



COURSE OUTLINE: CSD0122 - HARDWARE, OS, NETWORKS

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Course Code: Title	CSD0122: HARDWARE, OS, NETWORKS
Program Number: Name	1120: COMMUNITY INTEGRATN
Department:	C.I.C.E.
Academic Year:	2022-2023
Course Description:	The CICE student, with the assistance of a learning specialist, receive an overview of computer hardware, software, and networking to expose them to the foundational technologies on which all computer software operates. The hardware components of a typical computer system are studied as well as system level software such as operating systems and device drivers. An introduction to assembly language gives the CICE student, with the assistance of a learning specialist, an understanding of how the software they create is compiled and executed. The essentials of networking are studied using working hardware to experiment with networking communication, resource sharing, and encryption.
Total Credits:	5
Hours/Week:	5
Total Hours:	70
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course:	1120 - COMMUNITY INTEGRATN
Please refer to program web page for a complete listing of program outcomes where applicable.	VLO 1 Integrate fully in academic, social and community activities.
	VLO 2 Develop and apply transferrable learning strategies to promote self-determination, life satisfaction, and lifelong learning.
	VLO 5 Further develop confidence, self-awareness, and self-advocacy skills related to independence, employment, and personal well-being.
Essential Employability Skills (EES) addressed in this course:	EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication.
	EES 4 Apply a systematic approach to solve problems.
	EES 5 Use a variety of thinking skills to anticipate and solve problems.
	EES 7 Analyze, evaluate, and apply relevant information from a variety of sources.
	EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.
	EES 10 Manage the use of time and other resources to complete projects.
Course Evaluation:	Passing Grade: 50%, D
	A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.



Other Course Evaluation & Assessment Requirements:

To successfully pass this course, the student must receive passing grades for both the Test portion of the class AND the Laboratory portion.

Grade
 Definition Grade Point Equivalent
 A+ 90 - 100% 4.00
 A 80 - 89%
 B 70 - 79% 3.00
 C 60 - 69% 2.00
 D 50 - 59% 1.00
 F (Fail) 49% and below 0.00

CR (Credit) Credit for diploma requirements has been awarded.
 S Satisfactory achievement in field /clinical placement or non-graded subject area.
 U Unsatisfactory achievement in field/clinical placement or non-graded subject area.
 X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.
 NR Grade not reported to Registrar's office.
 W Student has withdrawn from the course without academic penalty.

Books and Required Resources:

This course uses Free Open Educational Resources only

Course Outcomes and Learning Objectives:

Upon successful completion of this course, the CICE student, with the assistance of a Learning Specialist will acquire varying levels of skill development relevant to the following learning outcomes:

Course Outcome 1	Learning Objectives for Course Outcome 1
1. Describe the fundamental components of computer architecture	1.1 Identify components of a computer, including key components on the motherboard, and describe their role/function 1.2 Draw and discuss process flow diagram for a computer 1.3 Describe the sequence of events that occur when a computer starts up
Course Outcome 2	Learning Objectives for Course Outcome 2
2. Write simple assembly language programs	2.1 Explain how a CPU manipulates data and executes program code 2.2 Describe the binary number system, and explain its importance in computer systems 2.3 Explain how machine, assembly, and high-level languages relate to each other 2.4 Describe registers and their use in assembly code 2.5 Explore basic assembly instructions, and describe what they do 2.6 Write a simple assembly program for an emulator 2.7 Discuss the advantages of high-level languages, and how they relate to assembly language
Course Outcome 3	Learning Objectives for Course Outcome 3
3. Describe the role of operating systems	3.1 Explain how operating systems coordinate running applications and system resources



