

## CMPE211- Object-Oriented Programming

**Department:**

Computer Engineering

**Program Name:**

Computer Engineering

**Program Code:** 25**Course Number:**

CMPE211

**Credits:**

4 Cr

**Year/Semester:**

2017-2018 SPRING

 Required Course     Elective Course**Prerequisite(s):**

CMPE112 Programming Fundamentals

**Catalog Description:**

Basics of C++ and Control structures. Program design, Object-Oriented programming and its specific features. Layout of a simple C++ program (elementary C++ programming. Fundamental types, scope. Overview of selection and iteration structures of C and C++ languages. Examples of C++ programs. Functions and Arrays. Review of functions and arrays. Prototypes (declarations), function definition, function overloading, inline functions, scope resolution operator (::), call-by-value, call-by-reference (reference parameters), default arguments, array declarations, operations on arrays, using arrays as function arguments. Pointers, C strings and C++ strings. Pointer variables, declaration and initialization. Use of pointers in call-by-reference function calls, returning a reference, arrays of pointers, pointers to arrays, pointers to functions, dynamic memory allocation with C++ operators new and delete, C-strings, input/output operations, standard C-string functions, formatted and unformatted input /output, C++ string type (the standard string class). Classes and Data abstraction. Structure definition, accessing members of structures, class declarations, constructors, constructor initialization lists. Class destructor, member access specifiers public and private, const member functions, friend functions and classes, static data and function members. Operator Overloading. Fundamentals and restrictions of operator overloading, this pointer, overloading unary and binary operators. Composition and Inheritance. Base classes and derived classes, protected class members, virtual functions and polymorphism, virtual destructors, private access vs. protected access, abstract base classes. Revision of the material discussed in the course. (Pre-requisite: CMPE 112)

**Course Web Page:**<http://cmpe.emu.edu.tr/courses/cmpe211>**Textbook(s):**Schaum's Outline of Programming with C++ by J.R.Hubbard, 2<sup>nd</sup> edition (ISBN 0071353461), McGraw-Hill, 2000.**Topics Covered and Class Schedule:****(4 hours of lectures per week)**

<b>Week 1</b>	<b>Basics of C++ and control structures</b>
<b>Week 2</b>	<b>Layout of a simple C++ program</b>
<b>Week 3-4</b>	<b>Overview of selection and iteration structures of C and C++ languages</b>
<b>Week 5-6</b>	<b>Functions and Arrays</b>
<b>Week 7-8</b>	<b>Pointers</b>
<b>Week 9</b>	<b>C Strings and C++ Strings</b>
<b>Week 10 -11</b>	<b>Midterm Week</b>
<b>Week 12-13</b>	<b>Classes and Data Abstraction</b>
<b>Week 14-15</b>	<b>Operator Overloading</b>
<b>Week 16</b>	<b>Revision</b>
<b>Week 17-19</b>	<b>Final Exams Week</b>

**Laboratory Schedule:**  
**(2 hours of laboratory per week)**

Labs start on the third week of the semester and the preliminary schedule is as follows:

**LW #1** (chapters 1-4 of the textbook), **LW #2** (chapters 1-6 of the textbook), **LW #3** (chapters 1-7 of the textbook),

**LW #4** (chapters 5-8 of the textbook), **LW #5** (chapters 5-9 of the textbook), **LW #6** (chapters 1-10 of the textbook)

**Course Learning Outcomes:**

On successful completion of this course, all students are expected to be able to:

- (1) Design and implement algorithms in the C++ language
- (2) Define and call functions
- (3) Pass parameters by call by value and by reference,
- (4) Use Arrays
- (5) Use pointers, dynamic memory allocation and de-allocation
- (6) Define classes, private and public members, accessing class members
- (7) Overload operators for classes
- (8) Use overloaded operators in programs
- (9) Use objects in programs

	<b>Method</b>	<b>No</b>	<b>Percentage</b>
<b>Assessment</b>	Midterm Exam(s)	1	40%
	Labs	6	15 %
	Final Examination	1	45%

**Contribution of Course to Criterion 5**

Credit Hours for:

Mathematics & Basic Science : 0      Engineering Sciences and Design : 4      General Education : 0

**Relationship of Course to Program Outcomes**

The course has been designed to contribute to the following program outcomes:

- e) identify, formulate, and solve engineering problems,
- k) use the techniques, skills, and modern engineering tools necessary for engineering practice

**Exams:**

- If you miss midterm or final exam and submit a medical/written report to your instructor stating your excuse within 3 days of that examination, you will be able to enter makeup of the missed exam.
- If you miss both midterm and final exams and do not submit any written report, you will get an “NG” grade. In the same case, if you submit report for both missed exams, you will be able to enter makeup exam for one of them only.

**Labs:**

- There will be one makeup for the missed lab experiments.
- Exemption for lab work will not be provided for students who are repeating the course.
- The best 4 lab grades out of the first 5 lab experiments will be considered for each student. Lab6 grade will also be considered for the calculation of the total lab grade.

**PLAGIARISM**

- Plagiarism (which also includes any kind of cheating in exams, assignments, and lab works) is a disciplinary offence and will be dealt with accordingly. Furthermore, the penalty of plagiarism is to get grade zero for the corresponding exam, assignment, or lab work.

**IMPORTANT REMARKS**

- You should have regular attendance to the lectures for being successful in the course. Course related materials, exercises, laboratory experiments, old exam questions and announcements will be published on the course web site and you will be responsible from all. Note that the course web site can update during the semester. Therefore, please check it regularly.

**Prepared by:** Assoc.Prof.Dr. Önsen Toygar

**Date Prepared:** February 12, 2018