



## Applied College

### Program Diploma in Electronics Technician

#### Level 1

Course title	English Language (1)
Course code	ENG 101-1
Credit hours	3
Medium of instruction	English
Course specification	English Language (1) ENG 101-1 is taught at the first level for 3 credit hours.

Course title	Basics of Mathematics for Technician
Course code	Math 111
Credit hours	3
Medium of instruction	English
Course specification	Basics of Mathematics for Technicians Math 111 is at the first level of the first year for 3 credit hours. The content of this course will cover topics related to linear equations and nonlinear equations, differentiation and integration and vectors and matrices.

Course title	General Physics for Engineering (1)
Course code	PHYS 102
Credit hours	4
Medium of instruction	English
Course specification	General Physics for Engineering (1), PHYS 102 is at first level of the first year for 4 credit hours. This course covers topics in units and measurements, motion in one dimension, vectors, Newton's laws of motion and applications, circular motion, work and energy, elasticity, temperature and heat, first and second law of thermodynamics and applications, properties of fluids, and elasticity. Students study basic laws in each subject and their applications.



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<b>Course title</b>	Computer Programming Concepts
<b>Course code</b>	PROG 120
<b>Credit hours</b>	3
<b>Medium of instruction</b>	English
<b>Course specification</b>	This course covers concepts of problem solving using constructs of logic inherent in computer programming languages. It covers all the essential programming concepts including variables, data types, control statements, functions and arrays. In this course, students will apply problem solving concepts by analyzing problems and constructing, testing, and implementing algorithms using pseudo-code, and procedural programming.

<b>Course title</b>	Safety Principles, Occupational Health
<b>Course code</b>	COD 100
<b>Credit hours</b>	2
<b>Medium of instruction</b>	English
<b>Course specification</b>	Safety Principles, Occupational Health, COD 100 is at first level of the first year for 2 credit hours. This course gives a general and insightful description of occupational health and safety. It educates about the general rules related to safety and the professional working environment. Essential rules, principles, and laws will be the major knowledge gainers for students. Hence, it is an amalgamation of important factors.

<b>Course title</b>	Professional Ethics
<b>Course code</b>	COD 101
<b>Credit hours</b>	2
<b>Medium of instruction</b>	English
<b>Course specification</b>	Professional Ethics, COD 101 is at first level of the first year for 2 credit hours. This course introduces: Ethics and Professionalism, Moral reasoning and code of ethics Professionalism, Engineering as social experimentation, commitment to safety, Workplace responsibility and rights, Honesty, Environmental Ethics and global issues.



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## Level 2:

<b>Course title</b>	English Language (2)
<b>Course code</b>	ENG 102-2
<b>Credit hours</b>	3
<b>Medium of instruction</b>	English
<b>Course specification</b>	English Language (2) ENG 102-2 is taught at the second level of first year for 3 credit hours.

<b>Course title</b>	Technical Mathematics
<b>Course code</b>	Math 112
<b>Credit hours</b>	3
<b>Medium of instruction</b>	English
<b>Course specification</b>	Technical Mathematics Math 112 is at the second level of first year for 3 credit hours. The content of this course will cover topics related to introduction to differential equations, sequences and series, Fourier Series, Laplace Transforms, and complex numbers.

<b>Course title</b>	Electrical Circuits and Measurement Lab
<b>Course code</b>	ELD 110
<b>Credit hours</b>	2
<b>Medium of instruction</b>	English
<b>Course specification</b>	Electrical Circuits and Measurement Lab, ELD 110 is at second level of first year for 2 credit hours. The content of this course has the elementary concepts in electrical engineering, starting with electric current, resistance, and electrical models. It introduces key principles such as Ohm's law, potential difference, and SI units for work, power, and energy. The focus then shifts to D.C. circuits, including Kirchhoff's laws, source transformations, and various theorems like Superposition, Thevenin's, and Norton's. The section also explores A.C. fundamentals, covering sinusoidal voltage and currents, phasor representation, and the study of A.C. circuits involving resistance, inductance, and capacitance, along with corresponding phasor diagrams and waveforms.



<b>Course title</b>	Electronics Lab(1)
<b>Course code</b>	ELD 130
<b>Credit hours</b>	2
<b>Medium of instruction</b>	English
<b>Course specification</b>	Electronics Lab (1), ELD 130 is at second level of the first year for 2 credit hours. This subject introduce to Electronics fundamentals, Semiconductor Physics, PN Junction Diode, Zener diode, LED, Tunnel diode. Diode Models. Diode basic circuit analysis and applications of diode. Types of Diodes, Filter Circuits: Clipper, Clamper. BJT (Mode of operation, Terminal characteristics, DC biasing). CE. CB and CC Configurations, Amplifier configurations and characteristics. Electronics Equipment & Components.

<b>Course title</b>	Digital Logic Circuit Applications
<b>Course code</b>	ELD 150
<b>Credit hours</b>	3
<b>Medium of instruction</b>	English
<b>Course specification</b>	Digital Logic Circuit Applications, ELD 150 is at second level of the first year for 3 credit hours. This course deals with the digital logic circuit design. It starts with a presentation of the systems numbers and code, the logic gates, the Boolean algebra, and Karnaugh maps. It covers the design and analysis of combinational logic systems using logic gates, decoders, encoders, multiplexers, demultiplexers, adders, and subtractors. It also includes the design of sequential logic using the latches, flip-flops. Some sequential circuits components are also presented in this course, such as registers, shift registers, and counters. Construction of state diagram, up down counter, sequence detector, Synchronous sequential circuit design, State equivalence, State reduction, equivalence classes, implication chart



<b>Course title</b>	Microcontroller and Microprocessor Applications
<b>Course code</b>	ELD 220
<b>Credit hours</b>	2
<b>Medium of instruction</b>	English
<b>Course specification</b>	Microprocessors and Microcontrollers Applications, ELD 220 is at second level of the first year for 2 credit hours. This course is intended to introduce the evolution of Microprocessors. It will cover the architecture of processor. The topics covered are INTEL 8085 architecture, addressing modes, instruction set of 8085. Concept of Assembly language programming. Programming techniques. Timing diagram. Introduction to the concepts of 8086 architecture and functioning.

