CIS 285 - Object-Oriented Programming

I. CIS 285 - Object-Oriented Programming – 3 Semester Hours

II. Course Description
This course is an advanced object-oriented programming course and covers advanced program development techniques and concepts in the context of an object-oriented language, such as C++ or Java. Subject matter includes object-oriented analysis and design, encapsulation, inheritance, polymorphism (operator and function overloading), information hiding, abstract data types, reuse, dynamic memory allocation, and file manipulation. Upon completion, students should be able to develop a hierarchical class structure necessary to the implementation of an object-oriented software system.

III. Prerequisite
CIS 255 or Equivalent

IV. Textbook
Textbook: Java Programming, Advanced Topics, 3rd Edition
Publisher: Course Technology
Author: Wigglesworth

V. Course Objectives
1. The student will acquire knowledge of object-oriented programming terminology and concepts.
2. The student will be able to design object-oriented programs.
3. The student will be able to implement programs in an object-oriented language, such as, Java.
4. The student will develop an understanding of object-oriented programming application areas.

VI. Course Outline of Topics
1. The student will acquire knowledge of object-oriented programming terminology and concepts.
   a. The student will be able to define the terminology commonly associated with object-oriented programming, such as, encapsulation, inheritance, and polymorphism.
   b. The student will be able to describe the importance of object-oriented concepts and be able to explain how they relate to software engineering principles, such as, abstract data types, information hiding, message passing, structure diagrams, class hierarchy, reuse, and operator and function overloading.
2. The student will be able to design object-oriented programs.
   a. The student will be able to analyze a problem and identify the classes (abstract data types) needed in an object-oriented solution.
   b. The student will be able to determine a class hierarchy for the set of classes constituting an object-oriented program.
   c. The student will be able to identify the attributes and methods (including constructors, and destructors) needed in a class definition.
   d. The student will be able to define class interfaces and message links for abstract data types.
3. The student will be able to implement object-oriented programs in an object-oriented language, such as, Java.

a. The student will be able to write, compile, debug, execute and document object-oriented programs in an object-oriented programming language.
b. The student will be able to describe and apply the appropriate language dependent constructs for class definition, class declaration, inheritance, operator and function overloading, and message passing.
c. The student will be able to utilize container classes such as, arrays and linked lists.
4. The student will develop an understanding of object-oriented programming application areas.
a. The student will be able to develop an object-oriented program that creates a simple database.
b. The student will be able to discuss and explain application examples.

VII. Evaluation and Assessment
Evaluation and assessment will be determined by the instructor and specified on the instructor's class syllabus. Grades will be based upon following scale: A = 90 – 100%, B = 80 – 89%, C = 70 – 79%, D = 60 – 69%, and F = below 60%.

VIII. **Attendance**
Students are expected to attend all classes for which they are registered. Students who are unable to attend class regularly, regardless of the reason or circumstance, should withdraw from that class before poor attendance interferes with the student's ability to achieve the objectives required in the course. Withdrawal from class can affect eligibility for federal financial aid.

IX. **Statement on Discrimination/Harassment**
The College and the Alabama State Board of Education are committed to providing both employment and educational environments free of harassment or discrimination related to an individual's race, color, gender, religion, national origin, age, or disability. Such harassment is a violation of State Board of Education policy. Any practice or behavior that constitutes harassment or discrimination will not be tolerated.

X. **Americans with Disabilities**
The Rehabilitation Act of 1973 (Section 504) and the Americans with Disabilities Act of 1990 state that qualified students with disabilities who meet the essential functions and academic requirements are entitled to reasonable accommodations. It is the student's responsibility to provide appropriate disability documentation to the College. The ADA Accommodations Office is in FSC 305 (205-856-7731).