Course Information

Course Title	Computer Organization
Course Prefix, Num. and Title	COSC 2425 - Computer Organization
Division	Technology and Business
Department	Computer Science
Course Type	Academic General Education Course (from ACGM, but not WCJC Core)
Course Catalog Description	The organization of computer systems is introduced using assembly language. Topics include basic concepts of computer architecture and organization, memory hierarchy, data types, computer arithmetic, control structures, interrupt handling, instruction sets, performance metrics, and the mechanics of testing and debugging computer systems. Embedded systems and device interfacing are introduced.
Pre-Requisites	COSC 1436
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
Prepared by:		
Department Head:		
Division Chair:		
Dean/VPI:		
Approved by CIR:		

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).

1. Hardware Overview
2. The Decimal, Binary, and Hexadecimal Numbering Systems
3. Apply Boolean logic to computer hardware and software
4. Understand the principles of computer architecture as applied to the Intel x86 microprocessor families.
5. Be familiar with such as Basic Elements of Assembly Language such
    - Defining Data, Symbolic Constant
    - Data Related Operators and Directives
    - Addition and Subtraction
    - Multiplication and Division
    - Comments on Comments
    - Procedures
    - Conditional Processing, Conditional Jumps, Loops, and Structures
    - Integer Arithmetic
    - Decision-making in Assembly Language
6. Create, compile, link, and run assembly programs using Microsoft Visual Studio 2010.

Course Learning Outcomes:

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

Upon successful completion of this course, students will:
1. Explain contemporary computer system organization.
2. Describe data representation in digital computers.
3. Explain the concepts of memory hierarchy, interrupt processing, and input/output mechanisms.
4. Measure the performance of a computer system.
5. Design and develop assembly language applications.
6. Explain the interfaces between software and hardware components.
7. Explain the design of instruction set architectures.
8. Develop a single-cycle processor.
9. Explain the concept of virtual memory and how it is realized in hardware and software.
10. Explain the concepts of operating system virtualization.

Methods of Assessment:

All outcomes will be assessed by one or more of the following:
Course Projects
Tests and Quizzes
Final Exam

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

- Kip R. Irvine," Assembly Language for X86 Processors" ,Prentice Hall, 6th Edition, ISBN # 9780136022121
- USB Flash Drive
- High-speed Internet Connection

Suggested Course Maximum:

20

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

Computer lab, one PC per student

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 Hands-on Lab Assignments
50% - Labs, Projects
50% - Tests & Final Exam

Grading System:
100-90 = A
89-80 = B
79-70 = C
69-60 = D
and below = 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