

Student Outcomes - Updated 5-31-2022

	POLS	Applying Techniques & Tools - (1) an ability to apply knowledge, techniques, skills, and modern tools of mathematics, science, engineering, and technology to solve well-defined engineering problems appropriate to the discipline.	Solutions - (2) an ability to design solutions for well-defined technical problems and assist with engineering design of systems, components, or processes appropriate to the discipline.	Communicating - (3) an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature.	Measuring & Experimenting - (4) an ability to conduct standard tests and measurements, and to conduct, analyze, and interpret experiments.	Team Work - (5) an ability to function effectively as a member of a technical team.
1	ELET115N - C++	Understand the components of a computer system and understand basic design and problem solving strategies using C++.	✓			
		Understand C++ datatypes, Input / Output (I/O), File I/O, expressions, and errors.	✓			✓
		Understand the use of functions, parameter passing and return values from functions.	✓			✓
		Understand C++ control structures – if statements, loops, and conditional logic.	✓			✓
2	ELET121N - Digital Circuits I	Convert between number systems and express signed numbers in binary signed magnitude using 1's and 2's complement form	✓			
		Understand and apply Logic Gates, Adders, Encoders, Decoders, Comparators, Multiplexers and de-multiplexers	✓			✓
		Simplify algebraic expressions using Boolean algebra, DeMorgan's theorems and Karnaugh map to simplify expressions or truth table functions	✓			
		Apply Latches and Flip-Flops and use One-shots and Multivibrators as clocking sources	✓			
3	ELET131N - Circuit Analysis I	Determine and solve for current, voltage, resistance, and power in series, parallel, and series-parallel electric circuits using both scientific and engineering notation	✓			✓
		Calculate voltages and currents using Ohm's law, Kirchhoff's voltage and current laws as well as voltage and current divider equations	✓			✓
		Calculate electrical quantities using the branch-current analysis, mesh analysis, and nodal analysis methods	✓			✓
		Solve complex circuits by applying Superposition, Thevenin's, Norton's, and Maximum Power Transfer theorems	✓			✓
		Determine transient (time-varying) responses of capacitive and inductive networks and plot resulting voltages and currents.	✓		✓	✓

4	ELET132N - Circuit Analysis II	Determine the phase relationship between two sinusoidal waveforms and understand how to calculate the average and effective values of any waveform and using phasor format to add and subtract sinusoidal waveforms.	✓		✓	✓	
		Find the total impedance of series, parallel and series-parallel ac circuits and become proficient in applying Thevenin's and Norton's theorem to ac networks.	✓			✓	
		Develop confidence in the use of logarithms and decibels to define levels and also become familiar with frequency response of filters and display these using Bode Plots.	✓		✓	✓	
5	ELET141N - Electronics I	Define semiconductor principles and construct DC load lines and operating points for diodes, bipolar junction transistors (BJT's) and Field Effect Transistors (FET's).	✓			✓	
		Identify and analyze half-wave and full-wave rectifier circuits as well as clippers, clampers, peak detectors and voltage multipliers.	✓			✓	
		Discuss the operation of the BJT and the FET including biasing them in various configurations and identifying saturation and cut-off points for a given bias.	✓			✓	
		Design BJT and FET amplifier networks and use decibels and Bode Plots to understand their Frequency Response.	✓			✓	
6	ELET221N - Advanced Digital Circuits	Understand synchronous and asynchronous circuits by implementing various types of shift register (SR) circuits and using state machines and state diagrams to implement and apply circuits to real world applications.	✓	✓		✓	
		Understand memory basics including the various types of memory devices such as RAM, ROM, Flash, etc.	✓			✓	
		Be able to design basic programmable devices such as CPLDs and FPGAs in a real world application.	✓	✓		✓	
		Be able to discuss the computer bus basics including the different types (parallel, serial, USB, etc).	✓				
7	ELET241N - Electronics II	Understand logarithms, decibels, Bode Plots and Miller Effect Capacitance	✓			✓	
		Be able to calculate Frequency Response for BJT and FET Amplifiers as well as Op-Amps	✓			✓	
		Amp depends on its open-loop gain and differential input voltage.	✓			✓	
		Work with differential, instrumentation and bridge amplifiers and calculate the effects for AC performance, bandwidth, slew rate and noise.	✓			✓	
		Understand the basics of Electronic Communications and Digital Communications.	✓			✓	

8	ELET245N - Communications Theory	Explain the fundamentals of Amplitude Modulation (AM), Frequency Modulation (FM) and know the differences between time division multiplexing, frequency division multiplexing and digital modulation.	✓			✓	
		Explain the basics of transmission line theory and perform communication circuit analysis using computer simulations.	✓			✓	
		Understand principles of Data Communications.	✓				
9	ELET250N - Microcontrollers	Analyze the Hardware and Software Architectures of the Intel Family of Embedded Microprocessors.	✓				
		Understand and interpret coding schemes, such as Assembly Language Fundamentals, including looping, calls, and procedures and the differences between microcontrollers and microprocessors	✓				
		Interface the on-board ROM, RAM, registers, timers, counters, serial port, and general purpose I/O to digital, analog, and time-varying input and output signals	✓		✓		
		Apply microcontroller principles to real world situations. This includes develop real-time assembly language programs using linear, polling, handshaking, and interrupt techniques.	✓		✓		
10	ELET274N - EET Capstone	Create a Project Plan which includes but is not limited to: the project proposal, circuit design, simulation, test plans, bill of materials, flowcharts and software code (where applicable), and demonstration of a working prototype.	✓		✓	✓	
		Create a project test evaluation plan to assure the project works as initially specified.	✓			✓	
		Apply formal communication skills with client / customer (if applicable), instructor, teammates in both oral and written form. This includes but is not limited to regular status reports and formal public presentation.	✓			✓	
		Demonstrate teamwork which includes professional, ethical, and social responsibilities					✓



Criterion 3 –Associate Degree Quick Tracking Matrix

Criteria 3 – Existing Format

a. an ability to apply the **knowledge, techniques, skills,** and modern tools of the discipline to narrowly defined engineering technology activities;

b. an ability to apply a knowledge of **mathematics, science, engineering, and technology** to engineering technology problems that require limited application of principles but extensive practical knowledge;

c. an ability to conduct standard tests and

Criteria 3 – New Format

(1) an ability to apply **knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology** to solve well-defined engineering problems appropriate to the discipline;

(2) an ability to **design solutions** for well-defined technical problems and assist with engineering **design** of systems, components, or processes appropriate to the discipline;



