COURSE OUTLINE: ELN340 - MICROCONTROLLERS II

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Course Code: Title	ELN340: EMBEDDED MICROCONTROLLERS II
Program Number: Name	4029: ELECTRICAL TY-PROCES
Department:	ELECT./INSTRUMENTATION PS
Academic Year:	2022-2023
Course Description:	This is an application course which will employ embedded microcontrollers and associated hardware to solve more advanced computer interfacing problems.
Total Credits:	4
Hours/Week:	3
Total Hours:	42
Prerequisites:	CSD105, ELN335
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**4029 - ELECTRICAL TY-PROCES** VLO 6 Design, assemble, analyze, and troubleshoot electrical and electronic circuits, components, equipment and systems under the supervision of a qualified person. VLO 7 Design, install, analyze, assemble and troubleshoot control systems under the supervision of a qualified person. VLO 8 Use computer skills and tools to solve a range of electrical related problems.
Essential Employability Skills (EES) addressed in this course:	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 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.
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:	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W Student has withdrawn from the course without academic penalty.

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
1. Write high level language programs for a microcontroller.	1.1 Develop algorithms and write source code in a high level language for an embedded microcontroller. 1.2 Compile and debug programs.
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Utilize high level PC based software to interface with microcontrollers	2.1 Develop a system to collect, store and analyze typical process data.
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3. Build interface circuitry	3.1 Design, build and commission hardware interface circuitry for an embedded microcontroller.
Course Outcome 4	**Learning Objectives for Course Outcome 4**
4. Test completed modules and projects.	4.1 Test the completed applications and debug the problems.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Labs and Projects	70%
Tests/Quizzes	30%

Date: August 15, 2022

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