

# Progressive Science Initiative® (PSI®)

**CSCI6310:** **AP Computer Science Principles**

**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.

**COURSE DESCRIPTION:**

This course is for students to learn the content of PSI AP Computer Science Principles and be prepared to take the AP Exam.  It focuses on fundamental understanding of computers, networking and life in a digital world. Programming skills will be deepened throughout this course.  Topics include an introduction to programming, operators & logic, algorithms & control structures, lists, functions & procedures, the global impact of computing, bits & bytes, data & privacy, graphics & images, and the Internet & networking.

**STUDENT LEARNING OUTCOMES:**

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

1. Create basic computer programs using the Python language.
2. Understand how computers and computing can impact the world, both positively and negatively.
3. Apply best practices for collaboration when computer programming.
4. Describe how computers store, access and process information.
5. Describe how computers communicate via networks, and how those networks work.
6. Demonstrate mastery of AP Computer Science Principles content on a comprehensive final exam.

**TEXTS, READINGS, INSTRUCTIONAL RESOURCES:**

**Required Texts:**

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

**COURSE REQUIREMENTS:**

In order to receive a Passing grade, the participant must 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.
* Interaction with module discussion boards that allow conversation with peers and course instructors about the module’s content, delivering that content to students.  Discussion boards also serve as a place to ask and answer questions related to the module’s content.
	1. 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.
	2. Programming Assignments/Labs: In each module, a Python 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 occurs in the final module.
	3. 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.
	4. 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 | 65% |
| Final ExamProgramming Assignments/LabsMastery Exercises | 15%10%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 – Introduction to Programming** | * Presentation within module.
 | * Graded Programming Assignment
* Mastery Exercise
* Module Exam
 |
| **2 – Operators & LogicLoops** | * Presentation within module.
 | * Graded Programming Assignment
* Mastery Exercise
* Module Exam
 |
|  |
| **3 – Algorithms & Control Structures** | * Presentation within module.
 | * Graded Programming Assignment
* Mastery Exercise
* Module Exam
 |
| **4 - Lists** | * Presentation within module.
 | * Graded Programming Assignment
* Mastery Exercise
* Module Exam
 |
| **5 – Functions & Procedures** | * Presentation within module.
 | * Graded Programming Assignment
* Mastery Exercise
* Module Exam
 |
| **6 – Global Impact of Computing** | * Presentation within module.
 | * Graded Programming Assignment
* Mastery Exercise
* Module Exam
 |
| **7 – Bits & BytesLoops** | * Presentation within module.
 | * Graded Programming Assignment
* Mastery Exercise
* Module Exam
 |
| **8 - Data & Privacy** | * Presentation within module.
 | * Graded Programming Assignment
* Mastery Exercise
* Module Exam
 |
| **9 – Graphics & Images** | * Presentation within module.
 | * Graded Programming Assignment
* Mastery Exercise
* Module Exam
 |
| **10 – The Internet & Networking** | * Presentation within module.
 | * Graded Programming Assignment
* Mastery Exercise
* Module Exam
 |
| **11 – Final Exam** | * Review course presentations.
 | * Final Exam
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