Dept Number	CS 304	Course Title	Advanced Object-Oriented Programming
Semester Hours	3	Course Coordinator	Kenny Fong
Catalog Description	Advanced features of object-oriented programming are covered in depth. The topics covered include, but are not limited to, the following: polymorphism, inheritance, overloading, generic programming, exception handling, file I/O, GUI development. A group project is an integral part of the course.		

Textbooks

Big C++ By Cay Horstmann and Timothy Budd John Wiley & Sons, 2005.

References

- Absolute C++, Walter Savitch, Addison Wesley, 2002.
- Standard C++, Paul S. Wang, Addison Wesley, 2001.
- Visual C++.NET How to Program, Deitel, ET. Al., Prentice Hall, 2004.

Course Learning Outcomes

- To learn object oriented-programming in C++.
- To learn some advanced program design techniques.
- To learn some advanced programming techniques.
- To improve one's ability to program sophisticated solutions to difficult problems.

Assessment of the Contribution to Program Outcomes

Outcome →	1	2	3	4	5	6	7	8	9	10
Assessed →	X	X	X	X	X	X		X		

Prerequisites by Topic

220 with a grade of *C* or better.

Major Topics Covered in the Course

1. Major differences between Java and C/C++: Boolean data type; unsigned numeric; data types; assignment expressions; interpretation of logical true and false; arrays, C-style strings (null terminated strings); definition of classes; input/output; preprocessor directives; storage classes; scope rules; struct and union; enumerations; pointers ; memory management (new and delete);references; typedef; const keyword; default arguments; friends (functions and classes);name spaces; multiple inheritance {9 classes}
2. Polymorphism: virtual functions; types of inheritance {3 classes}
3. Operator overloading: characters (cctype library); C-style strings (cstring library); the string class {6 classes}
4. Character and string processing: characters (cctype library), C-style strings (cstring library); the string class {3 classes}
5. Templates: template functions; the standard template library; containers; iterators; generic algorithms {5 classes}
6. Exception handling: try, throw, and catch; examples {2 classes}
7. File processing: sequential files (creating, reading, updating); random access files (creating, writing randomly, reading randomly, reading sequentially) {3 classes}
8. GUI development with MFC: introduction to the Microsoft Foundation Classes; event-driven programming; building GUI applications {9 classes}