ECS 102: Introduction to Computing

ECS 102
Introduction to Computing
(3 credits)
Class Size: 10-25

Faculty: Ehat Ercanli, Associate Professor, Syracuse University
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Course Catalog Description

Computing concepts. Principles of programming. Applications of computing concepts to problem solving in engineering and computer science. Laboratory topics will include problem solving projects from various disciplines within the college.

Course Overview

ECS 102 is a one-semester course taught at Syracuse University to all freshmen engineering, computer science, visual and performing art students, and most students at the Newhouse School of Public Communications and the Maxwell School of Public Affairs. The course covers computing concepts, principles of programming, applications of computing concepts, and problem solving in engineering and computer science. Laboratory topics will include problem solving projects from various engineering disciplines. Acceptable languages are C++ OR Java.

Week 1: What is Abstraction?; Course Requirements and Course

Overview; Overview of Abstraction; Modeling (Verification, Correctness)

Week 2: Computer Abstraction; Program Development (Editing, Compiling, Linking); Representing Information (Variable Declaration, Data Types); Displaying Information (Format, Output)

Week 3: Operational Abstractions; Arithmetic and Comparison Operations (+, -, *, /, % and >, <, ==, !=, >=, <=); Special Assignment Operations (assignment = / ++,- — / *=, +=, -=); Program Control Constructs (if, else, while, switch, case, break)

Week 4: Functional Abstraction; Constructs (do while, for); Functions (return value, name, parameters); Functions (pass by value, prototypes, body)

Week 5: Ordering Abstraction; Arrays (linear ordering, index); Arrays (pointer constant, passing arrays as parameters), Arrays (multidimensional)

Week 6: Indirect Abstraction; Pointers (indirect reference, addresses); Pointers (to arrays); Pointers (passing by reference)

Week 7: Hierarchical Abstraction; Strings (characters, ASCII); Strings (comparison, I/O, appending); Scope (global functions)

Week 8: Structural Abstraction; Structures (data groups, access); Structures (Structure Pointers); Structures (passing by reference)

Pre- / Co-requisites

N/A

Course Objectives

N/A

Laboratory

N/A

Required Materials

Problem Solving with C++, 10th Edition; Savitch, W.

ISBN: 9780134448282 (Pearson, 800-848-9500)

Java Software Solutions: Foundations of Program Design, 9th Edition; Lewis & Loftus (AddisonWesley)

ISBN: 9780134462028 (Pearson, 800-848-9500)

Instructor Recommendations

N/A