

**Department of Electrical and Computer Engineering
ECE 206 Electrical Engineering Computations
Fall 2006**

Website: <http://www.ece.utk.edu/~xwang/ece206/>

Course Catalog Description:

Engineering problem solving and algorithm development by programming computers. Emphasis on software engineering, structured programming and object-oriented design, building abstractions with procedures and data, and programming in a modern computer language. Includes Level 1 design projects, which require laboratory work.

Prerequisites:

none

Class/Laboratory Schedule:

Class: Tuesdays and Thursdays, 8:10 – 9:25am, Ferris Hall 511

Laboratory: Tuesdays and Thursdays, 3:40-4:55pm, Ferris Hall 602

Textbooks and/or Other Required Material:

Textbook: H. M. Deitel and P. J. Deitel, *C++ How to Program*, Deitel & Deitel, 5th ed., 2005.

Instructor:

Prof. Xiaorui (Ray) Wang

Office Hour: TR 2:00pm-4:00pm, Ferris Hall 421

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Course Objectives:

To provide students with introduction to computer architecture, concepts of computer programming, the design philosophy of object orientation, and how to solve practical problems with C/C++ computer programming language. To gain proficiency in fundamentals of computer programming using ANSI standard C and the proposed ANSI/ISO C++. This will be achieved by 10 lab assignments, 4 projects, and interleaving classroom lectures as well as lab lectures in the Linux working environment. The design content requirement of this course will be met by each student's design and implementation of C++ software to satisfy the project requirements.

Topics Covered:

Overview of computer systems

Software development environment

Data types: data declaration, basic data types, type modifiers, type conversion storage class

Operators: arithmetic, logical, assignment, conditional, bitwise operators

Control Structures: sequential, selection, repetition control structures

Function: function definition, prototype, passing arguments to functions (call-by-value, call-by-reference), inline function, function overloading, default arguments, recursive function

Array: 1-dimensional array, multi-dimensional array, passing array, sorting array

Pointers and dynamic allocation

String manipulation

Overview of object-oriented programming

Introduction to C++ class
Operator overloading
Inheritance
Polymorphism
Template and STL
Overview of software development history and UML modeling language

Contribution of Course to Meeting the Professional Component:

Contributes to engineering topics appropriate to the student's field of study. The distribution of the course is as follows: 66.7% engineering science and 33.3% engineering design.

Relationship of Course to Program Objectives:

Responds to program educational objectives #1, #2, #3 and #8. Contributes to the program outcomes *a-c*, *e-k*, and *m*.

Academic Integrity:

All computer programs and projects turned in for credit must be each student's own work. Students must write their own programs and problem solutions from scratch independently. No discussion is allowed during quiz and exams. Any violations will result in a minimum penalty of a zero on the given assignment, quiz or exam.

Disability Statement:

Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Office of Disability Services at 865-974-6087 in Hoskins Library to coordinate reasonable accommodations for students with documented disabilities.