



**Purpose:** It is the intention of this Administrative-Master Syllabus to provide a general description of the course, outline the required elements of the course and to lay the foundation for course assessment for the improvement of student learning, as specified by the faculty of Wharton County Junior College, regardless of who teaches the course, the timeframe by which it is instructed, or the instructional method by which the course is delivered. It is not intended to restrict the manner by which an individual faculty member teaches the course but to be an administrative tool to aid in the improvement of instruction.

**Course Title** - Computer Organization

**Course Prefix and Number** - COSC 2425

**Department** – Computer Science

**Division** – Technology & Business

**Course Type:** (check one)

- Academic General Education Course (from ACGM – but not in WCJC Core)
- Academic WCJC Core Course
- WECM course (This course is a Special Topics or Unique Needs Course: Y  or N )

**Semester Credit Hours #: Lecture Hours #: Lab/Other Hours #:** 4:3:2

**Equated Pay hours for course** - 4

List Lab/ Other Hours
Lab Hours 2
Clinical Hours 0
Practicum Hours 0
Other (list) 0

**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.

**Prerequisites/Co-requisites** – COSC 1436

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**Date:** 09/16/2013

**Reviewed by Department Head:** Donna Schilling

**Date:** 06/16/2015

**Accuracy verified by Division Chair:** David Kucera

**Date:** 8/12/15

**Approved by Dean or Vice President of Instruction:** Leigh Ann Collins

**Date:** 12-18-15



**I. Topical Outline** – Each offering of this course must include the following topics (be sure to include information regarding lab, practicum, 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.

**II. Course Learning Outcomes**

<b>Learning Outcomes</b>	<b>Methods of Assessment</b>
<p>Upon successful completion of this course, students will:</p> <ol style="list-style-type: none"> <li>1. Explain contemporary computer system organization.</li> <li>2. Describe data representation in digital computers.</li> <li>3. Explain the concepts of memory hierarchy, interrupt processing, and input/output mechanisms.</li> <li>4. Measure the performance of a computer system.</li> <li>5. Design and develop assembly language applications.</li> <li>6. Explain the interfaces between software and hardware components.</li> <li>7. Explain the design of instruction set architectures.</li> <li>8. Develop a single-cycle processor.</li> <li>9. Explain the concept of virtual memory and how it is realized in hardware and software.</li> <li>10. Explain the concepts of operating system virtualization.</li> </ol>	<p>All outcomes will be assessed by one or more of the following:</p> <ul style="list-style-type: none"> <li>Course Projects</li> <li>Tests and Quizzes</li> <li>Final Exam</li> </ul>

**III. Required Text(s), Optional Text(s) and/or Materials to be Supplied by Student.**

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

**IV. Suggested Course Maximum - 20**

**V. List any specific spatial or physical requirements beyond a typical classroom required to teach the course.** Computer lab, one PC per student

**VI. 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

**VII. Curriculum Checklist**

- **Academic General Education Course** (from ACGM – but not in WCJC Core)  
No additional documentation needed
- **Academic WCJC Core Course**  
Attach the Core Curriculum Checklist, including the following:
  - Basic Intellectual Competencies
  - Perspectives
  - Exemplary Educational Objectives
- **WECM Courses**  
If needed, revise the Program SCANS Matrix & Competencies Checklist.