

School			
Major		Masters of Science in Electronics Engineering	
Major Requirements			
Code	Title	Credits	Description
EENG695A	Master Thesis Project(Part I)	3	The Master's Project course is six credits practical and research course. The master project is spread over two semesters. Students are requested to conduct a research relevant to the field of specialty; ending up with a thesis describing methodology; applications and results. The course also includes producing a prototype of the research subject (numerical model, physical application).
EENG560	Transducers, Sensors and Actuators	3	This course explains and illustrates the principles of function and use of transducers associated with electronic circuits. Particularly, it introduces sensors and actuators constituting the main parts of transducers which are available in all aspects of control technology. Focus will be concentrated on the conversion of physical quantities into electronic signals and vice versa.
EENG585	Introduction to Mechatronics	3	This course offers a multidisciplinary approach to analyze and design advanced engineering systems. A combination of background and competencies referring to mechanical engineering, electrical and electronics engineering, wireless communication, control and programming is developed to describe complex systems. The course is based on several concrete application cases that are analyzed in details: modern automotive electronic systems, aircraft electronic systems, biomedical applications, production lines control, etc. A brief introduction to Micro-Electro-Mechanical devices is also presented in this course.
EENG612L	Introduction to VLSI Lab	1	This course provides basic applications in CMOS circuit design using adapted integration tools. It covers the main steps of schematic acquisition and simulation, layout placement and routing, and final check rules before fabrication. The course proposes many application examples going from a component level to a complete circuit simulation and implementation.
EENG612	Introduction to VLSI	3	CMOS Logic, Fabrication, Verification, and Testing. MOS Transistor Theory. Delay. Power. Interconnection. Combinational and sequential Circuit Design.
EENG695B	Master Thesis Project(Part II)	3	The Master's Project course is six credits practical and research course. The master project is spread over two semesters. Students are requested to conduct a research relevant to the field of specialty; ending up with a thesis describing methodology; applications and results. The course also includes producing a prototype of the research subject (numerical model, physical application).
EENG512	Electronics for Communication Systems	3	Introduction to Electronic Communication; Amplitude Modulation Fundamentals and Circuits; Frequency Modulation Fundamentals and Circuits; Digital Communication Techniques; Radio Transmitters; Communication Receivers; Multiplexing and Demultiplexing.
EENG632	Antennas	3	Radiation from small antennas, linear antenna characteristics, arrays of antennas, impedance concepts and measurements, multi-frequency antennas, and aperture antennas. The student will also learn to calculate and use these metrics through the study of specific antennas such as center-fed dipoles, monopoles, loops, phased arrays, broadband antennas, Yagi antennas, traveling wave antennas, and aperture antennas. The Student will have the opportunity to use industry standard software to design a practical antenna, and use equipment to conduct some antenna measurements during the course.
EENG691	Graduate Seminar	1	Acquaints the student with the abilities to search for up-to-date Electrical and Electronics Engineering related topics and to address them in a professional atmosphere.
Core Requirements			
Code	Title	Credits	Description

EENG500L	Industrial Systems Automation and Control Lab	1	This lab introduces Programmable Logic Controllers__PLC's in both simulation and experimental environments. Starting with introduction and basic ON/OFF contacts, it switches to series and parallel circuits designed using the contacts. Two-way circuits are introduced, latching and self-latching circuits are discussed and impulse relays are tested. The students learn to pulse a cycle on rising oe falling edge as well as designing and using timers and counters in PLC projects. Multiple "real" applications are performed containing projects controlling heat of an oven, flashing lights, memory usage, conveyor belts and star-delta motor starters. The lab also teaches the student to use WinProladder software using both LADDER language and STEP instructions.
EENG500	Industrial Systems Automation and Control	3	After completing this course, the student will be able to understand the PLC (Programmable Logic Controllers), which are small computers, dedicated to automation tasks in an industrial environment. The PLC's are programmable power control systems dedicated for electromechanical and electrical systems control: relay control, analog (pneumatic, hydraulic) governors, timing, measurements, control and regulation.
EENG551	Analog Integrated Circuit Design	3	Integrated-circuits devices and modeling. Design of basic analog circuits, such as current sources and mirrors, differential amplifiers. Basic amplifier circuits, CMOS Opamps, opamp stability and frequency compensation. Feedback.EENG551 Analog Integrated Circuit Design Lab
EENG551L	Analog Integrated Circuit Design Lab	1	Design, simulation, and Layout of Analog Integrated Circuits using CAD tools.