



## SPECIALIST CERTIFICATIONS

- Automation and Industrial Robotics
- Simulation and Cyber-Physical Systems
- Technological Innovation

## SCHOOL OF ENGINEERING



# MECHA TRONICS ENGINEE RING

The Mechatronics Engineering Undergraduate Program trains well-rounded professionals capable of designing, manufacturing, implementing and integrating state-of-the-art automated systems and machinery. Through a solid foundation in theory and practice, graduates are equipped to drive innovation in production systems by combining mechanics, electronics, programming, and control—enhancing organizational competitiveness.

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	LEVEL 6	NIVEL 7	LEVEL 8	LEVEL 9	LEVEL 10
BASIC MATHEMATICS 5	CALCULUS I 5	APPLIED ARTIFICIAL INTELLIGENCE * 3	DIFFERENTIAL EQUATIONS * 4	COMPLEX VARIABLE AND TRANSFORMS ANALYSIS 4	SIGNAL AND SYSTEM ANALYSIS 4	COMPUTER-AIDED DESIGN AND MANUFACTURING 3	MECHATRONICS SYSTEM DESIGN 4	INDUSTRIAL PLANT DESIGN 4	INDUSTRIAL ROBOTICS SYSTEMS 3
RESEARCH METHODOLOGIES 3	ECONOMICS AND BUSINESS 3	CALCULUS II * 5	STATISTICS AND PROBABILITY * 4	COST AND BUDGET 3	INNOVATION MATERIALS TECHNOLOGY 3	ELECTRICAL MACHINES 3	RESEARCH PROJECT 4	MECHATRONICS INTEGRATIVE PROJECT I 4	MECHATRONICS INTEGRATIVE PROJECT II 4
PERSONAL AND SOCIAL DEVELOPMENT 3	LINEAR ALGEBRA 3	DIGITAL CIRCUITS 4	ELECTRICAL CIRCUITS 4	COMPUTER PROGRAMMING 3	DYNAMIC SYSTEMS CONTROL I 4	MACHINE LEARNING 3	INDUSTRIAL PROCESS CONTROL 3	PROJECT MANAGEMENT * 3	ELECTIVE V 3
LANGUAGE AND COMMUNICATION I 4	PHILOSOPHY TOPICS 3	PHYSICS I * 4	PHYSICS II * 4	APPLIED MECHANICS 4	FLUIDS AND HEAT ENGINEERING 3	EMBEDDED SYSTEMS AND INDUSTRIAL IOT 4	COMPUTER INTEGRATED MANUFACTURING 4	ELECTIVE III 3	ELECTIVE VI 3
CIVIC ETHICS 2	LANGUAGE AND COMMUNICATION II 3	ORGANIZATIONAL SYSTEMS * 2	FUNDAMENTALS OF MACHINES AND MECHANISMS 3	MATERIAL RESISTANCE ENGINEERING 4	MANAGERIAL COMPETENCE DEVELOPMENT * 3	DYNAMIC SYSTEMS CONTROL II 4	IMAGE DIGITAL PROCESSING 4	ELECTIVE IV 3	MANDATORY CREDITS 7
INTRODUCTION TO ENGINEERING 3	SOCIAL AND POLITICAL PROCESSES 3	MECHANICAL DRAWING 4	GENERAL CHEMISTRY * 4	ELECTRONIC CIRCUITS 4	MICROCONTROLLERS 3	PROJECT FORMULATION AND EVALUATION 3	ELECTIVE II 3	MANDATORY CREDITS 11	
MANDATORY CREDITS 20	MANDATORY CREDITS 20	MANDATORY CREDITS 22	MANDATORY CREDITS 23	MANDATORY CREDITS 22	INTELLIGENT SENSORS AND ACTUATORS 3	ELECTIVE I 3	MANDATORY CREDITS 19		
					MANDATORY CREDITS 23	MANDATORY CREDITS 20			

#### Elective Subjects:

PNEUMATIC SYSTEMS 3	INDUSTRIAL NETWORKS AND PROTOCOLS 3	UNMANNED AUTONOMOUS SYSTEMS 3	COMPUTER VISION IN ROBOTICS 3	DIGITAL TRANSFORMATION * 3	SUSTAINABLE PROJECT DESIGN * 3
BIG DATA 3	CYBERSECURITY 3	GRIPPER DESIGN AND FABRICATION 3	VIRTUAL REALITY AND AUGMENTED REALITY 3	DESIGN AND PROTOTYPE * 3	OCCUPATIONAL SAFETY, HEALTH, AND ORGANIZATIONAL WELL-BEING 3
DESIGN PROJECT MANAGEMENT * 3	INDUSTRIAL TECHNOLOGY * 3	SCADA SYSTEMS 3	DIGITAL TWIN 3	PROGRAMMING TECHNOLOGIES * 3	

To choose these subjects, it is necessary to meet the requirements set out in this curriculum.

Mandatory subjects of the General Studies Program

Mandatory subjects of the Mechatronics Engineering Undergraduate Program

Elective subjects of the Mechatronics Engineering Undergraduate Program

Subjects in common among undergraduate programs of the School \*\*



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\*\* The School of Engineering comprises the Civil Engineering, Industrial Engineering, Systems Engineering, Mechatronics Engineering, and Environmental Engineering undergraduate programs.

CREDIT SUMMARY	CREDITS	TYPE OF CREDIT
General Studies	40	Mandatory
School	147	Mandatory
Total Elective Subjects	18	Elective
Total Credits	205	

Subject to curricular change.