COURSE OUTLINE : CS/IS 137
D Credit – Degree Applicable
COURSE ID 005204
Cyclical Review: September 2020

COURSE DISCIPLINE : CS/IS

COURSE NUMBER : 137

COURSE TITLE (FULL) : C++ and Advanced Topics

COURSE TITLE (SHORT) : Advanced C++

CATALOG DESCRIPTION

CS/IS 137 prepares the student for C++ programming in the workplace and other real world environments. The course focuses on the advanced object-oriented programming concepts needed for today's programs as well as other advanced concepts such as templates and generics, files and streams, and operator overloading. The course provides students an opportunity to work on advanced projects of the student's choosing within the scope of the course.

Total Lecture Units: 4.00

Total Laboratory Units: 0.00

Total Course Units: 4.00

Total Lecture Hours: 72.00

Total Laboratory Hours: 0.00

Total Laboratory Hours To Be Arranged: 0.00

Total Contact Hours: 72.00

Total Out-of-Class Hours: 144.00

Prerequisite: CS/IS 135 or equivalent.

ENTRY STANDARDS

	Subject	Number	Title	Description	Include
1	CS/IS	135	Programming In C/C++	Analyze a programming task to develop and communicate efficient algorithms to implement that task;	No
2	CS/IS	135	Programming In C/C++	recognize programming problems on a function-by-function basis and develop structured/procedural code based on this approach;	No
3	CS/IS	135	Programming In C/C++	demonstrate an understanding of object-oriented programming concepts and object-oriented design;	Yes
4	CS/IS	135	Programming In C/C++	program in the C++ language including use of objects, pointers, and structures.	No
5				design, code, and debug basic object-based programs.	Yes

EXIT STANDARDS

1 Demonstrate understanding of object oriented programming concepts and the application of those concepts to the C++ language;
2 develop an advanced understanding of techniques used in the areas of objected oriented programming;
3 create software development projects;
4 apply advanced features such as templates and the standard template library.

STUDENT LEARNING OUTCOMES

1 apply both file stream and event scheduled operating system interfacing and the methods for designing programs that will successfully operate in one or both environments;
2 describe the practical uses of object oriented programing;
3 apply programming skills to various types of problems commonly encountered in professional software development projects

COURSE CONTENT WITH INSTRUCTIONAL HOURS

	Description	Lecture	Lab	Total Hours
1	Introduction to Visual Studio • Using the interface • Creating a basic window • Background and basics of using .NET and Visual C++	3	0	3

2	Object Oriented Programming – A Deeper Look • Const (constant) objects and const member functions • Composition: objects as members of classes • Friend functions and friend classes • Dynamic memory management with operators new and delete • Static class members • Data abstraction and information hiding	8	0	8
3	Operator Overloading; String and Array Objects	8	0	8
4	Object Oriented Programming – Inheritance • Base classes and derived classes • Protected members • Relationship between base classes and derived classes • Constructors and destructors in derived classes	14	0	14
5	Object Oriented Programming – Polymorphism • Fundamentals and examples • Virtual functions	14	0	14
6	Templates and Generics • Creating user defined templates • Using generics	8	0	8
7	Files and Streams • File handling mechanisms • Passing streams to functions	8	0	8
8	Standard Template Library • Overview of pre-defined abstract data types (ADT) • Use of those ADT	7	0	7
9	Basics of GUI Programming	2	0	2
				72

OUT OF CLASS ASSIGNMENTS

1 group and individual programming projects (e.g. move a sprite under program and algorithmic control within a window).

METHODS OF EVALUATION

1 quizzes;
2 midterm examinations;
3 final examination.

METHODS OF INSTRUCTION

- [x] Lecture
- [ ] Laboratory
- [ ] Studio
- [ ] Discussion
- [ ] Multimedia
- [ ] Tutorial
- [ ] Independent Study
- [ ] Collaboratory Learning
- [x] Demonstration
- [ ] Field Activities (Trips)
- [ ] Guest Speakers
- [x] Presentations

TEXTBOOKS

Title	Type	Publisher	Edition	Medium	Author	IBSN	Date
C++:How to Program	Required	Upper Saddle River: Prentice Hall	10	Print	Deitel, Paul	978-0134448237	2017