

Course Title: Microprocessors Systems Design		
Course Prefix: ELEG	Course No.: 3073	Section No.: P01
Department of Electrical and Computer Engineering		College of Engineering
Instructor Name:		<i>Suxia Cui</i>
Office Location:		<i>New Electrical Engineering Building</i>
Office Phone:		936-261-9917
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U.S. Postal Service Address:		Prairie View A&M University
P.O. Box 519		
Mail Stop 2520		
Prairie View, TX 77446		
Office Hours: TR 9:30am-2:00pm		
Virtual Office Hours:		
Course Location:	<i>New Electrical Engineering Building Room 115</i>	
Class Meeting Days & Times: TR 8:00am-9:20am		
Catalog Description: (3-0) Credit 3 semester hours. Introduction to architecture, operation, and application of microprocessors; microprocessor programming; address decoding; system timing; parallel, serial, and analog I/O; interrupts and direct memory access; interfacing to static and dynamic RAM; microcontrollers. Introduction to Microcomputers.		
Prerequisites: ELEG 1043 and ELEG 3063.		
Co-requisites: ELEG 3071.		
Required Text: "Designing Embedded Systems with PIC Microcontrollers, Principles and Applications" Tim Wilmshurst, Elsevier, 2 nd edition. ISBN: 978-1-85617-750-4. Instructor's handouts.		
Recommended Text/Readings: "Interfacing PIC Microcontrollers, Embedded Design by Interactive Simulation" Martin Bates, Elsevier 2 nd edition. ISBN: 978-0-08-099363-8.		
Access to Learning Resources:	PVAMU Library: phone: (936) 261-1500; web: http://www.tamu.edu/pvamu/library/ University Bookstore: phone: (936) 261-1990; web: https://www.bkstr.com/Home/10001-10734-1?demoKey=d	
Course Goals or Overview:		
The goal of this course is to teach fundamentals of microprocessor systems.		
Course Outcomes / Objectives		
This course is going to measure below ABET outcomes: [c] Ability to design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, societal, political, ethical, health and safety, manufacturability, and sustainability. [f] An understanding of professional and ethical responsibility. [h] The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.		
At the end of this course, the student will		
1	Be able to design, program, and test advanced microcontroller-based systems for general purpose and/or special-purpose applications.	

Course Requirements & Evaluation Methods													
This course will utilize the following instruments to determine student grades and proficiency of the learning outcomes for the course. Note: See Program Outcomes in True Outcomes													
Exams – written tests designed to measure knowledge of presented course material Exercises – written assignments designed to supplement and reinforce course material Projects – web development assignments designed to measure ability to apply presented course material Class Participation – daily attendance and participation in class discussions													
(instruments will vary slightly depending on the course)													
Grading Matrix (points will vary according to instructor's grading system)													
	Homework & Quizzes: 30% Tests & Exams: 40% Projects: 25% Attendance: 5%												
Total: 100%													
Grade Determination:													
	<table border="1"> <thead> <tr> <th>Numerical score</th> <th>Letter grade</th> </tr> </thead> <tbody> <tr> <td>90 or more</td> <td>A</td> </tr> <tr> <td>80-89</td> <td>B</td> </tr> <tr> <td>70-79</td> <td>C</td> </tr> <tr> <td>60-69</td> <td>D</td> </tr> <tr> <td>Less than 60</td> <td>F</td> </tr> </tbody> </table>	Numerical score	Letter grade	90 or more	A	80-89	B	70-79	C	60-69	D	Less than 60	F
Numerical score	Letter grade												
90 or more	A												
80-89	B												
70-79	C												
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Course Procedures													
Submission of Assignments:													
(if there are any special instructions relating to assignment submissions, they should be discussed here)													
Formatting Documents: Microsoft Word is the standard word processing tool used at PVAMU. If you're using other word processors, be sure to use the "save as" tool and save the document in either the Microsoft Word, Rich-Text, or plain text format.													
Exam Policy Exams should be taken as scheduled. No makeup examinations will be allowed except under documented emergencies (See Student Handbook). (if there are any other special instructions relating to exams, they should be discussed here)													
Professional Organizations and Journals													
(if applicable to your course or program, they should be listed here)													
References													
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16 WEEK CALENDAR
Week One: Review& Introduction
Chapter (s):
Assignment (s):
Week Two: Topic Number Systems and Gates
Chapter (s):
Assignment (s):
Week Three: Topic Microcontroller Technology Introduction
Chapter (s):
Assignment (s):
Week Four: Topic PIC Instructions in Assembly Language Programming
Chapter (s):
Assignment (s):
Week Five: Topic Register Instruction
Chapter (s):
Assignment (s):
Week Six: Topic I/O and Subroutines and Time Delay Routines
Chapter (s):
Assignment (s):
Week Seven: Topic PIC Microcontroller Simple I/O and WDT (Watch Dog Timer) Controls Exercises
Chapter (s):
Assignment (s):
Week Eight: Topic
Chapter (s): Exercise and Review for Midterm
Assignment (s):
Mid-Term Exam
Week Nine: Topic Spring Break
Chapter (s):
Assignment (s):
Week Ten: Topic Intel Presentation & Demonstration
Chapter (s):
Assignment (s):
Week Eleven: Topic I/O Controls with Interrupts Applications
Chapter (s):
Assignment (s):
Week Twelve: Topic I/O Controls and LCD Module Parallel Communications and Table Lookup
Chapter (s):
Assignment (s):
Week Thirteen: Topic Matrix Keypad Software Scanning: Debouncing & Decoding Design
Chapter (s):
Assignment (s):
Week Fourteen: Topic Stepper Motors
Chapter (s):
Assignment (s): Final Project & Report
Week Fifteen Topic: Introduction to HPC
Chapter (s):
Assignment (s):
Week Sixteen Final Exam

University Rules and Procedures

Disability statement (See Student Handbook):

Students with disabilities, including learning disabilities, who wish to request accommodations in class should register with the Services for Students with Disabilities (SSD) early in the semester so that appropriate arrangements may be made. In accordance with federal laws, a student requesting special accommodations must provide documentation of their disability to the SSD coordinator.

