

El Paso Community College

Syllabus

Part II

Official Course Description

SUBJECT AREA	<u>Computer Science</u>
COURSE RUBRIC AND NUMBER	<u>COSC 2336</u>
COURSE TITLE	<u>Programming Fundamentals III</u>
COURSE CREDIT HOURS	<u>3 3 : 1</u> Credits Lec Lab

I. Catalog Description

Provides further applications of programming techniques, introducing the fundamental concepts of data structures and algorithms. Includes topics on recursion, fundamental data structures (including stacks, queues, linked lists, hash tables, trees, and graphs), and algorithmic analysis. It is highly recommended that students take COSC 1436, COSC 1437, and COSC 2425 before enrolling in COSC 2336. **Prerequisite: READ 0309 or INRW 0311 or ESOL 0340 (can be taken concurrently) or by placement exam or ENGL 1301 with a “C” or better or ENGL 1302 with a “C” or better. (3:1).**

II. Course Objectives

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

- A. Utilize advanced Java Programming techniques.
- B. Develop and effectively use object-oriented programming basics such as classes, inheritance, encapsulation, abstract data types (ADTs), and polymorphism.
- C. Identify, select, design, and utilize a variety of data structures including stacks, queues, lists, trees, graphs, and hash tables.
- D. Discuss the advantages of dynamic data structures over static structures.
- E. Identify, design, and utilize a variety of algorithms.
- F. Examine alternate approaches to data structures and algorithms and evaluate their efficiency.
- G. Apply Big O analytical methods to analyze algorithms and evaluate the performance/complexity of solutions.
- H. Integrate linked list data structures into program design.
- I. Recognize the need for stacks and queues and describe how to implement them.
- J. Identify and utilize recursion when appropriate.
- K. Discuss time and space analysis for both iterative and recursive algorithms.
- L. Implement additional search and sorting algorithms to include the use of binary trees, heaps, and hashing.
- M. Discuss the various properties of graphs and graph algorithms.
- N. Map real-world problems into graphical representations.

III. Evaluation

A. Preassessment

None

B. Postassessment

1. There will be four (4) written examinations. The final exam will be comprehensive.
2. Homework assignments will be assigned at the instructor's discretion and will be averaged on a 100-point scale.
3. Lab assignments will be assigned at the instructor's discretion and will be averaged on a 100-point scale.

C. Remediation

The instructor may provide the students with means of improving a grade. The instructor will determine the timing, form, and method of remediation.

D. Final Grade

The final grade report will be based on the percentage of the total points earned.

IV. Disability Statement (American with/Disabilities Act [ADA])

EPCC offers a variety of services to persons with documented sensory, mental, physical, or temporary disabling conditions to promote success in classes. If you have a disability and believe you may need services, you are encouraged to contact the Center for Students with Disabilities to discuss your needs with a counselor. All discussions and documentation are kept confidential. Offices located: VV Rm C-112 (831-2426); TM Rm 1400 (831-5808); RG Rm B-201 (831-4198); NWC Rm M-54 (831-8815); and MDP Rm A-125 (831-7024).

V. 6 Drop Rule

Students who began attending Texas public institutions of higher education for the first time during the Fall 2007 semester or later are subject to a 6-Drop limit for all undergraduate classes. Developmental, ESL, Dual Credit and Early College High School classes are exempt from this rule. All students should consult with their instructor before dropping a class. Academic assistance is available. Students are encouraged to see Counseling Services if dropping because exemptions may apply. Refer to the EPCC catalog and website for additional information.