



National Computing Education Accreditation Council
NCEAC



NCEAC.DOC.001-E

COURSE DESCRIPTION

NAME OF INSTITUTION	Lahore Garrison University
PROGRAM (S) TO BE EVALUATED	Computer Science , Fall 2022

Course Description :

Course Code	CSC346																		
Course Title	Comp Organization & Assembly Lang																		
Credit Hours	3+1																		
Prerequisites by Course(s) and Topics	Programming Fundamentals																		
Assessment Instruments with Weights (homework, quizzes, midterms, final, programming assignments, lab work, etc.)	SESSIONAL (Quizzes, Assignments, Presentations) =25 % Midterm Exam =25 % Final Exam = 50%																		
Course Coordinator	Laraib kanwal																		
URL (if any)																			
Current Catalog Description																			
Textbook (or Laboratory Manual for Laboratory Courses)	Computer Systems: A Programmer's Perspective, 3/E (CS:APP3e), Randal E. Bryant and David R.O' Hallaron, Carnegie Mellon University																		
Reference Material	1. Robert Britton, MIPS Assembly Language Programming, Latest Edition, 2. Computer System Architecture, M. Morris Mano, 3. Assembly Language Programming for Intel- Computer, Latest Edition																		
Course Goals	Learning Basic concept of Computer organization with implementation of concepts in assembly language.																		
Course Learning Outcomes (CLOs):	<table><tr><th>At the end of the course the students will be able to:</th><th>Domain</th><th>BT Level*</th></tr><tr><td>Define the concepts of computer organization and acquire the basic knowledge of assembly language.</td><td>C</td><td>1</td></tr><tr><td>Describe how the basic units of computer work together to represent integer numbers, floating numbers and register representation inside the microprocessor.</td><td>C</td><td>1</td></tr><tr><td>Explain the concepts of basic computer organization , architecture and assembly language techniques.</td><td>C</td><td>2</td></tr><tr><td>Solve the problems related to computer organization and implement the assembly programs using latest microprocessor architecture.</td><td>P</td><td>3</td></tr><tr><td colspan="3">* BT= Bloom's Taxonomy, C=Cognitive domain, P=Psychomotor domain, A= Affective domain</td></tr></table>	At the end of the course the students will be able to:	Domain	BT Level*	Define the concepts of computer organization and acquire the basic knowledge of assembly language.	C	1	Describe how the basic units of computer work together to represent integer numbers, floating numbers and register representation inside the microprocessor.	C	1	Explain the concepts of basic computer organization , architecture and assembly language techniques.	C	2	Solve the problems related to computer organization and implement the assembly programs using latest microprocessor architecture.	P	3	* BT= Bloom's Taxonomy, C=Cognitive domain, P=Psychomotor domain, A= Affective domain		
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Topics Covered in the Course, with Number of Lectures on Each Topic (assume 15-week instruction and one-hour lectures)	Week	Lecture	Topics Covered
	Week 1	1	Introduction to computer systems Information is bits + context; Programs are translated By other programs into different forms
		2	It pays to understand how compilation systems Work, processors read and interpret instructions stored in memory
	Week 2	3	Caches matter
		4	Storage Devices form a hierarchy
	Week 3	5	The operating system manages the hardware
		6	Systems Communicate with other systems using networks
	Week 4	7	Representing and manipulating Information: Information storage
		8	Representing and manipulating Information: Integer representations
	Week 5	9	Representing and manipulating Information: Integer arithmetic
		10	Representing and manipulating Information: Floating point
	Week 6	11	Machine-level representation of programs: a historical perspective
		12	Program encodings
	Week 7	13	Data Formats
		14	Accessing information
	Week 8	1 hours	Mid Term
	Week 9	15	arithmetic and logical operations
		16	control, procedures
	Week 10	17	array allocation and access
		18	heterogeneous data structures
	Week 11	19	Mid Term Examination
		20	Mid Term Examination
	Week 12	21	putting it together: understanding pointers
		22	life in the real world: using the gdb debugger
	Week 13	23	outof-bounds memory references and buffer overflow
		24	x86-64: extending ia32 to 64 bits
	Week 14	25	machine-level representations of floating-point programs
		26	Processor architecture: the Y86 instruction set architecture
	Week 15	27	logic design and the Hardware Control Language (HCL)
		28	sequential Y86 implementations,
	Week 16	29	pipelining
		30	general principles of pipelining
	Week 17	2 hours	Final Term
Laboratory Projects/Experiments Done in the Course			
Programming Assignments Done in the Course			

Instructor Name Laraib kanwal

Instructor Signature

Date