

**EEL 3370 – C++ Programming for Embedded Systems
Summer 2025**

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

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Classroom/Time: RVC: Online

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

Catalog Description:

Object-oriented programming in C++ with emphasis on evaluation of alternative program design strategies. Class design, recursion, linked and dynamically allocated structures. This class will also include data structure concepts and applications. (3 Credits)

References:

Programming principles and practice using C++ Bjarne Stroustrup 978-0-321-54372-1	C++ Primer Lippman, Lajoie, Moo ISBN 0-321-71411-3
Object-Oriented Programming in C++, Fourth Edition Robert Lafore ISBN 0-672-32308-7	Cplusplus.com C++ Tutorial http://cplusplus.com/doc/tutorial/

Course Objectives:

Through successful completion of the course, the student will:

- Understand and be able to analyze problem and develop an object-oriented solution.
- Confidently use C++ class syntax and semantics.
- Understand and be able to apply basic data structure concepts to real application.

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.

Topics Covered:

- Introduction to C++ Programming
- Structures
- Class, Objects, and Strings
- Functions and Recursion
- Arrays and Vectors
- Pointers
- Overloading
- Encapsulation
- Inheritance
- Polymorphism
- Stream I/O
- Data Structures
 - o Linked Lists
 - o Stacks
 - o Queues
 - o Trees

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.

NOTE: This course requires consistent participation in class, homework, attendance, materials, and milestones. The final grade consists of contributions from all these elements.

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

Topic	Percentage
Exam 1 <i>no makeup</i>	20%
Exam 2 <i>no makeup</i>	20%
Final <i>no makeup</i>	25%
Homework	10%
Program of the Week	10%
DFS Project	10%
Participation (Quizzes)	5%
Attendance	Unexcused Absence Penalty based on class policy

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 in 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. Review documentation with the lecturer,
 2. email as a written record to watsonh_fiu@yahoo. (Note underscore)
 1. Name, SID, class, section, description and date of the absence
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.

Online – videos listed below by week

Mod	Date	3370 Weekly Topics		
	Monday	Tuesday	Thursday	HW Due Date
1	05/12/25	to Bjarne Stroustrup and C++ V1, V2		HW01 05/20
2	05/19/25	Software Installation – IDE, Compiler, Application Library V3, V4		HW02 05/27
3	05/26/25	Functions, Pointers, Structures V5, V6		HW03 PW3 06/03
4	06/02/25	Classes, constructors, destructors V7, V8		HW04 PW4 06/10
5	06/09/25	Classes, overloading, pointers, this PQClasses -Thur 06/12 V9		HW05 PW5 06/17
6-7	06/16/25	Tue 06/17 Review V10	Exam1 – Thur 06/19 STL & History – V11	HW06 PW6 06/24
8	06/23/25	Iterators V12	Iterators V13	HW07 PW7 07/01
9	06/30/25	Templates, Algorithms V14 PQIterator 07/01	Templates, Containers V15 >>>>>>>>	HW08 PW8 DFS-1 07/08
10-11	07/07/25	Tue 07/08 Review V16	Exam2 – 07/10 Friday wxHelloWorld V17 wxSmith – RAD	HW09 07/15 WxPong DFS-2
12	07/14/25	wxNotePad wxPong V18	wxTetris V20 PQPong 07/17	HW10 07/22 WxTetris DFS-3
13	07/21/25	wxSmith – RenderTimer V19	Applications – Audacity Applications V22	HW11 07/29 DFS-4
14	07/28/25	Review 07/29 V23	Thursday Exam3 07/31	