

Department of Electrical and Computer Engineering

**EEL 2880 - C Programming for Embedded Systems
Summer 2024**

Instructor : Dr. Herman Watson
Office Hours : by Zoom appointment

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Class :
On Line - RVC

Web Page : <http://web.eng.fiu.edu/watsonh/>

Catalog Description:

Engineering problem solving process, overview of a generalized computing system, software development, real-life engineering applications, computational implications.
(3 Credits)

Reference Textbook: Open source materials are used as instruction materials

Deitel & Deitel
C How to Program
ISBN 0-13-299044-X

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:

- 1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- 2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- 4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- 6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- 7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

| 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 | 60-69 | |
| 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 (In-Class only):** 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. Request Mitigating Circumstances form
 - 2. Complete and submit form for review
3. **On Time (In-Class only):** As in the workplace, on time arrival and preparation are required.
4. **Deadlines: Work is due on the date specified.** Late submissions and corrections within one week will receive up to half credit. After one week, **late work will not be accepted.** Each assignment is reviewed for grades once only; late submissions are graded after the final exam. Participation deadlines are absolute – no late completions are allowed.
5. **Submissions: This class is paperless. Submissions are made using the web form listed on the class web site, not Canvas.** All submissions must be
 - a) Captures of work must be whole screen images (include time and calendar)
 - b) Everything placed in a single word or pdf document stored on your own cloud storage
 - c) Contain your name, date, and time of completion within the document
 - d) Permission: accessible by anyone with link and readable with a browser
 - e) Use a single URL link to view the document
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 |
|-------------------------|--|
| Exam 1 <i>no makeup</i> | 20% |
| Exam 2 <i>no makeup</i> | 25% |
| Final <i>no makeup</i> | 25% |
| Project | 15% |
| Homework | 10% |
| Participation (Quizzes) | 5% |
| Attendance | Unexcused absence penalty based on in class policy |

Class Schedule:

In-Class - each session: Tuesday, Thursday

Online – videos listed below by week

| Wk | Module | 2880 Calendar Topic | Homework |
|----|--------------------------|--|--|
| 1 | 05/06/24 M01 & M02 | Introduction, Flow Charts/ Integrated Development Environments V2: SFC, V3: install C::B, V4: IDE | HW01 Flow Chart HW02 Install IDE 05/14/24 |
| 2 | 05/13/24 M03 | Objects / Expressions V5: Data Types, ForIf, V6: Scopes | HW03 Operators Quiz1 05/21/24 |
| 3 | 05/20/24 M04 | Expressions / Statements – Print Pi & Burglar Alarm V7: PrintPi , V8: Burglar Alarm (bitwise operators) | HW04 Binary Print 05/28/24 |
| 4 | 05/27/24 M05 | Statements – Switch/ While, For Loop Examples V9: McDucks , V10: For Examples PQBinary - Thursday | Review Quiz2 06/04/24 |
| 5 | 06/03/24 M06 | Tue, V11: Review / Thur 06/06: Exam 1 | |
| 6 | 06/10/24 M07 | Project Assigned / Arrays & Strings V12: Hist, Project V13: Array, String, Tires/Apples | HW05 Comments 06/18/24 |
| 7 | 06/17/24 M08 | Pointers Deck: V14, Card functions: V15 | HW06 Shuffle Deck 06/25/24 |
| 8 | 06/24/24 M09 | Functions V16: APF Summary, Hist ptr/value V17: BBB, Deck solution PQDeck – Thursday Exercise 1 Due Friday 06/28 | HW07 Play 2 Hands Quiz 3 07/02/24 |
| 9 | 07/01/24 M10 | Tue, V18: Quiz 3 Review; Thursday 07/05 Exam 2 | |
| 10 | 07/08/24 M11 | Structures, File I/O V19: Structures, New, List V20: Stdio.h, Text file I/O Exercise 2 Due Friday 07/12 | HW08 Structures 07/16/24 |
| 11 | 07/15/24 M12 & M13 | Structures, File I/O / PQStructures - Tuesday V21: Binary I/O, Hex Dump, Text EOL V23: Alice/Plumbing HW / PQFileI/O | HW09 File I/O 07/23/24 HW10 Plumbing Quiz4 for review only |
| 12 | 07/22/24 M15 | Tue, V24: Quiz4 Review File I/O Thur 07/25: Exam 3 Exercise 3 Project Due Friday 07/26 | |