EEO 224: Object Oriented Programming for Electrical and Computer Engineers
Spring 2017

2016-2017 Catalog Description:
EEO224 introduces object oriented programming (OOP) using the C++ programming language. The C++ language is derived from the C language. A basic understanding of C is assumed for this course, though we will review elements of C.

Course Designation: Required.

Text book:
"C++ Primer Plus" by Stephen Prata, 6th edition, Addison-Wesley Professional, 2011.

Prerequisites: EEO124 or equivalent knowledge of C programming.

Coordinator:
Dr. Alex Doboli.

Goals:
C++ expands upon C with the addition of objects, methods, classes, virtual functions, inheritance, overloading, and more. These additional features encourage a different programming paradigm compared to C and will be the main focus of our course. C++ can be used as a procedural language (like C) or as an object-oriented language (unlike C). Our work will emphasize the object-oriented approach.

Objectives: By the end of the course, you should understand the object oriented programming paradigm and be able to read, write, and modify OOP code using the C++ language. Your code should demonstrate good programming practices as evidenced by your use of comments, good modular program structure, and a high degree of code reusability.

Additional course materials: You will also need access to a computer and an integrated development environment (IDE). C++ is intended to be platform independent; you can use a Windows, Mac, or Linux machine for the course.

Topics: We will cover a complete introduction to the C++ language as outlined in the table below. Topics shared with the C language will be covered briefly for review purposes.

week	reading	topic
1	Chapter 2, 3	Getting started (IDE), cin, cout, statements, functions, simple data (***Hw1***)
2	Chapters 4, 5	Compound data types; structured programming (***Hw 2***)
3	Chapters 6, 7	Structured programming, functions (***HW 3***)
4	Chapters 7	Functions (***Hw 4***)
5	Chapters 8, 9	Functions: inline, overloading, templates, multi-file programs (***Hw 5***)
6	Chapter 10	Classes, objects (***Hw 6***)
7	chapter 11	Overloading, friends (***Hw 7***)

8	chapter 12	Dynamic memory allocation (***Hw 8***)
9	chapter 13	Class inheritance (***Hw 9***, ***Project description is handed over***)
10	chapter 14	Code reuse (***Hw 10***)
11	chapter 15	Friends, exceptions, type cast (***Hw 11***)
12	chapter 16	Strings in C++, standard template library (***Hw 12***)
13	chapter 17	I/O and files (***Hw 13***)
14		Overview (***Project deadline***)
15		***Final exam***

Program Outcomes	**% contribution***
X(a) an ability to apply knowledge of mathematics, science and engineering	30%
❑ (b1) an ability to design and conduct experiments	
❑ (b2) an ability to analyze and interpret data	
X ❑ (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	50%
❑ (d) an ability to function on multi-disciplinary teams	
X❑ (e) an ability to identify, formulate, and solve engineering problems	20%
❑ (f) an understanding of professional and ethical responsibility	
❑ (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	
❑ (i) a recognition of the need for, and an ability to engage in life-long learning	
❑ (j) a knowledge of contemporary issues	

* Assume that the total contribution of any course will be 100%. Use the right hand column to indicate the approximate percent that the left hand columns contribute to the overall course.

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Grading: The final grade will be weighted as follows:

Homeworks	30%
Project	40%
Final exam	30%

The homework assignments are typically short to medium sized programs. The project is a larger program that will consist of multiple modules. The ability to work in a team is a valuable programming skill, but for practical reasons the assignments in this on-line course will be individual. The final exam will require you to find a suitable location and proctor.

Contact Information: Alex Doboli (631) 632-1611, alex.doboli@stonybrook.edu

Required statements:

Americans with Disabilities Act: If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC (Educational Communications Center) Building, room128, (631) 632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential.

Academic Integrity: Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at http://www.stonybrook.edu/uaa/academicjudiciary/

Critical Incident Management: Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures.

Program Outcomes and Assessment	**% contribution**
✓ ❑ (a) an ability to apply knowledge of mathematics, science and engineering	10
❑ (b1) an ability to design and conduct experiments	
❑ (b2) an ability to analyze and interpret data	
✓ (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	25
❑ (d) an ability to function on multi-disciplinary teams	
✓ (e) an ability to identify, formulate, and solve engineering problems	25

❑ (f) an understanding of professional and ethical responsibility
❑ (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
❑ (i) a recognition of the need for, and an ability to engage in life-long learning
❑ (j) a knowledge of contemporary issues
✓ (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice 40
❑ Any other outcomes and assessments?
❑ (l) an ability to communicate and/or collaborate effectively online

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