

Department of Electrical and Computer Engineering

**CNT 3142 – MICROCONTROLLERS FOR INTERNET OF THINGS
Fall 2022**

Instructor : Dr. Shafiul Islam
Office Hours : by appointments or
Tuesday & Thursday 11:30 – 1:30 am

Office : EC – 3105
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Class :
TBD

Web Page : <https://ece.fiu.edu/people/faculty/index.html#>

Catalog Description:

Microprocessors for IoT is a course that provides an overview of embedded systems and microcontrollers in the context of IoT. The assignments are based on an 8-bit Atmel Microcontroller based platform. This course covers the microcontroller's architecture and interfacing, along with an integrated development environment. At the end of a semester, students must design, develop, and test a real-world IoT system.

This course will consist of 6 modules, seven assignments, one project, and one midterm exam. Module availability is open. Each assignment will be completed individually or in a group (as specified in the assignment) and will be due in approximately seven days. Assignments will be evaluated within a week of submission. Communication will take place primarily via Canvas Inbox and professor announcements. (3 Credits)

Reference Textbook: Open source materials are used as instruction materials

Course Objectives:

1. Describe the architecture and operation of microcontrollers including communication interfaces, timer, and interrupts.
2. Use Arduino programming and hardware.
3. Identify, formulate and design small experiments and real-world IoT system.

Relationship of course to program outcomes:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

Grading Scale:		
A	92-100	"Florida International University is a community dedicated to generating and imparting knowledge through excellent teaching and research, the rigorous and respectful exchange of ideas, and community service. All students should respect the right of others to have an equitable opportunity to learn and honestly to demonstrate the quality of their learning. Therefore, all students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational mission of the University. All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the Academic Misconduct procedures and sanctions, as outlined in the Student Handbook."
A-	90-92	
B+	88-90	
B	82-88	
B-	80-82	
C+	78-80	
C	70-78	
D	60-70	
F	< 60	

Department Regulations Concerning Incomplete Grades

To qualify for an Incomplete, a student:

1. Must contact (e.g., phone, email, etc.) the instructor or secretary before or during missed portion of class
2. Must be passing the course prior to that part of the course that is not completed
3. Must make up the incomplete work through the instructor of the course
4. Must see the Instructor. All missed work must be finished before last two weeks of the following term.

Policies:

1. **Academic Misconduct:** For work submitted, it is expected that each student will submit their own original work. Any evidence of duplication, cheating or plagiarism will result at least a failing grade for the course.
2. Absences: Resolution of absences and materials missed are student responsibility
 - a) **Unexcused Absences:** Two unexcused absences are permitted during the term. More than two will result in the loss of points from your final grade. (1 point per absence above two, 3 points per absence above 5).
 - b) **Excused Absences:** Only emergency medical situations or extenuating circumstances are excused with proper documentation.
 - 1. Review documentation with the lecturer,
 - 2. email as a written record to mdsislam@fiu.edu.
 - Name, SID, class, section, description and date of the absence
3. **On Time:** As in the workplace, on time arrival, preparation, and submissions are required.
4. **Deadlines: Work is due on the date specified.** Late submissions within one week will receive up to half credit. After one week, **late work will not be accepted.** Late submissions are graded after the final exam.

Participation deadlines are absolute – no late completions are accepted

5. **Submissions: This class is paperless.** Submissions are made using the web form listed on the class web site (online and in class sections) See the class web site for instructions. All submissions must be
 - a) a single document,
 - b) web accessible and readable with a browser
 - c) with a single URL reference.
6. **DO NOT** submit work by email.
7. Instructor reserves right to change course materials or dates as necessary.

Grading Scale: NOTE: There are *no makeup exams* offered

Topic	Percentage
Exams <i>no makeup</i>	15%
Discussion	5%
Project – Exercises	35%
Assignments	40%
Quiz	5%
Attendance	Unexcused absence penalty based on in class policy

Class Schedule

Tentative weekly schedule and topics (may be adjusted based on other activities):

Week	Dates	Module/Topic	Notes and Deadlines
1	Aug 24 – Aug 30	1	
2	Aug 31 – Sep 06	1	Due Sunday, 11:59 pm: PlayPosit Quiz 1 PlayPosit Quiz 2 Assignment 1
3	Sep 07 – Sep 13	2	Due Sunday, 11:59 pm:
4	Sep 14 – Sep 20	2	Due Sunday, 11:59 pm: Form Groups Assignment 2
5	Sep 21 – Sep 27	3	Due Sunday, 11:59 pm:
6	Sep 28 – Oct 04	3	Due Sunday, 11:59 pm:
7	Oct 05 – Oct 11	3	Due Sunday, 11:59 pm: Assignment 3
8	Oct 12 – Oct 18	4	Due Sunday, 11:59 pm: Project Proposal Assignment 4
9	Oct 19 – Oct 25	4	Due Sunday, 11:59 pm: Assignment 5 Midterm Exam
10	Oct 26 – Nov 01	5	Due Sunday, 11:59 pm:

Week	Dates	Module/Topic	Notes and Deadlines
11	Nov 02 – Nov 08	5	Due Sunday, 11:59 pm: PlayPosit Quiz 1 PlayPosit Quiz 2 Assignment
12	Nov 09 – Nov 15	6	Due Sunday, 11:59 pm:
13	Nov 16 – Nov 22	6	Due Sunday, 11:59 pm:
14	Nov 23 – Nov 29		Thanksgiving Week
15	Nov 30 – Dec 06	6	Due Sunday, 11:59 pm: Final Design Project Presentation Final Design Project Demonstration