



NEW JERSEY CENTER
FOR TEACHING & LEARNING

**Progressive Science Initiative® (PSI®)
CSCI4314: AP Computer Science A**

Course Credit: 1.0 Carnegie Credit

Dates & Times:

This course covers all of the content normally taught in a full-year course. While it will take approximately 120 hours to complete, it is asynchronous, which allows students flexibility in scheduling. The exact number of hours will vary based on each student's study style and preferences.

Prerequisite: Computer Science Principles, or Instructor Approval

COURSE DESCRIPTION:

This course is for students to learn the content of PSI AP Computer Science A and be prepared to take the AP Exam. It focuses on fundamental programming skills and thought processes required for successful programming in any language while integrating components of Java. It also focuses on object-oriented programming skills and thought processes required for successful programming in any language while integrating components of Java. Topics include fundamentals of programming, control statements & loops, methods & arrays, strings, classes, array lists, inheritance & polymorphism, recursion, and searching & sorting.

STUDENT LEARNING OUTCOMES:

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

1. Apply the principles of computer science in the areas of primitive data types & variables; control statements & loops; arrays; strings; and elements of the standard java library.
2. Utilize the numerous development tools of an integrated development environment (IDE) to write, test, debug and run programs.
3. Create new programs that function as intended using logic and algorithmic processing to ensure intended results when executed.
4. Select and appropriately implement commonly used data structures and algorithms to solve problems.
5. Code with an object-orientated paradigm in mind.

TEXTS, READINGS, INSTRUCTIONAL RESOURCES:

Required Texts:

- PSI AP Computer Science A uses a free digital text book accessible at:
<https://njctl.org/materials/courses/ap-computer-science-a/>

COURSE REQUIREMENTS:

Students are expected to complete the following course requirements:

1. Activities: A number of different learning activities will ensure participant engagement and learning in the course. These include:
 - Engage in video module lessons which demonstrate minimized direct instruction followed by frequent formative assessment
 - Completion of formative assessments aligned to learning objectives which include detailed analysis when answered incorrectly.
2. Mastery Exercises: For each module, these multiple-choice question quizzes assess the content knowledge gained in a module. Participants have the opportunity to retake; random questions are pulled from a larger question bank on each attempt ensuring varied questions.
3. Programming Assignments/Labs: In each module, a .java file is submitted to demonstrate an understanding of the graded programming assignment. These assignments are problem-based questions that require the writing of a program. These promote a deeper understanding of logical reasoning and the applications of programming. A culminating lab activity is embedded into the final module.
4. Module Exam: One is completed at the end of each module. It is a culminating exam consisting of multiple choice and free response questions aligned to the standards and objectives of the module.
5. Final Exam: At the end of the course, a comprehensive exam consisting of Multiple Choice and Free Response questions assesses the content knowledge learned throughout the course and aligns to the AP College Board Exams.

GRADE DISTRIBUTION AND SCALE:

Grade Distribution:

Module Exams	70%
Final Exam	10%
Programming Assignments/Labs	10%
Mastery Exercises	10%

Grade Scale:

A	93 – 100
A-	90 – 92
B+	86 – 89
B	83 – 86
B-	80 – 82
C+	77 – 79
C	73 – 76
C-	70 – 72
D	60.0 – 69.9
F	59.9 or below

ACADEMIC INTEGRITY:

Students must assume responsibility for maintaining honesty in all work submitted for credit and in any other work designated by the instructor of the course. Academic dishonesty includes cheating, fabrication, facilitating academic dishonesty, plagiarism, reusing /re-purposing your own work, unauthorized possession of academic materials, and unauthorized collaboration.

DISABILITY SERVICES STATEMENT:

We are committed to providing reasonable accommodations for all persons with disabilities. Any student with a documented disability requesting academic accommodations should contact the Dean of Students, Dr. Rosemary Knab, additional information to coordinate reasonable accommodations for students with documented disabilities (rosemary@njctl.org).

NETIQUETTE:

Respect the diversity of opinions among the instructor and classmates and engage with them in a courteous, respectful, and professional manner. All posts and classroom communication must be conducted in accordance with the student code of conduct. Think before you push the Send button. Did you say just what you meant? How will the person on the other end read the words?

Maintain an environment free of harassment, stalking, threats, abuse, insults or humiliation toward the instructor and classmates. This includes, but is not limited to, demeaning written or oral comments of an ethnic, religious, age, disability, sexist (or sexual orientation), or racist nature; and the unwanted sexual advances or intimidations by email, or on discussion boards and other postings within or connected to the online classroom.

If you have concerns about something that has been said, please let your instructor know.

CLASS SCHEDULE:

Module	Required Readings	Assignments
1 – Fundamentals of Programming	<ul style="list-style-type: none">PDFs of presentations within the module.	<ul style="list-style-type: none">Graded Programming AssignmentMastery ExerciseModule Exam
2 – Control Statements & Loops	<ul style="list-style-type: none">PDFs of presentations within the module.	<ul style="list-style-type: none">Graded Programming AssignmentMastery ExerciseModule Exam
3 – Strings	<ul style="list-style-type: none">PDFs of presentations within the module.	<ul style="list-style-type: none">Graded Programming AssignmentMastery ExerciseModule Exam
4 - Arrays	<ul style="list-style-type: none">PDFs of presentations within the module.	<ul style="list-style-type: none">Graded Programming AssignmentMastery ExerciseModule Exam
5 – Coding Applications	<ul style="list-style-type: none">PDFs of presentations within the module.	<ul style="list-style-type: none">Lab

6 - Classes	<ul style="list-style-type: none"> PDFs of presentations within the module. 	<ul style="list-style-type: none"> Graded Programming Assignment Mastery Exercise Module Exam
7 – ArrayList	<ul style="list-style-type: none"> PDFs of presentations within the module. 	<ul style="list-style-type: none"> Graded Programming Assignment Mastery Exercise Module Exam
8 – Inheritance & Polymorphism	<ul style="list-style-type: none"> PDFs of presentations within the module. 	<ul style="list-style-type: none"> Graded Programming Assignment Mastery Exercise Module Exam
9 - Recursion	<ul style="list-style-type: none"> PDFs of presentations within the module. 	<ul style="list-style-type: none"> Graded Programming Assignment Mastery Exercise Module Exam
9 – Searching & Sorting	<ul style="list-style-type: none"> PDFs of presentations within the module. 	<ul style="list-style-type: none"> Graded Programming Assignment Mastery Exercise Module Exam
10 –Final Exam	<ul style="list-style-type: none"> Final Exam Review 	<ul style="list-style-type: none"> Reflection Paper Module Exam