

ELECTRICITY/ELECTRONICS (ELE)

ELE 111 Electrical Fundamentals (4 Credits)

60 lecture, 30 lab, 4 total contact hours

In this course students will learn the fundamentals of DC and AC components and circuits. Topics of study will include proper circuit operation, component identification and testing procedures. Students will be instructed on the proper use of various test equipment for the purposes of verifying proper component and circuit operation and also troubleshooting circuit faults. The course is designed to foster an intuitive understanding of electrical concepts appropriate for occupations involved with the installation, maintenance, and troubleshooting of electrical circuits and devices. Students must have good numerical and algebraic skills to be successful in this course. Level I Prerequisite: Academic Reading and Writing Levels of 6; Academic Math Level 3

ELE 134 Motors and Controls (4 Credits)

60 lecture, 30 lab, 4 total contact hours

This course is an introduction to the theory and application of AC and DC electrical machines and their controls. Topics include DC generators, DC motors and controls, three-phase power, three-phase transformers, alternators, three-phase and single phase AC motors and controls, electronic motor drives, synchronous motors, servo motors and stepper motors. In weekly lab assignments, students will read and interpret schematic diagrams, connect motors and controls, test and troubleshoot motors and controls. Level I Prerequisite: Academic Reading and Writing Levels of 6 Level II Prerequisite: Academic Math Level 3 or higher; ELE 111 minimum grade "C-" or equivalent

ELE 174 ELE Co-op Education I (1-3 Credits)

120 to 360 clinical/other, 1 to 3 total contact hours

In this course, the student gains skills from a new experience in an approved, compensated, electronics related position. Together with the instructor and employer, the student sets up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two possible co-op experiences. Level I Prerequisite: Academic Reading and Writing Levels of 6; ELE 111 or CST 150; consent required

ELE 211 Basic Electronics (4 Credits)

60 lecture, 30 lab, 4 total contact hours

In this course, students will be introduced to basic electronics concepts and solid state devices. Topics will include the theory and application of light and temperature sensors, diodes, bipolar transistors, field effect transistors, thyristors and operational amplifiers. Using common laboratory equipment, students will build and test circuits. Level I Prerequisite: Academic Reading and Writing Levels of 6; Academic Math Level 3; ELE 111 minimum grade "C-"

ELE 224 Programmable Controllers (PLCs) I (4 Credits)

60 lecture, 30 lab, 4 total contact hours

This is an introductory, lab-based course which covers PLC hardware, and relay-type, timer, counter, data manipulation, math and program control instructions, with an emphasis on troubleshooting. Weekly labs use Allen Bradley SLC, PLC-5 and ControlLogix controllers and RSLogix software. This course is intended for Industrial Electronics and Mechatronics students, electricians, electrician (and other) apprentices, technicians and engineers. The title of this course was previously Introduction to PLCs. Level I Prerequisite: Academic Reading and Writing Levels of 6; ELE 111 minimum grade "C-"

ELE 254 Programmable Controllers (PLCs) II (4 Credits)

60 lecture, 30 lab, 4 total contact hours

This is an advanced, lab based course in PLC system hardware, software and troubleshooting. Topics include analog I/O, data manipulation, PID process control, data communications (DeviceNet and EtherNet/IP), and HMIs. Labs use A-B SLC-5/04 and ControlLogix controllers, and RSLogix software. This course is intended for Industrial Electronics and Mechatronics students, electricians, electrician (and other) apprentices, technicians and engineers. The title of this course was previously PLC Applications. Level I Prerequisite: Academic Reading and Writing Levels of 6 Level II Prerequisite: ELE 224 minimum grade "C-"; Academic Math Level 3

ELE 274 ELE Co-op Education II (1-3 Credits)

120 to 360 clinical/other, 1 to 3 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses. Level I Prerequisite: Academic Reading and Writing Levels of 6; ELE 174; consent required