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MASTER DEGREE COURSE IN

COMPUTER ENGINEERING

Study programme for students enrolled in the academic year 2025-2026

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MASTER DEGREE COURSE IN COMPUTER ENGINEERING		
CURRICULUM ARTIFICIAL INTELLIGENCE AND ROBOTICS		
1st YEAR		
MANDATORY UNITS	**HOURS**	**CREDITS**
AUTOMATA, LANGUAGES AND COMPUTATION	72	9
OPERATIONS RESEARCH 1	72	9
MACHINE LEARNING	48	6
ARTIFICIAL INTELLIGENCE	72	9
COMPUTER VISION	72	9
DEEP LEARNING	48	6
2nd YEAR		
MANDATORY UNITS	**HOURS**	**CREDITS**
INTELLIGENT ROBOTICS	72	9
18 FREE-CHOICE CREDITS AMONG THE FOLLOWING:	**HOURS**	**CREDITS**
BIG DATA COMPUTING (1st year)	48	6
ROBOTICS AND CONTROL 1 (1st year)	72	9
NEUROROBOTICS (2nd year)	48	6
LEARNING FROM NETWORKS (2nd year)	48	6
NATURAL LANGUAGE PROCESSING (2nd year)	48	6
3D DATA PROCESSING (2nd year)	48	6
12 ADDITIONAL FREE-CHOICE CREDITS		
QUALITY ENGINEERING (1st year)	48	6
REINFORCEMENT LEARNING (2nd year)	48	6

	HOURS	CREDITS
GAME THEORY (2nd year)	48	6
INNOVATION, ENTREPRENEURSHIP AND FINANCE (2nd year)	72	9
INDUSTRIAL ROBOTICS (2nd year)	72	9
MEASUREMENT ARCHITECTURES FOR CYBER-PHYSICAL SYSTEMS (2nd year)	72	9
OPERATIONS RESEARCH 2 (2nd year)	48	6
FURTHER MANDATORY ACTIVITIES	**HOURS**	**CREDITS**
ENGLISH LANGUAGE (for italian students) **or** **ITALIAN LANGUAGE** (for foreigh students)	-	3
PRACTICAL TRAINING	-	9
FINAL THESIS	-	21

CURRICULUM BIOINFORMATICS		
1st YEAR		
MANDATORY UNITS	**HOURS**	**CREDITS**
AUTOMATA, LANGUAGES AND COMPUTATION	72	9
OPERATIONS RESEARCH 1	72	9
MACHINE LEARNING	48	6
INFERENTIAL STATISTICS	48	6
BIOINFORMATICS	72	9
2nd YEAR		
MANDATORY UNITS	**HOURS**	**CREDITS**
COMPUTATIONAL GENOMICS	48	6
LEARNING FROM NETWORKS	48	6
24 FREE-CHOICE CREDITS AMONG THE FOLLOWING:	**HOURS**	**CREDITS**
BIG DATA COMPUTING (1st year)	48	6
DEEP LEARNING (1st year)	48	6
SEARCH ENGINES (1st year)	72	9
WEB APPLICATIONS (1st year)	48	6
DISTRIBUTED SYSTEMS (2nd year)	72	9
NATURAL LANGUAGE PROCESSING (2nd year)	48	6
12 ADDITIONAL FREE-CHOICE CREDITS		
IMAGING FOR NEUROSCIENCE (1st year)	72	9
STRUCTURAL BIOINFORMATICS (1st year)	48	6
ADVANCED ALGHORITHM DESIGN (2nd year)	72	9
GENOMICS AND NGS DATA ANALYSIS (2nd year)	72	9
OPERATIONS RESEARCH 2 (2nd year)	48	6
FURTHER MANDATORY ACTIVITIES	**HOURS**	**CREDITS**
ENGLISH LANGUAGE (for italian students) **or** **ITALIAN LANGUAGE** (for foreigh students)	-	3
PRACTICAL TRAINING	-	9
FINAL THESIS	-	21

