

1. Course number and name:

CMP 220 – Programming II

2. Credits Hours

2-3-3

3. Prerequisite and/or Co-Requisite:

Prerequisites: CMP 120 (Programming I)

Pre-requisite/Concurrent:

4. Instructor's or course coordinator's name:

Dr. Ghassan Qadah

Office: EB1-251

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Phone: (06) 515-22913

Office Hours: Mon. 12 noon – 1:50 pm, Thursday 11:00-11:50 am and 1:00 – 1:50 pm as posted on the Professor's office door **(or by appointment)**

5. Course Description (Catalog Description):

Covers object-oriented programming concepts: constructors, destructors, objects, classes, functions and attributes, operator overloading and overriding, inheritance and polymorphism. Explores abstraction principles (interfaces, information hiding, encapsulation), templates, exception handling, I/O streams and advanced pointers. Uses the C++ programming language in laboratory work.

6. Textbook, and other Supplemental Material

Textbook:

- W. Savitch and K. Mock, *Problem Solving with C++*, 9th edition. Pearson, 2015.

Other supplemental materials:

None.

7. Learning outcomes:

Upon completion of the course, students will be able to:

1. Develop C++ programs using pointers, table of pointers, strings, dynamic memory, enums and structures.
2. Implement object-oriented C++ programs using classes, operator overloading and templates.
3. Develop object-oriented C++ programs using inheritance and polymorphism
4. Develop C++ programs using I/O streams and exception handling
5. Use a programming development environment such as Microsoft Visual Studio, to write, compile, run and debug small to medium complexity C++ programs.

8. Teaching and Learning Methodologies:

Methods include two one-hour lectures per week, one three hours lab. assignment per week and one homework assignment per other week.

9. Course Topics and Schedule:

Review of pointers and references, table of pointers, dynamic memory allocation and string manipulation functions	2
Overloaded and template functions and function pointers	1
User Defined Data Types: Enumerated, Structures and Classes	3
Exception Handling	1
Operator Overloading	2
Template Classes	1
Inheritance	2
Virtual functions and polymorphism	2
Review & Evaluation	2
Total	16

10. Schedule of Laboratory and other Non-Lecture Sessions:

One three-hour lab per week

11. Out-of-Class Assignments with Due Dates:

- One homework assignment per other week.
- A final comprehensive programming project.

12. Student Evaluation:

Attendance	3%
Homework	7%
Lab Assignments	10%
Project (s)	10%
Quizzes	10%
Midterm I (Tues – March 15 & Wed March 16)	15%
Midterm II (Tues – April 26 & Wed April 27)	15%
Final Exam (as scheduled)	30%

1. Contribution of Course to Program Outcome:

This course contributes to the accomplishment of the following program outcomes:

CMP Program outcome	Emphasis in this course
a) an ability to apply knowledge of computing and mathematics	
b) an ability to analyze a problem, identify and define the computing requirements	

c) an ability to design, implement and evaluate a computer-based system, process, component, or program	●
d) an ability to function effectively on teams to accomplish a common goal	
e) an understanding of professional, ethical, legal, security and social issues and responsibilities	
f) an ability to communicate effectively with a range of audiences	
g) an ability to analyze the local and global impact of computing on individuals, organizations, and society	
h) recognition of the need for and an ability to engage in continuing professional development	
i) an ability to use current techniques, skills, and tools necessary for computing practice	●
(J): An ability to apply mathematical foundations, algorithmic principles, and computer science	
(k): An ability to apply design and development principles in the construction of software	●

Emphasis: ● High; ● Medium; ○ Low; Blank – Nothing Specific Expected

COE Program outcome	Emphasis in this course
(a) an ability to apply knowledge of mathematics, science, and engineering	
(b) an ability to design and conduct experiments, as well as 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	●
(d) an ability to function on multidisciplinary teams	
(e) an ability to identify, formulate, and solve engineering problems	●
(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.	●

Emphasis: ● High; ● Medium; ○ Low; Blank – Nothing Specific Expected