

Administrative Master Syllabus

Course Information

Course Title	Programming Fundamentals III
Course Prefix, Num. and Title	COSC 2436 Programming Fundamentals III
Division	Technology and Business
Department	Computer Science
Course Type	Academic General Education Course (from ACGM, but not WCJC Core)
Course Catalog Description	Further application of programming techniques, introducing the fundamental concepts of data structures and algorithms. Topics include data structures (including stacks, queues, linked lists, hash tables, trees, and graphs), searching, sorting, recursion, and algorithmic analysis. Programs will be implemented in an appropriate object-oriented language.
Pre-Requisites	COSC 1437
Co-Requisites	None

Semester Credit Hours

Total Semester Credit Hours (SCH): Lecture Hours: Lab/Other Hours	4: 3: 2
Equated Pay Hours	4
Lab/Other Hours Breakdown: Lab Hours	2
Lab/Other Hours Breakdown: Clinical Hours	0
Lab/Other Hours Breakdown: Practicum Hours	0
Other Hours Breakdown	0

Approval Signatures

Title	Signature	Date
Department Head:	Muna Saqer, Comp Sci and IT&N Program Director	10-26-2023
Division Chair:	David Kucera, Technology & Business Division Chair	10-26-2023
VPI:		



Additional Course Information

Topical Outline: Each offering of this course must include the following topics (be sure to include information regarding lab, practicum, and clinical or other non-lecture instruction).

Investigation of techniques for program design, testing, and debugging. Data structures are studied including stacks, queues, linked lists and binary trees. Searching, sorting, recursion, strings, and arrays are also covered. Taught in appropriate high-level language in a lecture/lab setting.

Course Learning Outcomes:

Learning Outcomes – Upon successful completion of this course, students will:

1. Design and develop programs that implement basic data structures, including stacks, queues, linked lists, hash tables, trees, and graphs.
2. Apply recursive techniques and algorithms to solve problems.
3. Implement searching and sorting algorithms.
4. Understand algorithm efficiency, Big-O notation, and why it should be considered in programming.
5. Analyze and select appropriate data structures to implement a solution to a problem.
6. Design and implement data structures using classes and incorporating object-oriented concepts.
7. Demonstrate best practices of software development including testing, validation, and documentation.

Methods of Assessment: All outcomes will be assessed by one or more of the following:

Individual Programming
Projects Tests and Quizzes
Final Exam

Required text(s), optional text(s) and/or materials to be supplied by the student:

Starting Out with Java from Control Structures through Objects, Tony Gaddis, Published by Pearson (Latest Edition)
Revel Access Code for Introduction to Java Programming and Data Structures, Thirteen Edition, Y. Daniel Liang. Published by Pearson (Latest Edition)

Suggested Course Maximum:

20

List any specific or physical requirements beyond a typical classroom required to teach the course.

Computer for each student with appropriate compiler

Course Requirements/Grading System: Describe any course specific requirements such as research papers or reading assignments and the generalized grading format for the course.

Tests and Comprehensive Final Exam (partial multiple choice, fill in the blank, etc. with a hands-on component) weekly
Short Answer and Hands-on Lab Assignments

Lab and/or Projects.....40-60%
Quizzes and/or Exams.....40-60%



Wharton County Junior College

Grade System:

90-100% =A

80-89% =B

70-79% =C

60-69% =D

Below 60%..... =F

Curriculum Checklist:

Administrative General Education Course (from ACGM, but not in WCJC Core) – No additional documents needed.

Administrative WCJC Core Course. Attach the Core Curriculum Review Forms

Critical Thinking

Communication

Empirical & Quantitative Skills

Teamwork

Social Responsibility

Personal Responsibility

WECM Course -If needed, revise the Program SCANS Matrix and Competencies Checklist