Programming Fundamentals I (COSC 1436)

Credit: 4 semester credit hours (3 hours lecture, 2 hours lab)

Prerequisite/Co-requisite: None

Course Description

Introduces the fundamental concepts of structured programming. Topics include software development methodology, data types, control structures, functions, arrays, and the mechanics of running, testing, and debugging. This course assumes computer literacy. This course is included in the Field of Study Curriculum for Computer Science.

Required Textbook and Materials

1. *Introduction to Java Programming: Comprehensive,* by Y. Daniel Liang, 9th Edition

    a. ISBN number is 9780132936521.

2. USB Flash Memory drive.

Course Objectives (with applicable SCANS skills after each)

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

1. Describe how data are represented, manipulated, and stored in a computer.
2. Categorize different programming languages and their uses.
3. Understand and use the fundamental concepts of data types, structured programming, algorithmic design, and user interface design.
4. Demonstrate a fundamental understanding of software development methodologies, including modular design, pseudo code, flowcharting, structure charts, data types, control structures, functions, and arrays.
5. Develop projects that utilize logical algorithms from specifications and requirements statements.
6. Demonstrate appropriate design, coding, testing, and documenting of computer programs that implement project specifications and requirements.
7. Apply computer programming concepts to new problems or situations.

Course Outline

A. Introduction to Computers, Programs, and Java
   1. Introduction
   2. What is a computer?
   3. Programming Languages
   4. Operating Systems

B. Elementary Programming
   1. Introduction
   2. Writing a single program
   3. Reading input from the console
   4. Identifiers

C. Selections
   1. Introduction
   2. Boolean data type
   3. If statements
   4. Case Study
   5. Two-way if-else statements

D. Loops

1. Introduction
2. The while loop
3. The do-while loop
4. The for loop

E. Methods
   1. Introduction
   2. Defining a method
   3. Calling a method
   4. Void example method

F. Single-Dimensional Arrays
   1. Introduction
   2. Array basics
   3. Case study
   4. Copying Arrays
G. Multidimensional Arrays
   1. Introduction
   2. Two dimensional array basics

3. Processing two dimensional arrays

H. Objects and Classes
   1. Introduction
   2. Defining classes for objects
   3. Constructing objects using constructors
I. Strings
   1. Introduction
   2. The string class
   3. The character class
J. Thinking in Objects
   1. Introduction
   2. Immutable objects and classes
   3. The scope of variables

Grade Scale

90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
0 – 59	F

Course Evaluation

Final grades will be calculated according to the following criteria:

1. Daily work	50%
2. Applications Exams (3)	30%
3. Final	20%

Course Requirements

1. Purchase required materials including book and USB flash memory drive.

Course Policies

1. No food, drinks, or use of tobacco products in class.

2. Beepers, telephones, headphones, and any other electronic devices must be turned off while in class.

3. Do not bring children to class.

4. No late assignments will be accepted.

5. Tests. Students that miss a test are not allowed to make up the test. Students that miss a test will receive a grade of '0'.

6. If you wish to drop a course, the student is responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an 'F' in the course.

7. Exams will test information in assigned chapters and material discussed in class. Any student being disruptive during an exam will be required to terminate their exam and leave the classroom.

8. Grades will be posted under the My Grades icon on the Blackboard class web site.

9. If you need to contact the instructor, you may leave a voice mail or e-mail in Blackboard or the instructor's LIT e-mail (preferred). Your call or e-mail will be answered within 24 hours Monday – Thursday and within 72 hours Friday - Sunday. If leaving a voice mail, be sure to leave a phone number that can be understood.

10. The textbook (and all items included ISBN bundle number) and the flash drive are mandatory. A student not acquiring these mandatory materials will not be able to PASS this course.

11. Tests and a Final exam will be taken during the semester. DO NOT miss any exams. Makeup exams will not be given unless you make arrangements in advance with the instructor.

12. Attendance: students should be present and punctual for all classes. If tardy, enter quietly and do not disturb the class. Regular class attendance will maximize your computer skills for your personal and professional future. If you are taking the course via the Web, submission of assignments by the due date is a measure of attendance. Students that are tardy or miss a class are responsible for all work and/or discussion missed. The student is responsible to obtain missed material from a classmate. **Do not expect your instructor to repeat a lecture.**

13. Do not talk, type, or print while the instructor is talking to the class or when a student is asking a question that pertains to the class.

14. Refrain from "surfing" the Web during class, unless directed by your instructor.

15. Additional class policies as defined by the individual course instructor.

16. A grade of "C" or better must be earned in this course for credit toward degree requirement. A grade of "B" or better must be earned to transfer this credit to an Academic Institution.

Disabilities Statement

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability

requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the office in Student Services, Cecil Beeson Building.

Course Schedule

Refer to Blackboard for actual assignments and due date

Week of	Topic	Reference
Week 1	Course introduction and policies,	
Week 2	Chapter 1: Introduction to Computers, Programs and Java	pp. 1-32
Week 3	Chapter 2: Elementary Programming	pp. 33-80
Week 4	Chapter 3: Selections	pp. 81-132
Week 5	Chapter 3: Selections	pp. 81-132
Week 6	Exam One	
Week 7	Chapter 4:Loops	pp. 133-176
Week 8	Chapter 5: Methods	pp. 177-222
Week 9	Chapter 6: Single Dimensional Arrays	pp. 223-262
Week 10	Chapter 6: Single Dimensional Arrays	pp. 223-262
Week 11	Exam Two	
Week 12	Chapter 7: Multidimensional Arrays	pp. 263-294
Week 13	Chapter 8: Objects and Classes	pp. 295-334
Week 14	Chapter 9: Strings	pp. 335-368
Week 15	Chapter 10: Thinking in Objects	pp. 369-406
Week 16	Exam Three/Final	