Passaic County Community College
Academic Year: 2023-2024
Standard Syllabus

Department Chair: Merille Siegel

Course Code: CIS 161 **Course Title:** Fundamentals of Computer Science II

Department: CIS/Engineering **Semesters Offered:** Fall Evening, Spring Day

Course Description:

This course extends the knowledge gained in CIS 160. An emphasis is placed on utilizing an object oriented paradigm to design and implement software solutions. Extensive programming activities utilizing structures, arrays, classes, files and pointers are covered. Efficient searching and sorting techniques, effective use of dynamic memory allocation, pointer arithmetic and recursive functions are also covered. In addition, stacks, queue and linked list structures are briefly introduced. By the end of the course students are able to construct system and application programs. Offered Fall (evenings) Spring (days)

Co/Prerequisites: CIS 160 Computer Science I

Credits: 4 **Lecture Hours:** 4 **Lab/Studio Hours:** 0 **Clinical/Fieldwork Hours:** N/A

Required Textbook/Materials:

Textbooks: "Starting Out with C++ - Early Objects"; T. Gaddis/J. Walters/ G. Muganda; Pearson; 2017. ISBN-13: 978-0-13-523500-3.

Reference: "A First Book of C++", Gary J. Bronson; G. Bronson, Course Technology, Cengage Learning. ISBN-10: 1111531005; 2012

Additional Time and Supplemental Requirements: Based on a 15 week semester, students are expected to complete approximately 6 hours per week of assigned work outside of class.

- All assigned projects are completed out of class time. Students, who don't have a computer, can use the open lab to complete homework assignments. Students must read and enforce what they learned outside of the class.

Special Facilities/Equipment:

Hardware: WinTel Platform PC or lab top.
Software: Any modern C++ compiler (**wxDev-C++** is a free integrated development environment (IDE) that is based on the popular Dev-C++.).
Storage Media: At least 1 GB Flash Drive for saving lab work.

Course Learning Outcomes:

Upon completion of this course, students will be able to:

1. Demonstrate programming skills utilizing the C++ language.
2. Apply data abstraction Using classes and Object Oriented Programming.
3. Implement data structures (such as arrays, structures and arrays of structures) to support specification techniques.
4. Define recursive solutions to problems including searching and sorting.
5. Utilize dynamic memory allocation using pointers and pointer arithmetic.
6. Use pointers to implement stacks, queues and linked list structures.
7. Create header files as libraries for code reusability in multiple applications.

General Education Outcomes: This is not a general education course.

Grading Standards:

Activity	Contribution
Lab Projects (4 – 6)	30%
Tests/ Quizzes	35%
Final Exam	30%
Attendance/Activities/Etc.	5%

Course Content:

(Schedule and suggested topics, readings, and assignments subject to change based on instructor and instructional resource)

WEEK	TOPIC	Chapter
1	**CIS-160 review: (focus on chapter 7)**	1 - 7
2 (Test 1) And 3	**Arrays:**	8
4(Test 2) And 5	**Searching, Sorting and algorithm analysis:**	9
6/7	**Pointers and the address operator &:**	10
8	**More about Classes and OOP:**	11
9(Test 3)	**More about Classes and OOP: (Cont…)**	11
10	**Polymorphism and Virtual Functions:**	15
11	**Characters, strings and the string Class:**	12

11	**Advanced file and I/O Operations:**		13
12	**Recursion:**		14
13	**Templates and the STL:**		16
14	**linked lists:**		17
15	**Final Exam**	(Final project is Due)	

Class Policies:

1. Students are reminded of the College Academic Integrity policy for Passaic County Community College. Students are urged to conduct themselves accordingly.
2. Attendance required.
3. Homework and projects mandatory, collected on the due dates at the beginning of the classes. No late projects or homework will be collected, except for emergencies with valid reasons.
4. Classroom exams will be announced in advanced. No make-up exams given unless under valid emergency. Students are required to call in to inform the Professor prior to the class.
5. No eating and drinking as noted by CIS Dept. policy
6. Mobile devices turn on to vibrate or silent mode.

College Policies:

For Information regarding:

- PCCC's Academic Integrity Code
- Student Conduct Code
- Student Grade Appeal Process

Please refer to the PCCC Student Handbook and PCCC Catalog

Panther Alert:

The College will announce delayed openings, closings, and other emergency situations through the Panther Alert System. Students are encouraged to sign up for Panther Alert Notifications by logging into their student accounts through the PCCC website at www.pccc.edu and following Panther Alert System instructions.

Notification for Students with Learnings Disabilities:

If you have a disability, and believe you need accommodations in this class, please contact the Office of Accessibility Services at 973-684-6395, or email ods@pccc.edu. You should do so as soon as possible at the start of each semester. If you require testing accommodations, you must remind me (the instructor) one week in advance of each test.