

COURSE SYLLABUS FORM
American University of Beirut
Faculty of Arts and Sciences
Department Math and Computer Science

Course Number and Title: cmps255

1. Course Learning Outcomes

The course describes broad digital systems concepts, and particular focus on computer systems architecture. The computer system is looked at in a bottom up manner. We first consider the digital logic level, the digital macros level and eventually we reach the software interface level, that is the assembly language level. The advanced part of the course will cover Motorola 68k architecture and translation of high level code to M68K assembly language.

2. Resources Available to Students

Text Book: Logic and Computer Design Fundamentals, by M. M. Mano and R. Kime, 2nd revised edition 2001.

Logic Kit: (This is a take-home kit to be purchased from the bookshop)

References: Structured Computer Organisation by A. Tanenbaum, 4th edition
Understanding Personal Computer Hardware by S. Roman

3. Grading Criteria

Assessment: 5% attendance and contribution, 25% midterm, 20% assignments, 50% Final.
To do well in the subject, a consistent performance throughout the session and the final is required. If Assignment/Lab work mark is higher than other components, then it counts less.

4. Schedule

Week	Topic	Activities	Assignments
1	Digital systems: Applications and characteristics.	Lectures	Problem sheet 1
2, 3	The Digital Logic Level: From switches to gates, basic gates, boolean algebra, modelling gate circuits, minimising gate-circuits.	Lectures	Problem sheets 2, 3
4, 5	The Logic Macros Level: Bases Arithmetic, Applications of Logic Macros, Arithmetic Circuits.	Lectures	Logic Kit: Lab 1
6,7	Sequential cricuits, Circuits with memory.	Lectures, Midterm	Problem sheet 4
8	Computer sub-systems level: The Virtual Machine View, CPU sub-systems integration, Programming Virtual Machines	Lectures	Problem sheet 5
9	Computer Architecture: CPU control unit, Datapath, Data selection, Mircoprogramming.	Lectures	Logic Kit: Lab 2
10, 11	M68k architecture concepts	Lectures	Problem sheet 6
12, 13	Assembly language (AL) Virtual Machine: CPU datapath for M68k. Register uses and examples of AL instructions. Data Representation and Encoding	Lectures	Logic Kit: Lab 3
14	Advanced AL concepts: Translation of high level code to M68k AL.	Lectures	Problem sheet 7
15	Revision	Lectures	

5. Course Policy (if any)

1. Any detected copying in assignment work (or exams) will lead to the parties involved sharing the mark.
2. Copying under exam conditions results in immediate loss of marks, and can result to a zero mark been awarded for the exam in question for repeat offenders.
3. There will be no makeup for a missed midterm or assignments
4. Late assignments will get zero, except in exceptional circumstances