1. **Course Number and Title:**
   CMP 220 –Programming II

2. **Credits Hours**
   3 - 2 - 3

3. **Prerequisites and/or Co-Requisite:**
   Prerequisites: CMP 120 (Programming I)

4. **Name and Contact Information of Instructor:**
   Dr. Tamer Shanableh

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, *Problem solving using C++,* 10th edition. Addison-Wesley, 2017.

   Other supplemental materials:
   - None.

7. **Course 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. Develop object-oriented C++ programs using classes, collection 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:**

Topic/Activity	**Weeks**
Review of pointers and references and using an IDE for tracing and debugging	Week 1

Review of dynamic memory allocation and File IO	Week 2
C++ strings	Week 3
C++ vectors	Week 4
User Defined Data Types: Enumerated, Structures	Week 5
Object oriented programming with classes	Week 6
Object oriented programming with classes and class collections	Week 7
Operator Overloading	Week 8
The big three (operator=, copy constructors, destructors)	Week 9
Classes with pointers	Week 10
Inheritance basics	Week 11
Inheritance with pointers and polymorphism	Week 12
Template Classes and functions	Week 13
Exception Handling	Week 14
Revision	Week 15
Final Exam	Week 16