CURRICULUM HIGH PERFORMANCE AND BIG DATA COMPUTING

1st YEAR

MANDATORY UNITS	HOURS	CREDITS
AUTOMATA, LANGUAGES AND COMPUTATION	72	9
OPERATIONS RESEARCH 1	72	9
MACHINE LEARNING	48	6
INFERENTIAL STATISTICS	48	6
BIG DATA COMPUTING	48	6
PARALLEL COMPUTING	72	9

2nd YEAR

MANDATORY UNITS	HOURS	CREDITS
ADVANCED ALGORITHM DESIGN	72	9
21 FREE-CHOICE CREDITS AMONG THE FOLLOWING:	HOURS	CREDITS
ARTIFICIAL INTELLIGENCE (1st year)	72	9
DEEP LEARNING (1st year)	48	6
SEARCH ENGINES (1st year)	72	9
COMPUTER NETWORKS (1st year)	72	9
BIOINFORMATICS (1st year)	72	9
DISTRIBUTED SYSTEMS (2nd year)	72	9
COMPUTERS AND NETWORKS SECURITY (2nd year)	48	6
LEARNING FROM NETWORKS (2nd year)	48	6

12 ADDITIONAL FREE-CHOICE CREDITS

	HOURS	CREDITS
CRYPTOGRAPHY (2nd year)	48	6
COMPUTATIONAL GENOMICS (2nd year)	48	6
GAME THEORY (2nd year)	48	6
STOCHASTIC PROCESSES (2nd year)	48	6
OPERATIONS RESEARCH 2 (2nd year)	48	6

FURTHER MANDATORY ACTIVITIES	HOURS	CREDITS
ENGLISH LANGUAGE (for italian students) **or** **ITALIAN LANGUAGE** (for foreigh students)	-	3
PRACTICAL TRAINING	-	9
FINAL THESIS	-	21

CURRICULUM WEB INFORMATION AND DATA ENGINEERING		
1st YEAR		
MANDATORY UNITS	**HOURS**	**CREDITS**
AUTOMATA, LANGUAGES AND COMPUTATION	72	9
OPERATIONS RESEARCH 1	72	9
MACHINE LEARNING	48	6
COMPUTER NETWORKS	72	9
SEARCH ENGINES	72	9
WEB APPLICATIONS	48	6
2nd YEAR		
MANDATORY UNITS	**HOURS**	**CREDITS**
GRAPH DATABASES	72	9
18 FREE-CHOICE CREDITS AMONG THE FOLLOWING:	**HOURS**	**CREDITS**
SOFTWARE PLATTFORMS (1st year)	48	6
DISTRIBUTED SYSTEMS (2nd year)	72	9
CONCURRENT AND REAL TIME PROGRAMMING (2nd year)	48	6
PRIVACY PRESERVING INFORMATION ACCESS (2nd year)	48	6
COMPUTERS AND NETWORKS SECURITY (2nd year)	48	6
COMPUTER ENGINEERING FOR MUSIC AND MULTIMEDIA (2nd year)	48	6
NATURAL LANGUAGE PROCESSING (2nd year)	48	6
12 ADDITIONAL FREE-CHOICE CREDITS		
INFERENTIAL STATISTICS (1st year)	48	6
QUALITY ENGINEERING (1st year)	48	6
BIG DATA COMPUTING (1st year)	48	6
INFORMATION SECURITY (2nd year)	48	6
OPERATIONS RESEARCH 2 (2nd year)	48	6
ADVANCED TEXT ANALYTICS (2nd year)	48	6

FURTHER MANDATORY ACTIVITIES	HOURS	CREDITS
ENGLISH LANGUAGE (for italian students) **or** **ITALIAN LANGUAGE** (for foreigh students)	-	3
PRACTICAL TRAINING	-	9
FINAL THESIS	-	21

ANY FURTHER NOTES

The Master Degree in Computer Engineering is managed by the Department of Information Engineering (https://www.dei.unipd.it/) which belongs to the School of Engineering (https://www.ingegneria.unipd.it/).

Educational activities are organized in semesters.

Class attendance is not compulsory, but strongly recommended.