RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE

CSIT 105 Foundations of Computer Science

I. Basic Course Information

A. Course Number and Title:	CSIT 105 Foundations of Computer Science
B. New or Modified Course:	Modified
C. Date of Proposal:	Semester: Fall Year: 2018
D. Effective Term:	Fall 2019
E. Sponsoring Department:	Mathematics & Computer Science
F. Semester Credit Hours:	4
G. Weekly Contact Hours:	Lecture: 3 Laboratory: 2 Out of class student work per week: 7
H. Prerequisites/Corequisites:	Math 113 - Precalculus II or Math 114H - Precalculus Honors
I. Laboratory Fees:	yes

J. Name and Telephone Number or E-Mail Address of Department Chair and Divisional
    Dean at time of approval: Lori Austin – lori.austin@raritanval.edu (Chair),
    Sarah Imbriglio – Sarah.Imbriglio@raritanval.edu (Divisional Dean)

II. Catalog Description

(Prerequisite: Math 113 – Precalculus II or Math 114H – Precalculus Honors) This is the first course in Computer Science for transfer students. The programming language Java will be taught in conjunction with problem solving methods, algorithm development, and object-oriented design. Topics include data types, control structures, classes, objects, methods, file processing, recursion, and introduction to data structures

III. Statement of Course Need

A. This is the first course in the Computer Science transfer program. Over the past few years, enrollment in this course has been steady; this reflects the need for this course as well as the need for the transfer program. Students in this program have transferred to Rutgers, NJIT, and other colleges and universities in and outside New Jersey. This course is in line with the Association of Computer Machinery (ACM) Curricula 2013

B. This course has a weekly lab component. The lab is essential for providing students hands on experience to write programs in Java to solve problems using an Object Oriented approach.

C. This course generally transfers as a Computer Science program requirement

IV. Place of Course in College Curriculum

A. Free Elective (This applies automatically to all college level credit courses in the College.)
B. This course serves as a General Education course in Technological Competency
C. Computer Elective on the Computer and Programming Electives List
D. Programming Elective on the Computer and Programming Electives List
E. This course meets a program requirement for:
    a. Computer Science AS
    b. Engineering Science, Electrical Track AS
F. This course is a program option for:
    a. Information Systems & Technology AS
    b. Information Systems & Technology AAS
    c. Interactive Digital Media & Web Development AS
    d. Interactive Digital Media & Web Development AAS
    e. Mathematics AS
    f. Medical Assistant, Certificate
G. To see course transferability: a) for New Jersey schools, go to the NJ Transfer website, www.njtransfer.org; b) for all other colleges and universities, go to the individual websites.

V. Outline of Course Content

A. Java Fundamentals
B. Decision Structures
C. Loops and Files
D. Object-Oriented Programming
E. Introduction to Data Structures using Arrays
F. Sorting and Algorithm Analysis
G. Inheritance and Polymorphism
H. Handling Exceptions

I. Recursion
J. Databases
K. GUI Applications/applets

VI. General Education and Course Learning Outcomes

A. General Education Learning Outcomes:

At the completion of this course, the student will be able to:
1. identify changes in the technology that involves learning sufficient foundational material to enable one to acquire new skills independently after one's formal education is complete. (NJ-IL)
2. investigate technological tools for research, information analysis, problem solving, decision making, quantitative analysis while recognizing, and evaluating ethical issues. (NJ-IL, NJ-ER)
3. assess information resources, including print and electronic library resources, as well as the Internet that enables students to use computer software applications, and enhance self-directed learning. (NJ-IL)
4. construct quantitative reasoning techniques to interpret data and solve problems (GE-NJ 2)

B. Course Learning Outcomes:

At the conclusion of the course, students will be able to:

1. Describe concepts of object-oriented programming such as encapsulation, inheritance, and polymorphism.
2. Solve problems involving decisions and repetition.
3. Develop algorithms that may be used in coding programs.
4. Apply algorithms such as the sequential sort and search in solving problems.
5. Design classes using appropriate *instance data* and *methods*.
6. Design programs using traditional structured as well as object oriented methods.
7. Code programs using the correct syntax of the programming language.
8. Asses the ethical implications of writing code
9. Understand where testing fits in the software development process.
10. Test programs adequately with appropriate input data.
11. Distinguish among programming errors (syntax, logic, run-time)
12. Correct programming errors.
13. Understand the difference between a Java application and a Java Applet.
14. Gain some familiarity with HTML (Hypertext Markup Language)

C. Assessment Instruments

1. Programming Labs
2. Programming Projects
3. Homework
4. Quizzes
5. Final Exam and/or Final Project

VII. Grade Determinants

A. Programming Labs
B. Programming Projects
C. Homework
D. Quizzes
E. Exams
F. Final Exam and/or Final Project

Methods for teaching and learning that may be used in the course:
A. lecture
B. laboratory

VIII. Texts and Materials

Suggested Textbook - Gaddis, Tony. Starting Out with JAVA: From Control Structures through Objects, Sixth Edition, Pearson, 2017

(Please Note: The course outline is intended only as a guide to course content and resources. Do not purchase textbooks based on this outline. The RVCC Bookstore is the sole resource for the most up-to-date information about textbooks.)

IX. Resources

A. Computer Lab for classroom instruction and exercises
B. Technology Support
    a. An Integrated Development Environment for the editing, compiling, and running of programs in Java, such as NetBeans, or Eclipse
    b. Or a text editor configured with Java such as NotePad++ or TextPad

X. Honors Options

n/a