COURSE OUTLINE: ELN115 - DIGITAL ELECTRONICS

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Course Code: Title	ELN115: DIGITAL INTEGRATED ELECTRONICS
Program Number: Name	4026: ELECTRICAL TN-PROC 4029: ELECTRICAL TY-PROCES
Department:	ELECT./INSTRUMENTATION PS
Academic Year:	2024-2025
Course Description:	This course is the study of digital logic circuits and pulse circuits. The student will study pulse fundamentals, basic digital gates, flip flops counters and registers, A/D and D/A conversion. Practical exercises include circuit analysis, testing, troubleshooting and applications.
Total Credits:	6
Hours/Week:	4
Total Hours:	60
Prerequisites:	ELN109, ELR100
Corequisites:	There are no co-requisites for this course.
This course is a pre-requisite for:	ELN335, ELR251
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**4026 - ELECTRICAL TN-PROC** VLO 1 Interpret and produce electrical and electronics drawings including other related documents and graphics. VLO 2 Analyze and solve routine technical problems related to electrical systems by applying mathematics and science principles. VLO 4 Assemble, test, modify and maintain electrical circuits and equipment to fulfill requirements and specifications under the supervision of a qualified person. VLO 6 Verify acceptable functionality and apply troubleshooting techniques for electrical and electronic circuits, components, equipment, and systems under the supervision of a qualified person. VLO 7 Analyze, assemble and troubleshoot control systems under the supervision of a qualified person. VLO 12 Apply health and safety standards and best practices to workplaces. **4029 - ELECTRICAL TY-PROCES** VLO 1 Analyze, interpret, and produce electrical and electronics drawings, technical reports including other related documents and graphics. VLO 6 Design, assemble, analyze, and troubleshoot electrical and electronic circuits, components, equipment and systems under the supervision of a qualified person. VLO 12 Apply and monitor health and safety standards and best practices to workplaces.

Essential Employability Skills (EES) addressed in this course:	EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication. EES 3 Execute mathematical operations accurately. EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems. EES 6 Locate, select, organize, and document information using appropriate technology and information systems. EES 7 Analyze, evaluate, and apply relevant information from a variety of sources. EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others. EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals. EES 10 Manage the use of time and other resources to complete projects. EES 11 Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	Passing Grade: 50%, D A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Other Course Evaluation & Assessment Requirements:	To successfully pass this course, the student must receive passing grades for both the Test and Evaluation portion of the class AND the Laboratory portion. There will be 10 Quiz`s that will add up to 100% as well as 2 Tests Grade Definition Grade Point Equivalent A+ 90 - 100% 4.00 A 80 - 89% B 70 - 79% 3.00 C 60 - 69% 2.00 D 50 - 59% 1.00 F (Fail)49% and below 0.00 CR (Credit) Credit for diploma requirements has been awarded. S Satisfactory achievement in field /clinical placement or non-graded subject area. U Unsatisfactory achievement in field/clinical placement or non-graded subject area. X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course. NR Grade not reported to Registrar`s office. W Student has withdrawn from the course without academic penalty. Cell Phones must be turned off and put away for tests Smart Watches must be removed and put away for tests If you your phone or watch rings during a test immediately hand in your test and a score of 0 will be assessed for the test. Backpacks will be brought to the front of the classroom under the board during testing.

Books and Required Resources:

Digital Systems Principles and Applications by Neal S. Widmer/Gregory L. Moss/Ronald J Tocci
Publisher: Pearson Edition: 12
ISBN: 978-0-13-422013-0

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
1. Understand the terminology and characteristics associated with rectangular wave-shapes.	1.1 Identify and Define Pulse Amplitude, Period Width, Pulse Space, Duty Cycle, Rise / Fall Times, Overshoot / Undershoot and Ringing. 1.2 Set-up common test equipment to output and measure the above listed electrical characteristics of rectangular wave-shapes.
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Understand Digital Numbering Systems.	2.1 Fluently count in Binary, Octal, Hexadecimal, Binary Coded Decimal up to 10,000. 2.2 Convert between Decimal and Binary, Octal, Hexadecimal, Binary Coded Decimal 2.3 Understand the Gray and ASCII codes.
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3. Understand and troubleshoot circuits employing TTL & CMOS Logic Gates.	3.1 Construct and test circuits employing common digital logic functions 3.2 Analyze and troubleshoot circuits employing digital logic functions using common test equipment (DVM, Oscilloscope, Logic Probe / Logic Pulser)

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Laboratory Assignements.	30%
Tests and Quizes	70%

Date: September 18, 2024

Addendum: Please refer to the course outline addendum on the Learning Management System for further information.