A- Basic Information

Course Title: Electronic and Logic Circuits **Code**: ECE 270
Lecture: 3 **Tutorial**: 2 **Practical**: - **Total:** 5
Program on which the course is given: B.Sc. Electrical Engineering (Computer)
Major or minor element of Program: N. A.
Department offering the Program: Electrical Engineering Department
Department offering the course: Electrical Engineering Department
Academic year / level: **Second** Year / **Second** Semester
Date of specifications approval: 10/5/2006

B- Professional Information

1- Overall aims of course:
By the end of the course the students will be able to:

- Understand and use different number systems.
- Get acquainted with coding schemes.
- Understand how to minimize a Boolean function.
- Understand the concept of combinational logic and MSI. Functions
- Using of different combinational logic decoders, encoders, adders,…….
- Using the Flip-flops and Get deeply involved with sequential circuits (synchronous, asynchronous).
- Fundamentals of VLSI circuits.

2- Intended learning outcomes of course (ILOs)
By completion of the course, the student should be able to:
a- Knowledge and understanding

a1- Concepts and theories of mathematics and sciences, appropriate to the discipline.
a4- Principles of design including elements design, process and/or a system related to specific disciplines.
a15- Principles of analyzing and design of electronic circuits and components.
a16- Principles of analyzing and design of control systems with performance evaluation.
a19- Coding and decoding techniques.
a24. Methods of fabrication of integrated circuits

b- Intellectual Skills

b1. Select appropriate mathematical and computer-based methods for modeling and analyzing problems.
b3. Think in a creative and innovative way in problem solving and design.
b5. Assess and evaluate the characteristics and performance of components, systems and processes.
b13. Develop innovative solutions for the practical industrial problems.

c- Professional and practical skills

c4. Practice the neatness and aesthetics in design and approach
c15. Use relevant laboratory equipment and analyze the results correctly
c17. Identify appropriate specifications for required devices.

d- General and transferable Skills

d6. Effectively manage tasks, time, and resources.
D8. Acquire entrepreneurial skills.

3- Contents

No	Topic	No. of hours	ILO's	Teaching / learning methods and strategies	Assessment method
1	Number Systems And Codes	5	a1,b1,c4,d6	Lectures, Class activity, Assignments/ homework	Home assignments, Quizzes, Reports
2	Logic Families	5	a1,a4,b1,b3,c15,d6	Lectures, Class activity, Assignments/ homework	Home assignments, Quizzes, Reports
3	Boolean Algebra	5	a1,a2,b1,c4,d8	Lectures, Class activity, Assignments/ homework	Home assignments, Quizzes, Reports
4	Karnaugh Map	5	a1,a15,b3,b5,c15,c17,d6	Lectures, Class activity, Assignments/ homework	Home assignments, Quizzes, Reports
5	Digital Combinational Logic	5	a1,a15,b3,b5,c15,c17,d6	Lectures, Class activity, Assignments/ homework	Home assignments, Quizzes, Reports
6	Digital Combinational Logic	5	a1,a15,b3,b5,c15,c17,d6	Lectures, Class activity, Assignments/ homework	Home assignments, Quizzes, Reports
7	Sequential Logic And Flip-Flops	5	a4,a15,a16,b3,b5,c17,d8	Lectures, Class activity, Assignments/ homework	Home assignments, Quizzes, Reports
8	Mid-Term Exam				
9	Sequential Circuit Analysis And Design	5	a15,a16,a19,b13,c15,c17,d8	Lectures, Class activity, Assignments/ homework	Home assignments, Quizzes, Reports
10	Sequential Circuit Analysis And Design	5	a15,a16,a19,b13,c15,c17,d8	Lectures, Class activity, Assignments/ homework	Home assignments, Quizzes, Reports

11	Counter Circuits	5	a4,a15,a16,b5,b13,c17,d8	Lectures, Class activity, Assignments/ homework	Home assignments, Quizzes, Reports
12	Counter Circuits	5	a4,a15,a16,b5,b13,c17,d8	Lectures, Class activity, Assignments/ homework	Home assignments, Quizzes, Reports
13	Registers	5	a4,a15,a16,b5,b13,c17,d8	Lectures, Class activity, Assignments/ homework	Home assignments, Quizzes, Reports
14	VLSI circuits	5	a1,a4,a15,a16,a24,b1,b3,c15,d6	Lectures, Class activity, Assignments/ homework	Home assignments, Quizzes, Reports
15	**Final Exam**				
16					

4- Teaching and learning methods

Lectures
Class activity
Assignments / homework

5- Student assessment methods

Assignments to assess knowledge and intellectual skills.
Quizes.
Reports
Mid-term exam.
Final exam.

Assessment schedule

Assessment 1 on weeks 2, 5, 9, 11
Assessment 2 Quizzes on weeks 4, 6, 10, 12
Assessment 3 Mid-term exam on week 7

Assesment 4 Reports on weeks 4,9,11
Assessment 4 Final exam on week 15

Weighting of assessments

Home assignments	05%
Quizzes	05%
Mid-term examination	10%
Oral Examination	20%
Final-term examination	60%
Total	100%

6- List of references

Course notes

Logic Design : Circuits and systems

Essential books

- M. Morris Mano, "Computer Engineering Hardware Design", Prentice-Hall International Editions ……

Recommended books

- M. Morris Mano, "Computer Engineering Hardware Design", Prentice-Hall International Editions ……

Periodicals Web sites, etc

http://www.logiccircuit.org/

7- Facilities required for teaching and learning

Lecture room equipped with Presentation board, computer and data show

Course coordinator: Dr. Mazen Selim
Course instructor: Dr. Mazen Selim
Head of Department: Prof. Dr. Mousa A Abd-Allah **Date:** March 20, 2012