	<p>3.2 Describe the purpose of device controllers</p> <p>3.3 Compare popular operating systems, and highlight important differences</p> <p>3.4 Connect and configure peripheral devices</p>
Course Outcome 4	Learning Objectives for Course Outcome 4
4. Describe networks in general and begin building a telecommunications vocabulary.	<p>4.1 List and describe the elements common to all networks.</p> <p>4.2 Define and distinguish LAN, WAN</p> <p>4.3 List and describe the 7 layers of the OSI model and</p> <p>4.4 Identify various protocols at each layer and describe their purpose</p> <p>4.5 Identify the method of addressing at various layers and the associated protocol data units</p>
Course Outcome 5	Learning Objectives for Course Outcome 5
5. Describe the features of the Network layer and explain the fundamental concepts of routing	<p>5.1 Identify the role of the Network layer</p> <p>5.2 Examine the Internet Protocol (IP), and its features for providing connectionless and best-effort service</p> <p>5.3 Describe the principles used to guide the division, or grouping, of devices into networks.</p> <p>5.4 Describe the hierarchical addressing of hosts and how this allows communication between networks.</p> <p>5.5 Describe the fundamentals of routes, next-hop addresses, and packet forwarding to a destination network.</p> <p>5.6 utilize switches and TRUNK ports to build VLANs and use a router to carry traffic between them</p> <p>5.7 Explain the structure of IP addressing and demonstrate the ability to convert between 8-bit binary and decimal numbers.</p> <p>5.8 Explain how addresses are assigned to networks by ISPs and within networks by administrators.</p> <p>5.9 Verify and test connectivity and operational status of the IP protocol stack on a device using common testing utilities</p>
Course Outcome 6	Learning Objectives for Course Outcome 6
6. List the features of the Transport layer protocols and services	<p>6.1 Explain the need for the Transport layer.</p> <p>6.2 Describe the role of two TCP/IP Transport layer protocols: TCP and UDP.</p> <p>6.3 Explain the key functions of the Transport layer, including reliability, port addressing, and segmentation.</p> <p>6.4 Identify when it is appropriate to use TCP or UDP and provide examples of applications that use each protocol.</p>
Course Outcome 7	Learning Objectives for Course Outcome 7
7. Describe and utilize the Application Layer and its protocols.	<p>7.1 Describe how the functions of the three upper OSI model layers provide network services to end user applications.</p> <p>7.2 Define how the Application Layer provides communication across the telecommunication network.</p> <p>7.3 Identify the function of well-known TCP/IP applications, such as the World Wide Web and email, and their related services (HTTP, DNS, SMB, DHCP, SMTP, SNMP, and Telnet).</p> <p>7.4 Explain how protocols ensure services running on one kind</p>

	of device can send to and receive data from many different network devices.
Course Outcome 8	Learning Objectives for Course Outcome 8
8. Describe the nature of Encryption/Decryption and implement secure communications	8.1 Describe the nature of cryptography 8.2 Describe a hash and where it is used in cryptography 8.3 Distinguish between secret key vs public/private key encryption 8.4 Send a secure message across a communications channel 8.5 Describe how a firewall is used to secure a network 8.6 Explore other topics in security such as digital signatures and VPNs.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Assignments	10%
Labs	30%
Quizzes	10%
Test 1	16%
Test 2	17%
Test 3	17%

CICE Modifications:

Preparation and Participation

1. A Learning Specialist will attend class with the student(s) to assist with inclusion in the class and to take notes.
2. Students will receive support in and outside of the classroom (i.e. tutoring, assistance with homework and assignments, preparation for exams, tests and quizzes.)
3. Study notes will be geared to test content and style which will match with modified learning outcomes.
4. Although the Learning Specialist may not attend all classes with the student(s), support will always be available. When the Learning Specialist does attend classes he/she will remain as inconspicuous as possible.

A. Further modifications may be required as needed as the semester progresses based on individual student(s) abilities and must be discussed with and agreed upon by the instructor.

B. Tests may be modified in the following ways:

1. Tests, which require essay answers, may be modified to short answers.
2. Short answer questions may be changed to multiple choice or the question may be simplified so the answer will reflect a basic understanding.
3. Tests, which use fill in the blank format, may be modified to include a few choices for each question, or a list of choices for all questions. This will allow the student to match or use visual clues.
4. Tests in the T/F or multiple choice format may be modified by rewording or clarifying statements into layman's or simplified terms. Multiple choice questions may have a reduced number of choices.

C. Tests will be written in CICE office with assistance from a Learning Specialist.

The Learning Specialist may:

1. Read the test question to the student.
2. Paraphrase the test question without revealing any key words or definitions.
3. Transcribe the student's verbal answer.
4. Test length may be reduced and time allowed to complete test may be increased.

D. Assignments may be modified in the following ways:

1. Assignments may be modified by reducing the amount of information required while maintaining general concepts.
2. Some assignments may be eliminated depending on the number of assignments required in the particular course.

The Learning Specialist may:

1. Use a question/answer format instead of essay/research format
2. Propose a reduction in the number of references required for an assignment
3. Assist with groups to ensure that student comprehends his/her role within the group
4. Require an extension on due dates due to the fact that some students may require additional time to process information
5. Formally summarize articles and assigned readings to isolate main points for the student
6. Use questioning techniques and paraphrasing to assist in student comprehension of an assignment

E. Evaluation:

Is reflective of modified learning outcomes.

NOTE: Due to the possibility of documented medical issues, CICE students may require alternate methods of evaluation to be able to acquire and demonstrate the modified learning outcomes

Date:

December 20, 2022

Addendum:

Please refer to the course outline addendum on the Learning Management System for further information.

