CIS 1050

Division: Career and Technical Education
Department: Computer Information Systems
Course: CIS 1050
Title: Logical Analysis and Program Design
Catalog Description:

This class examines structures, methodologies, and tools used to solve problems through the use of critical thinking and logical analysis using structures program design. This course requires students to think creatively, integrate and synthesize knowledge, and apply systems methodologies to the solution of problems. The QBASIC programming language is used in labs to implement programs designed during lectures. In order for students to actually see how their programs are implemented into the real world, programs are transferred to a robot car where the program is executed to manipulate the car according to the program.

General Education Requirements: N/A
Semesters Offered: TBA
Credit/Time Requirement: Credit: 3; Lecture: 3; Lab: 1
Clock/Hour Requirements: 60
Offered for Non-Credit: No
Prerequisites: None

Corequisites: None

Justification:

This course is fundamental to and a prerequisite for all other CIS programming language courses. It introduces general concepts and prepares students for job readiness at graduation and/or transfer to a four-year college.

Student Learning Outcomes:

Upon successful completion of this course, students will understand the following:

- structured programming constructs of sequence, iteration, and selection
- basic forms of data representation (strings, numeric and floating point numbers, and some coding approaches)
- flowchart and pseudo-code in planning a program
- interactive debugging, using error messages to assist in diagnosing problems
- organizing a program into its various steps
- formatting reports and display screens
- handling both sequential and random access files
- table and arrays, and how to construct and utilize them in programming

Students will gain an awareness of the importance of correct programming methodologies to include:

- structured programming concepts: Control structures (sequences, decisions, iterations); flowcharts and pseudo-code; IPO and other charts; decision tables and trees
- problem solving: Defining a problem and breaking a problem into parts
- top down design and development: Subroutines and modularity
- design alternatives: Data flow and data structure methodologies
- debugging and testing: Types of testing, diagnostic trees, what constitutes an easy to debug program, and putting it all together.

Content:

Course objectives will be accomplished by providing students with learning experiences in the following subject areas:

- modular programming and subroutines
- logic theory and program flow
- diagnostic and debugging techniques
- conditional selections
- single and multi-dimensional tables
- sequential and binary searches
- file structure
- array and string manipulations
- data validation
- interactive programs
- menus and graphics
- Binary, Octal, and Hexadecimal arithmetic.

During the labs, students will be able to apply the principles learned by writing computer programs demonstrating the respective principles.

General Education Outcomes:

Key Performance Indicators:

In class:

- Student grades will be based on a combination of lab exercises (5-25%), quizzes (5-25%), tests (10-50%), and a final exam or project (20-50%).
- Completed programs also will demonstrate students proficiency in the vehicle language.

Following class:

- Post evaluations will be measured by success in subsequent courses.

Representative Text and/or Supplies:

- A handout will be provided covering the basic course material.
- Supplementary materials: Student will be provided with 2 blank diskettes for storing programs and data.

Optimum Class Size: 16
Maximum Class Size: 32

Signatures:

I hereby submit this course syllabus:

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I hereby find this course consistent with the goals and resources of the Computer Information Systems Department:

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Michael P. Medley, MBA, Assistant Professor, Chair

I hereby find this course consistent with the goals and resources of the Career and Technical Education Division:

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Michael P. Medley, MBA, Assistant Professor, Dean

I have discussed the need for library resources related to this class with the person submitting the syllabus:

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Lynn Anderson, MLIS, Technical Services Librarian (Main Campus)

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Michelle Olsen, MLS, Campus Librarian (Richfield Campus)