUTER SCIENCE NOT OFFERED IN 2020-2021

Code	Subject	Credits	Type	Semester
<u>18772</u>	DEVELOPMENT OF MULTIMEDIA AND MULTIMODAL APPLICATIONS	6	OP	
<u>18779</u>	MULTIMEDIA SIGNAL PROCESSING II: SPEECH AND AUDIOMULTIME	6	OP	

OPTIONAL SUBJECTS MATHEMATICS

GROUP A:

Code	Subject	Credits	Type	Semester
<u>16454</u>	NUMERICAL METHODS FOR ODE	6	OP	1
<u>16456</u>	GALAOIS 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>	CONMUTATIVE 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
16474	SEMINAR	6	OP	

OPTIONAL SUBJECTS MATHEMATICS NOT OFFERED IN 2020-2021

GROUP B

Code	Subject	Credits	Type	Semester
16460	COMBINATORIAL AND ANALITIC NUMBER THEORY	6	OP	
16464	PROJECTIVE GEOMETRY	6	OP	