

NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
CSC 201 – COMPUTER SCIENCE I (4 CR.)

Course Description

Introduces algorithm and problem solving methods. Emphasizes structured and especially object oriented programming concepts, I/O, control structures, functions and/or methods, data abstraction, data structures, and the study and use of an object technology high-level programming language. Lecture 4 hours per week.

General Course Purpose

The main part of this course covers problem analysis and solution methods, algorithm development, program design methodologies, programming constructs, methods of documentation, and good programming style. Other topics, such as computer systems, data representation, and information flow are introduced, as appropriate. Whereas In this course the student learns the theory of problem solving and program construction. A high-level computer language is taught in this course for the students to implement their solutions on a computer.

Course Prerequisites/Corequisites

Prerequisite: CSC 200 or CSC 130, or EGR 126.

Corequisite: MTH 263 or division approval.

Course Objectives

Upon completion of this course, the student will be able to:

- A. Analyze Problems
- B. Develop Algorithms in an Object Oriented Environment

Major Topics to be Included

- I. Review of algorithm theory and structured programming
 - A. Program design
 - B. Program logic
 - C. Modularity: Functions/methods and information passing
 - a. Call-by-value
 - b. Overloading
- II. Object Oriented Programming
 - A. Objects and classes
 - B. Constructors
 - C. Memory allocation
 - D. Encapsulation and data hiding
 - E. Inheritance and interfaces
 - F. Polymorphism
 - G. Abstract Classes
- III. Input/output
 - A. File I/O
 - B. Text files
 - C. Binary files
 - D. Object Serialization
- IV. Data structures
 - A. Arrays
 - B. Dynamic data structures

- V. Event Model
 - A. Event driven programming
 - B. Containers and Widgets
 - C. Layout strategies
- VI. Other optional content
 - A. Other Integrated Development Environments (IDEs)

Suggested Time Allocation per Topic

In order to standardize the core topics of CSC 201 so that a course taught at one campus is equivalent to the same course taught at another campus, the following student contact hours per topic are recommended. Of course, the topics cannot be followed sequentially. Many topics are taught best as an integrated whole, often revisiting the topic several times, each time at a higher level. There are normally 64 student-contact-hours per semester for a four-unit course. The last category, **Other optional content**, leaves ample time for an instructor to tailor the course to special needs or resources.

Ref	Topic	Hours	Percent
I	Review of algorithm theory and structured programming	9	14
II	Object Oriented Programming	29	45
III	Input/output	6	9
IV	Data structures	8	13
V	Event Model	3	5
VI	Other optional content	3	5
	Exams and quizzes	6	9
	Total	64	100