IAC **New Course** Proposal

Rowan College of Burlington County

Date: 10/27/2017 **Division**: STEM

Originator: Stephen Harad **Course Prefix/Number: CSE 112**

Course Title: Introduction to Computer Science II **Number of Credits: 4**

Co-requisite(s): **Prerequisite(s)**: CSE 110

Co-requisite/Prerequisite: Click or tap here to enter text.

Course description (indicate lab information): This course builds upon the work completed in CSE 110 to introduce the fundamental concepts of data structures and the algorithms that proceed from them. It focuses on recursion, the underlying philosophy of object-oriented programming, fundamental data structures (such as ques, tacks, linked lists, has tables, trees and graphs), sorting and searching techniques, and the basics of algorithmic analysis. Additional lecture time will be devoted to the Standard Template Library and its four components. Lab components The assignments provide hands – on programming experience that is vital for beginning programmers and computer science students.

Course will be offered: ☒ **Fall** ☒ **Spring** ☐ **Summer**

Proposed Course Fee (if known): $30

Relationship to Curriculum: Program Requirement

Sem/yr course will first be offered: Spring 2018

Default Course Capacity: 30

Minimum Enrollment (per course) 8

Instructor Consent Required for Registration: No

Textbook: Starting Out with C++, 8th Edition, Tony Gaddis, Pearson: ISBN 978 - 013376939 – 5

Reason for adding this course: Technology organization and textbook documentation of it has been expanded in the area of Standard Template Libraries. A four credit course has easier transfer to Rowan U. and other schools.

Complete this table:

Instructional Mode	Number of Credits	Number of Contact Hours
Lecture	3	3
Laboratory	1	2
Studio/Performance	Click or tap here to enter text.	Click or tap here to enter text.
Clinical/Practicum/Co-Op/Internship/Field Study	Click or tap here to enter text.	Click or tap here to enter text.

Credit Hours Distribution (i.e. 3/0/0): new 3/2/0 was a 2/2/0 old

Has this course been offered experimentally? No

If no, estimate initial enrollment: 30 students

If yes, complete this table.

Offering	*Course number*	*Semester & Year*	*Enrollment*
First:	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Second:	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.

If other colleges and universities offer this course, complete this table. Give New Jersey data, if available:

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College/University	*Course number/name*	*Contacted about course?*
Rowan University	CS04225 (DATA STRUCT FOR ENGINEERS 3	Yes
NJIT	CS114 (INTRO TO COMPUTER SCIENCE II) 3	No
Rutgers	01198111 (INTRODUCTION TO COMPUTER SCIENCE) 4	No

Course Learning Outcomes:

Course Learning Outcomes
At the completion of this, students should be able to:
Utilize Abstract Data Types to solve problems.
Solve problems using classes, dynamic arrays, lists, stacks and Queues.
Apply operator overloading, constructors, destructors, dynamic memory structures, and inheritance of class methods to solve problems.
Explain algorithm complexity concepts, representative sorting algorithms, and algorithm efficiency.
Implement recursive methods to solve problems.
Explain how standard template libraries work in C++ and how the components are organized
Click or tap here to enter text.

Core Course Content:

Core Course Content
Abstract Data Types, Structures and Classes
Friends, Operator overloading, constructors, destructors
Arrays, Classes, and Dynamic Arrays
Pointers, Linked List, dynamic data
Stacks and Queues
Recursive techniques
Inheritance and Polymorphism
Exception Handling
Templates
Standard Template Library

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General Education Outcomes

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Please select the RCBC outcome(s) below that apply to this course. Students will:

(Check all that apply.)

Written and Oral Communication

- ☒ Logically and persuasively support their points of view or findings.
- ☐ Communicate meaningfully with a chosen audience while demonstrating critical thought.
- ☐ Conduct investigative research which demonstrates academic integrity, originality, depth of thought, and master of an approved style of source documentation.

Quantitative Knowledge & Skills: Mathematics

- ☐ Analyze data to solve problems utilizing appropriate mathematical concepts.
- ☐ Translate quantifiable problems into mathematical terms and solve these problems using mathematical or statistical operations.
- ☐ Logically solve problems using the appropriate mathematical technique.

Scientific Knowledge & Reasoning: Science

- ☐ Understand and employ the scientific method of inquiry to draw conclusions based on verifiable evidence.
- ☐ Explain the impact of scientific theories, discoveries, or technological changes on society.
- ☐ Demonstrate critical thinking skills in the analysis of scientific data.

Society & Human Behavior: Social Science

- ☐ Demonstrate a general knowledge of political, social and economic concepts and systems and their effects on society.

Technological Competency or Information Literacy: Technology

- ☐ Demonstrate competency in office productivity tools appropriate to continuing their education.
- ☐ Use critical thinking skills for computer-based access, analysis, and presentation of information.
- ☐ Exhibit competency in library online tools appropriate to accessing information in reference publications, periodicals, and bibliographies.
- ☒ Demonstrate the skills required to find, evaluate, and apply information to solve a problem.

Humanistic Perspective: Humanities

- ☐ *Art:* Demonstrate an understanding of a variety of renderings.
- ☐ *Art:* Identify the movement, period, and their effect on the culture.
- ☐ *Theatre & Music:* Be able to articulate and analyze works of the performing arts and their effect on historical or cultural perspective as well as the values of the society.
- ☐ *Philosophy:* Demonstrate an understanding of fundamental philosophical questions and the contributions of major philosophers to resolve them.
- ☐ *Foreign Language:* Be able to demonstrate listening, speaking, reading and writing skills of the target language consistent with American Council on the Teaching of Foreign Languages (ACTFL) proficiency standards for the level being studied.
- ☐ *Foreign Language:* Be able to demonstrate cultural norms necessary to communicate effectively in the target language.
- ☐ *Literature:* Recognize and assess the contributions of people from various nations and/or cultures.
- ☐ *Literature:* Analyze the changing significance of social constructions of religion, race, class, and/or gender in cultural artifacts (music, art, literature) throughout time.

Historical Perspective: History

- ☐ Demonstrate knowledge of the nature, origins, central events and significant institutions of major civilizations.

Global & Cultural Awareness: Diversity

- ☐ Be able to compare and contrast cultural norms from diverse populations.
- ☐ Be able to explain how communication and culture are interrelated.
- ☐ Be able to examine how multicultural societies and people help engender a richer understanding of diverse life experiences

Ethical Reasoning & Action

- ☐ Analyze and evaluate the strengths and weaknesses of different perspectives on an ethical issue or a situation.
- ☐ Take a position on an ethics issue or a situation and defend it.