Old Dominion University
ECE 346: Microcontrollers
Spring Semester 2015

Instructor:	Youssif Al-Nashif, PhD Kaufman Hall, Room 231C Email: `yalnashi@odu.edu` Phone: (757) 683-5483
Office Hours:	MW: 10:00AM - 11:50AM MW: 12:50PM - 01:30PM
Lectures:	MWF: 12:00PM - 12:50PM @ KAUFMAN HALL 0224
Course Description:	The students are introduced to microprocessor and peripheral programming, I/O interfacing, and interrupt management. The students will conduct a sequence of projects that require programming of a microcontroller-based system and integrating it with other components. The project assignments require a microcontroller development board and accessories supplied by the student.
Prerequisites:	CS 150 A grade of C or better in ECE 241

Course Outline:

- Introduction

- Microcontrollers Overview: History and Applications, General Architecture

- Algorithmic State Machines Review

- Assembly Programming: Instruction Set Architecture, Data Path and Controller, Programming Model, Addressing Modes, Instruction Types, Programming Flow and Organization , Assembler, Subroutines, Parameter Passing, Interrupts, High-Level Language Interfacing

- Peripheral I/O Interfacing: I/O Management and Timing, Analog to Digital Conversion, Pulse-Width Modulation, Interrupt Management, Standard Communication Interfaces

- Real Time Processing

Suggested Textbook: P. Chu,*"Embedded SoPC Design with Nios II Processor and VHDL Examples"*, 1st edition, 2011, Wiley, ISBN-13: 978-1118008881

Required Hardware:
- Altera (Terasic) DE0-Nano Development Board (academic price: $61). Link: *http://www.terasic.com.tw/cgi-bin/page/archive.pl?No=593*

- ECE 241 Laboratory Parts Kit ($40.00): bread board, 22 AWG wire, wire cutters, 7400 series integrated circuit components, LEDs, and resistors.

Grading :

Homework	25%
Midterm Project	25%
Final Project	25%
Final Exam	25%
Total:	100%

Guidelines:

- **Contact Policy:** The subject of emails must start with "ECE346-" followed by the topic.E-mail questions should be limited to personal inquiries. If you have class content/material related questions, use the class forum under "Discussion Board" on BlackBoard.

- **Discussion Board (Forum):** Discussion Board on Blackboard will be used as a communication mechanism between the instructor, TA, and students. You can ask any class related questions. However, before posting a new question make sure to check the forum first for similar questions posted by other students. Questions could be answered by anyone. Answers should not violate the honor code

    - **Homework and projects:** There will be several assignments during the semester, all are equally weighted. While the students are encouraged to discuss the problems, each individual should prepare their own answers. Any violation of this rule will be considered as cheating and will be dealt with accordingly.

    - **Late Assignments:** No late assignments.

    - **Exams:** All exams will be closed book and closed notes.

    - **Make-up Exams:** No make-up exams will be given unless approved by University Student Ombudsperson Services (S.O.S). For documented absence for an exam, the documents will be examined and investigated by (S.O.S.). Bear in mind (S.O.S) will only investigate for the situations severe enough to cause you to miss at least one week of classes.

- **Attendance Policy:** Attendance to the lectures sessions is mandatory. Absenting for a lecture may result in missing an exam; there will be no makeup exams. According to ODU policy: "Students are expected to attend every class unless it is absolutely necessary to miss".

Grading Scale:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
≥94	90-93	87-89	84-86	80-83	77-79	74-76	70-73	67-69	64-66	60-63	<60

Important Dates:
1. **Jan. 17 to 19, 2015**   Martin Luther King Jr. Holiday
2. **Mar. 6, 2015**   Midterm
3. **Mar. 9 to 14, 2015**   Spring Break
4. **May 6, 2015**   Final Exam (12:30PM - 3:30PM)

Electronic Device Policy:
All electronic devices, including laptop computers, tablets, cell phones, etc. must be turned off and put away during all classes. No recording (audio or video) of the lecture is permitted. Since some of the lectures will be supplemented by power point lecture notes, students are encouraged to print off lecture notes and bring them to class. Violation of this policy will result in dismissal from the lecture.

Honor Code:
All students are expected to abide by the ODU Honor Code. For more information, refer to http://dl.odu.edu/about/policies and https://www.odu.edu/hs/honor-code

Office of Educational Accessibility:
Old Dominion University is committed to ensuring equal access to all qualified students with disabilities in accordance with the Americans with Disabilities Act. The Office of Educational Accessibility (OEA) is the campus office that works with students who have disabilities to provide and/or arrange reasonable accommodations.

- If you experience a disability which will impact your ability to access any aspect of my class, please present me with an accommodation letter from OEA so that we can work together to ensure that appropriate accommodations are available to you.

- If you feel that you will experience barriers to your ability to learn and/or testing in my class but do not have an accommodation letter, please consider scheduling an appointment with OEA to determine if academic accommodations are necessary.

The Office of Educational Accessibility is located at 1021 Student Success Center and their phone number is (757) 683-4655. Additional information is available at the OEA website: http://www.odu.edu/educationalaccessibility/