

Papua New Guinea University of Technology
Department of Electrical and Communication Engineering .
Lesson Plan

Subject	Computer Architecture	Subject Code	EE 341
Semester/year	1/2016	Date Prepared	11nd March, 2016
Lecturer(s)	Mr. Elias Mandawali	Credit Hours (PNG standard)	15
Period	15 weeks	Credit Hours (Engineering Accreditation Standard)	
Subject Synopsis	<p>Brief description of the content of the subject:</p> <p>The subject deals with the study of a computer. The course looks at the hardware and software design and application of computer systems. The subject analyse the Von Neumann computer architecture and implementation by IBM PC family of computers used in business and industry. The material looks at the three basic component, the CPU, Memory, and I/O devices of the computer setup, and including the BIOS structure and some software programs where applicable.</p>		
Contact hours	<p>Lecture: ____3____ hours/week Tutorial: ____3____ hours/week Lab: ____3____ hour/week (average)</p>		
Evaluation	<p>Continuous assessment -----40-% Final Examination 60 %</p>		
Learning Outcomes	<p>On completion of this subject, students will be able to:</p> <ol style="list-style-type: none"> 1. Design and describe the Von Neumann architecture and be able to detail the subsystems found in modern PC architecture. 2. Evaluate and explain what is meant by a CPU instruction set and give a brief overview of the interaction between CPU, memory, and I/O subsystems. 3. Analyze and provide a detailed description of the function of a number of commercially available 16 and 32 bit microprocessors and their bus systems, including their memory and I/O architecture. 4. Detail the difference between software and hardware interrupts and explain the function of interrupt vector tables. 5. Describe the system design for the IBM PC, at a hardware and firmware level. This will include basic hardware design, BIOS structure, major subsystem interface requirements as well as the DOS disk structure. 		

Assessment Methods	Distribution	(%)	LO1	LO2	LO3	LO4	LO5
	Laboratory		x	x	x	x	x
	Quizzes		x	x	x	x	x
	Assignments		x	x	x	x	x
	Tests		x	x	x	x	x
	Final Examination		x	x	x	x	x
References Used in Class	Mazidi, M. A. The Handbook of the IBM PC/XT, P52 and other 8088/86 (Volume I and II) Assembly Language, Design, and Interfacing, 3rd Edition.						
Additional References	Supplementary reference Material if any						

Program Outcomes

PO1	An ability to apply the knowledge gain for engineering solution in computer industry
PO2	An ability to design system components or processes to meet desired needs within realistic constraints such as the economical environmental social, ethical, health and safety, manufacturing, and sustainability.
PO3	The ability to apply the techniques of using proper tools to investigate, analyse, design, and simulate and/or fabricate/install and commissioning systems.
PO4	An ability to identify, analyse, formulate, design, simulate and / or fabricate / commission a complete system meeting the engineering requirement to a problem.
PO5	An ability to interpret data
PO6	With an ability to communicate effectively and prepare formal technical plans leading to solutions and detailed reports for computer systems.
PO7	Ability to lead the team towards achieving goals.
PO8	Posses knowledge and understanding of professional, safety and ethical responsibility.
PO9	Broad understanding of the impact of engineering solution in global environment and in society settings.
PO10	Ability to find solutions to new ideas and upgrade to higher learning and research activities.
PO11	Good sound knowledge of contemporary issues due to changing technical scenario.
PO12	Ability to manage important projects in multidisciplinary environment and ability to management techniques, skills, and project management tools necessary for good engineering practice.

Chapter	Topic	Week	Topic Outcomes (TO)	LO	PO	Delivery Methods
0-3	History Development and overview	1-2	Computer architecture and developments Instruction Set Architecture, Hardware System Architecture	LO1	PO1 PO2 PO6	
	Introduction and implementation	2-3	<i>Principles of operation computer subsystems - CPU, Memory, and I/O devices</i>	LO2	PO1 PO2 PO3 PO4	
4-5	Von Neumann architecture and development	4-5	Detailed subsystems and operations functions.	LO1 LO2	PO1 PO2 PO4	
	80 x 86 MPU CPU, Memory, I/O Devices	6	The inner working of an IBM PC Operational function of subsystems	LO1 LO2	PO1 PO2	

				LO3		
8	Mid-Term Break					
9-15	BCD and ASCII Operation, BIOS and DOS DOS interrupts		<i>BIOS Structure, Interrupts</i>	LO1 LO2 LO3 LO4 LO4		PO1 PO2 PO3 PO4 PO5 PO6
	16 bit, 32 bit bus structure		Bus Architecture control bus, data bus, and address bus	LO1 LO2 LO3		PO1 PO2 PO3 PO4 PO5 PO6

Assessment Details			
Type	Group/ Individual	Learning Domain	Mark
Laboratory	Groups	Psychomotor	10
Quizzes	Individuals	Cognitive	10
Assignments Tests	Individuals	Cognitive Cognitive	10 10
Final Examination	Individuals	Cognitive	60

Assessment schedule:

		Week N ^o														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ass	Laboratory		x		x		x			x		x		x		x
			x		x		x			x		x		x		x

es s m e n t M e t h o d s	Quizzes			x x				x x				x x			x x	
	Assignments			x x					x			x			x	
	Tests					x					x				x	

LO-PO mapping:

		Programme Outcomes (POs)											
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
Lear ning Out com es LOs	LO 1	x				x					x	x	
	LO 2	x	x	x		x							
	LO 3	x	x	x	x	x		x	x				
	LO 4	x	x	x	x	x		x	x		x		
	LO5	x	x	x		x	x	x		x	x	x	

Prepared By:

Checked & Approved By:

Date:

(Head of the department ECE)
Date:

Remarks:

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2. .