

COURSE DESCRIPTION

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| Dept., Number | CS 1401 Required | Course Title | Introduction to Computer Science |
| Semester hours | 45 hours + 21 lab hours | Course Coordinator | Vladik Kreinovich |

Current Catalog Description

Introduction to Computer Science (3-3) First course for students majoring in Computer Science. Introduction to problem solving with computers, including representation, control structures, and software development methods; closed laboratory and programming assignments in a high-level language; programming environments; social and ethical aspects of computing.

Textbook:

Liang, Y. Daniel, *Introduction to Java Programming: Comprehensive Version*, 9h Ed., Prentice Hall, 2013.

Course Outcomes:

Level 3 Outcomes: Synthesis and Evaluation:

Level 3 outcomes are those in which the student can apply the material in new situations. This is the highest level of mastery. On successful completion of this course, students will be able to:

1. Use the syntax and semantics of a higher-level language to express their solutions to programming problems, including the correct use of:
 - a. basic variable types such as integer, real number, character, string, 1-D array
 - b. assignment, arithmetic, and logical operations
 - c. basic control structures: if-then, for-loop, while-loop

Level 2: Application and Analysis:

Level 2 outcomes are those in which the student can apply the material in familiar situations, e.g., can work a problem of familiar structure with minor changes in the details. Upon successful completion of this course, students will be able to:

1. Use the syntax and semantics of a higher-level language to express their solutions to programming problems, including the correct use of:
 - a. complex arithmetic and logical expressions
 - b. simple I/O operations
 - c. methods, i.e., user-defined subprograms
 - d. classes, i.e., user-defined types
2. Describe computer representation of simple data types and operations, including operations with binary numbers
3. Use testing and debugging strategies, including black-box and white-box testing, test drivers, stubs and test suites, to identify software faults
4. Use exceptions to handle violation of preconditions
5. Use teamwork roles and methods in the classroom

Level 1: Knowledge and Comprehension:

Level 1 outcomes are those in which the student has been exposed to the terms and concepts at a basic level and can supply basic definitions. On successful completion of this course, students will be able to:

1. Describe, at a high level:
 - a. technical aspects of computing: memory, operating system, editors, interpreters, compilers, debuggers, virtual machine
 - b. computing as a profession, from required knowledge and skills to major career options
 - c. relation between computing and society, including main social, ethical, and legal issues
 - d. history of computing

Student Outcomes

Student Outcomes: 3, 4, 5, 7, 9, 11

Prerequisites by Topic:

MATH 1508 or MATH 1411 each with a grade of "C" or better.