**Department of Electrical and Computer Engineering**

**EEL 2880 - ENGINEERING SOFTWARE TECHNIQUES SPRING 2020 :**

Instructor : Dr. Subbarao Wunnava Ph.D., P.E.,

 [In collaboration with Dr. Herman Watson: Course Coordinator]

Office Hours : 08.30 -10.30 AM ; Other times by appointment

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Classroom: EC 2832: T & R : 9.30 AM - 10.45 AM

**Catalog Description:**

Engineering problem solving process, overview of a generalized computing system,

software development, real-life engineering applications, computational implications. (3 Credits)

**Textbook:**

Deitel & Deitel C How to Program (LATEST EDITION) ISBN 0-13-299044-X: Class programs and Notes

Material from Industry such as Microsoft, IBM will be used

**Course Objectives:**

Through successful completion of the course, the student will:

 Understand the stages of the engineering problem solving process and

 their relationship to the development of software for its implementation.

 Learn the C programming language, as a vehicle for the solution of

 engineering problems.

**Relationship of course to program outcomes:**

a) an ability to apply knowledge of mathematics, science, and engineering

c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

e) an ability to identify, formulate, and solve engineering problems.

g) an ability to communicate effectively.

h)the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

k)an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

**Topics Covered:**

 Engineering problem solving

 Overview of generalized computing system

 C programs

 Control Structures and Data Files

 Modular programming with Functions

 Arrays and Matrices

 Pointers

 Structures

 Introduction to C++

 Machine Language and other languages

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| **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 | 72-78 |
| C- | 70-72 |
| D+ | 68-70 |
| D | 62-68 |
| D- | 60-62 |
| 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:**

* **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.
* **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).
* **Excused Absences:** Only emergency medical situations or extenuating circumstances are excused with proper documentation.
* **On Time:** As in the workplace, on time arrival and preparation are required. Two “lates” are equivalent to one absence. (Leaving class early is counted the same as tardy.)
* **Deadlines:** Assignments are due at the beginning of the class period on the date specified. Assignments submitted late (within 1 week) will receive **half credit.**
* **DO NOT** send assignments by email.
* Instructors reserve right to change course materials or dates as necessary.

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

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| Topic | Percentage |
| 3 Quizzes(Unannounced) | 30% |
| 3 Tests including final | 55% |
| Projects/attendance | 15% |
| Total | 100% |

**Tentative Class Schedule: EEL 2880: SPRING 2020**

**Dr. Subbarao Wunnava [courtesy Dr. Herman Watson: Course Coordinator] 01 28 2020**

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| **Wk** | **Date** |  **2880 Weekly Topics** | **Homework/Activity** |
| 1 | 01 07 20 T R | Introduction to Computers, Software and HardwareDigital Logic Concepts and Computer Software environments |  Study Chp 1 & 2; NotesObtain Text/materials |
| 2 | 01/14/20 T R  | Integrated Development Environments (IDE)Practical programming examples with the IDE platforms | HW1 Assign; Discuss HW1 |
| 3 | 01/21-23/ T R01/28-30 T R | Structured C programming & Control Structures: While, for and other loopsWhile, for and other loops and advanced Controls | Study Chp 3&4; NotesAssign HW 2 |
| 4 | 02//04/20 T R | Expressions / Statements**Review** | Study Chp 5; Notes: Review and HW 3 |
| 5 | 02/11/20 T R | **TEST 1 [T1]**Introduction to Arrays | **Chps 1-5; and Class Notes** Study Chp 6; **Project 1 Assign** |
| 6 | 02/18/20 T R | Arrays and practical programming examplesCase studies of Arrays; Introduction to Pointers | Assign HW 4Project 1 discuss |
| 7 | 02/25/20 T R | Case studies and programming examples of PointersCase studies and programming examples of Pointers | Study Chp 6 & 7**Project 1 Due** |
| 8 | 03//03/20 T R | Introduction to StringsPractical programming applications and case studies with Strings & Pointers | Study Chp 7& 8; **Project 1 Due**Assign HW 5: Notes |
| 9 | 03/10/20 T R | Machine Code & Software Simulators; building computer system**Review**  | Notes and Handouts;**Assign Project 2** & HW 6 |
| 10 | 03/17/20 T R | **TEST 2 [T2]** Introduction to Formatted I/O | **T2, Chp 5-8, and Class Notes****Assign Project 2;** StudyChp 9 |
| 11 | 03/24/20 T R | Structures and File I/OProgramming and software applications of structures and file systems | Study Chp 9 and 10; NotesAssign HW 7 |
| 12 | 03//31/20 T R | Structures, File I/OPractical programming applications of Structures, Files, and I/O | Study Chp 11; NotesNotes: Proj 2 Discuss |
| 13 | 04/07/20 T R |  Introduction to other languages; C++ enhancementsPractical programming examples & Review : Project 2 Due | Study Chp 15 & 20 **Notes** |
| 14 | 04/14/20 T R |  **TEST 3: COMPREHENSIVE**COURSE CONCLUSION |   **Test 3 covers all quizzes, HWs T1,T2, and projects** |
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 ** 08 28 2020**

 **Reading and home work material will be assigned during class discussions**

 **Home Work & Projects can be done in groups:**

 **Home Work and project knowledge will help performance in quizzes & Tests**

**Students are encouraged to rework the programming examples discussed in class, at home**