CSE-103 Digital Computer Logic

Fall Semester 2002
Mr. Athar Mahboob
MIS & Computer Science Department
Institute of Business Administration
Karachi

Introduction

This is a basic course on the principles of Digital Computer Logic. This course is fundamental to your computer science education. Here is the IBA catalog description of this course:

This course introduces switching logic, combinatorial circuits and minimization methods, adders, comparators, multiplexers, ROM and PLA. Synchronous and asynchronous sequential circuits, registers, counters, flips-flops, encoders, decoders, buffers, RAM, switches, instruction set design, processor implementation techniques, serial and parallel arithmetic units, pipelining and memory hierarchy are also presented.

It is expected that after successful completion of the course students will be able to undertake further studies and practical work in the field of digital systems. Specifically this course is a pre-requisite for computer architecture and microprocessor related course.

Text Book

Logic and Computer Design Fundamental, International Edition
M. Morris Mano and Charles R. Kime
Prentice Hall International Editions
Prentice Hall, 1997 Upper Saddle River, NJ 07458

Reference Book

Digital Design: Principles and Practices, 2nd Edition
John F. Wakerly
Englewood Cliffs, NJ: Prentice Hall, 1994

A lot of reference material will be made available on-line.

Teaching Methodology

The teaching of this course will consist of classroom lectures. Extensive on-line (WWW based) materials will be provided on all aspects of the course. Homework assignments that reinforce concepts will be assigned. Similarly, laboratory assignments will be assigned towards the same goal. The URL for Official Course Web Page is http://www.atharmahboob.com/courses/digital-logic.

Instructor

Mr. Athar Mahboob holds a Master of Science and Bachelors of Science in Electrical Engineering both from Florida State University, Tallahassee, Florida, USA. Mr. Mahboob is a specialist in the field of Data & Computer Communications and Computer & Network Security. His special interests are in the area of Internetworking with TCP/IP suite of

protocols, Network Security and the Linux Operating System. Mr. Athar Mahboob is currently working towards his Ph. D. from the National University of Science & Technology where his research is centered on "Efficient Hardware Implementations of Elliptic Curve Cryptography."

Instructor Contact Information

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Office

Second Office (Next to Chairman's Office) on Ground Floor in New Building at IBA City Campus.

Office/Counseling Hours

Monday/Wednesday: 2:30 PM to 4:30 PM. Other times are by appointment.

Attendance

Attendance is required as per Institute Policy.

Homework and Quizzes

Homework Assignments and Class Quizzes (surprise) will be assigned/conducted and graded during the semester. Homework/Quizzes will account for 20% of the grade.

Hourly Tests

Three Hourly Tests will be held which will account for 30% of the grade. The best two Hourly Test results will be used.

Practical and Laboratory Work

Practical and laboratory work will account for 20% of the grade. Students will be tested to prove their proficiency in the practical assignments in order to obtain points. Lab Assignments will be conducted by the students in scheduled Lab Hours.

Final Exam

A comprehensive Final Exam will be held which will account for 30% of the grade.

Grade Distribution

As outlined above, the grade distribution policy boils down to:

Homework Assignments and Class Quizzes	20%
Hourly Tests	30%
Laboratory Assignments	20%
Final Exam	30%

Lecture Plan

The detailed lecture plan is given below. Please note that the lecture plan may be revised as we progress through the course. Most up-to-date lecture plan will always be available at the course website.

Week	**Topics**	**Reading Assignments and Supplementary Study Material**	**Homework, Quiz, Lab**
1	Introduction to Digital Computer Logic, Structure of Computer Systems	Pages 1-8	Quiz 1
2,3	Number Systems and Digital Codes - Binary and other number systems	Pages 8-26	Quiz 2, HW 1
4, 5, 6	Binary Logic and Logic Gates, Simplification of Boolean Functions	TBA	Quiz 3, HW 2
7,8	Combinational Logic Design Principles	TBA	Quiz 4, HW 3
9,10,11	Sequential Circuits	TBA	Quiz 5, HW 4
12	Registers and Counters	TBA	Quiz 6
13, 14	Memory and Programmable Logic Devices	TBA	Quiz 7
15, 16	Register Transfers and Datapaths	TBA	Quiz 8