Academic misconduct (See Student Handbook):

You are expected to practice academic honesty in every aspect of this course and all other courses. Make sure you are familiar with your Student Handbook, especially the section on academic misconduct. Students who engage in academic misconduct are subject to university disciplinary procedures.

Forms of academic dishonesty:

1. Cheating: deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.
2. Academic misconduct: tampering with grades or taking part in obtaining or distributing any part of a scheduled test.
3. Fabrication: use of invented information or falsified research.
4. Plagiarism: unacknowledged quotation and/or paraphrase of someone else's words, ideas, or data as one's own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one's own work also constitutes plagiarism.

Nonacademic misconduct (See Student Handbook)

The university respects the rights of instructors to teach and students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with either (1) the instructor's ability to conduct the class, (2) the inability of other students to profit from the instructional program, or (3) campus behavior that interferes with the rights of others will not be tolerated. An individual engaging in such disruptive behavior may be subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under nonacademic procedures.

Sexual misconduct (See Student Handbook):

Sexual harassment of students and employers at Prairie View A&M University is unacceptable and will not be tolerated. Any member of the university community violating this policy will be subject to disciplinary action.

Attendance Policy:

Prairie View A&M University requires regular class attendance. Excessive absences will result in lowered grades. Excessive absenteeism, whether excused or unexcused, may result in a student's course grade being reduced or in assignment of a grade of "F". Absences are accumulated beginning with the first day of class.

Student Academic Appeals Process

Authority and responsibility for assigning grades to students rests with the faculty. However, in those instances where students believe that miscommunication, errors, or unfairness of any kind may have adversely affected the instructor's assessment of their academic performance, the student has a right to appeal by the procedure listed in the Undergraduate Catalog and by doing so within thirty days of receiving the grade or experiencing any other problematic academic event that prompted the complaint.

Technical Considerations for Online and Web-Assist Courses

Minimum Hardware and Software Requirements:

- Pentium with Windows XP or PowerMac with OS 9
- 56K modem or network access
- Internet provider with SLIP or PPP
- 8X or greater CD-ROM
- 64MB RAM
- Hard drive with 40MB available space
- 15" monitor, 800x600, color or 16 bit
- Sound card w/speakers
- Microphone and recording software
- Keyboard & mouse
- Netscape Communicator ver. 4.61 or Microsoft Internet Explorer ver. 5.0 /plug-ins
- Participants should have a basic proficiency of the following computer skills:
 - Sending and receiving email
 - A working knowledge of the Internet
 - Proficiency in Microsoft Word
 - Proficiency in the Acrobat PDF Reader
 - Basic knowledge of Windows or Mac O.S.

Netiquette (online etiquette): students are expected to participate in all discussions and virtual classroom chats when directed to do so. Students are to be respectful and courteous to others in the discussions. Foul or abusive language will not be tolerated. When referring to information from books, websites or articles, please use APA standards to reference sources.

Technical Support: Students should call the Prairie View A&M University Helpdesk at 936-261-2525 for technical issues with accessing your online course. The helpdesk is available 24 hours a day/7 days a week. For other technical questions regarding your online course, call the Office of Distance Learning at 936-261-3290 or 936-261-3282

Communication Expectations and Standards:

All emails or discussion postings will receive a response from the instructor within 48 hours.

You can send email anytime that is convenient to you, but I check my email messages continuously during the day throughout the work-week (Monday through Friday). I will respond to email messages during the work-week by the close of business (5:00 pm) on the day following my receipt of them. Emails that I receive on Friday will be responded to by the close of business on the following Monday.

Submission of Assignments:

Assignments, Papers, Exercises, and Projects will distributed and submitted through your online course. Directions for accessing your online course will be provided. Additional assistance can be obtained from the Office of Distance Learning.

Discussion Requirement:

Because this is an online course, there will be no required face to face meetings on campus. However, we will participate in conversations about the readings, lectures, materials, and other aspects of the course in a true seminar fashion. We will accomplish this by use of the discussion board.

Students are required to log-on to the course website often to participate in discussion. It is strongly advised that you check the discussion area daily to keep abreast of discussions. When a topic is posted, everyone is required to participate. The exact use of discussion will be determined by the instructor.

It is strongly suggested that students type their discussion postings in a word processing application and save it to their PC or a removable drive before posting to the discussion board. This is important for two reasons: 1) If for some reason your discussion responses are lost in your online course, you will have another copy; 2) Grammatical errors can be greatly minimized by the use of the spell-and-grammar check functions in word processing applications. Once the post(s) have been typed and corrected in the word processing application, it should be copied and pasted to the discussion board.