<b>Course title</b>	Basics of Communication
<b>Course code</b>	COD 130
<b>Credit hours</b>	3
<b>Medium of instruction</b>	English
<b>Course specification</b>	Basics of Communication, COD 130 is at second level of the first year for 3 credit hours. Introduction to communication systems. Transmitter and Receiver design. Signals analysis, Communication channels characteristics. Analog communication systems concepts. Signal to Noise ratio. Modulation techniques: Amplitude modulation (AM): AM Modulator and AM DeModulator. Digital communication systems concepts.



### Level 3

<b>Course title</b>	Academic Writing for Engineering
<b>Course code</b>	ENG 104
<b>Credit hours</b>	3
<b>Medium of instruction</b>	English
<b>Course specification</b>	Academic Writing for Engineering, ENG 104 is at third level of the second year for 3 credit hours.

<b>Course title</b>	Electrical Circuits Applications and Measurement Devices
<b>Course code</b>	ELD 211
<b>Credit hours</b>	3
<b>Medium of instruction</b>	English
<b>Course specification</b>	Electrical Circuits Applications and Measurement Devices, ELD 211 is at third level of the second year for 3 credit hours. This subject introduces Philosophy of Measurements, Accuracy Precision and resolution, Measurement of Electrical Quantities, Measurement of Resistance; low, medium and high resistance measurement. Measurement of capacitance inductance, DC Bridges, AC Bridges, Wattmeter. Current and Potential Transformer, Measurement of non-electrical quantities, humidity, pressure and temperature, measurement of displacement, LVDT. Thermocouple, Thermistor, RTD.

<b>Course title</b>	Electronics Lab(2)
<b>Course code</b>	ELD 231
<b>Credit hours</b>	2
<b>Medium of instruction</b>	English
<b>Course specification</b>	Electronics Lab(2), ELD 231 is at third level of the second year for 2 credit hours. This subject introduces Multistage Amplifiers analysis and application, Differential amplifiers, amplifiers frequency response characteristics and applications, Feedback and stability of amplifiers, power amplifier, classes and applications



<b>Course title</b>	Industrial Electronic Applications
<b>Course code</b>	ELD 232
<b>Credit hours</b>	2
<b>Medium of instruction</b>	English
<b>Course specification</b>	Industrial Electronic Applications, ELD 232 is at third level of the second year for 2 credit hours. This course introduces the basic concepts of switched-mode converter circuits for controlling and converting electrical power with high efficiency. Principles of converter circuit analysis introduced, and developed for finding the steady state voltages, current, and efficiency of power converters. Assignments include simulation of dc-dc converter, analysis of an inverting dc-dc converter.

<b>Course title</b>	Electronic Systems Troubleshooting
<b>Course code</b>	ELD 233
<b>Credit hours</b>	2
<b>Medium of instruction</b>	English
<b>Course specification</b>	Electronic Systems Troubleshooting, ELD 233 is at third level of the second year for 2 credit hours. This course emphasizes on the maintenance and troubleshooting of basic electronic circuits used in industry. These include the testing of basic electronic circuits, maintenance of computer systems, maintenance of home appliances and industrial equipment.



<b>Course title</b>	Opto Electronics Troubleshooting
<b>Course code</b>	ELD 240
<b>Credit hours</b>	2
<b>Medium of instruction</b>	English
<b>Course specification</b>	Opto Electronics Troubleshooting, ELD 240 is at third level of the second year for 2 credit hours. This subject is the fundamentals of optical signals and modern optical devices and systems. Optical systems sources (e.g., lasers and light-emitting diodes (LED), Light Dependent Resistor (LDR), Opto coupler, Opto interrupter, Infrared transmitter and receiver, Photovoltaic solar cells, photodetectors (e.g., photodiodes, photomultiplier tubes)- Photo transistor. Clipper, Clamper. Light modulation components (e.g., liquid-crystal light modulators), transmission media (e.g., free space or fibers), displays (LCOS microdisplays).

<b>Course title</b>	Advanced Digital Circuit
<b>Course code</b>	ELD 251
<b>Credit hours</b>	3
<b>Medium of instruction</b>	English
<b>Course specification</b>	Advanced Digital Circuit, ELD 251 is at third level of the second year for 3 credit hours. This course aims to convey a knowledge of advanced concepts of digital circuit and system design in state-of-the-art technologies. It emphasis on the circuit and chip design and optimization for both energy efficiency and high performance for use in applications such as microprocessors, signal and multimedia processors, communications, memory and periphery. Special attention will be devoted to the most important challenges facing digital circuit designers today and in the coming decade, being the impact of slowdown in scaling, nanoscale effects, variability, power-limited design and timing.





## Level 4

<b>Course title</b>	Field Training Internship
<b>Course code</b>	ELD 290
<b>Credit hours</b>	8
<b>Medium of instruction</b>	English
<b>Course specification</b>	Field Training Internship, ELD 290 is at fourth level of the second year for 8 credit hours.

