

Course specification

(2104 Logic Design)

Faculty: HICIT

Programme(s) on which the course is given: Under graduate program in Computer Science

Major or minor element of programme: Compulsory

Department offering the programme: Department of Computer Science

Department offering the course: Department of Computer Science

Year / Class: 2nd Year – 1st semester

Date of specification approval: 22/9/2015

A- Basic Information

Title: Computer Logic

Code: 2104

Weekly Hours:

Lecture : 3

Exercise: -

Practical: 4

Total: 7

B- Professional Information

1- Course Objectives:

The objective of CS2104 is to teach ways and techniques of numbering systems, logic design combinational circuits and introduction to sequential. After completing this course, the student should be able to design and implement simple logic circuits as well as analysis existing ones.

2- Program ILOs Covered by Course

Program Intended Learning Outcomes			
Knowledge and understanding	Intellectual Skills	Professional and practical skills	General and Transferable skills
a8	b2, b4, b7, b8	c5, c6, c9	d9

3 - Intended learning outcomes of course (ILOs)

After Completing this course the student must demonstrate the Knowledge, and the skills listed below.

a: Knowledge and Understanding

- a1. Understand Numbering systems
- a2. Define the different types of logic gates
- a3. Understand Logic functions.
- a4. Explain the concept of Boolean functions.
- a5. Understand Boolean algebra.
- a6. Understand Combinational Logic Circuits Design methods.

- a7. Understand flip-flops and latches.
- a8. Understand Concept of sequential logic circuit .

b: Intellectual skills

Cognitive skills of critical thinking, analysis, synthesis, including :

- b1. Analyze transferring from different representations to have better representations
- b2. Apply Algebraic representation for systems functions.
- b3. Discuss optimization methodologies.
- b4. Synthesis of clearly and precisely solutions for problems.

c: Professional and practical skills

Specifically ability to:

- c1) Design and develop combinational logic circuits
- c2) Analyse combinational circuits to mathematical formulations to its function
- c3) Design and develop simple sequential circuit

d: General and transferable skills

Specifically ability to:

- d1) Communicate effectively by oral, written and visual means.
- d2)Work effectively as an individual and as a member of a team.
- d3) Develop Creativity and imagination skills, Self-assessment ability and Critical thinking and analytic ability.

4- Contents

Topic	Hours	Lec.	Exc/Lab
Number systems	7	3	4
Logic gates	7	3	4
Logic functions	14	6	8
Boolean algebra	14	6	8
Functions simplification	7	3	4
Canonical logic functions.	14	6	8
Combination logic design	7	3	4
Flip flops	7	3	4
State diagrams	7	3	4
Sequential logic circuits design	7	3	4

5- Teaching and learning methods

- 5.1 Lectures
- 5.2 Tutorial Exercises
- 5.3 Discussions.

6 -Student assessment methods

- 6.1 Midterm Exam: To assess the knowledge and understanding achieved by the student during the previous weeks.
- 6.2 Final Exam: To evaluate what the student gain at the end of the course, and to assess: the knowledge and understanding, general skills, and intellectual skills.
- 6.3 Course Work & Quizzes: To keep the student always in the course, and to evaluate knowledge, understanding, intellectual, and transferable skills.

Assessment Schedule

Assessment	Week #
Mid Term Exam	8
Final Exam	16
Course Work & Quizzes	2-14

Assessment Weight

Assessment	Weight %
Mid Term Exam	10%
Final Exam	80%
Course Work & Quizzes	10%
Total	100

Course Work & Quizzes: (Short Exams, Assignments, Researches, Reports, Presentations, Class/Project discussion)

7 -List of references

7.1 Text Books

-Digital design , M. Morris Mano, Prentice Hall, 2012.

8- Required Facilities

None

9- Course Maps

9-1 Course Contents/ILOs Matrix

Course Contents	a1	a2	a3	a4	a5	a6	a7	a8	b1	b2	b3	b4	c1	c2	c3	d1	d2	d3
Number systems	x											x						
Logic gates			x															
Logic functions	x																	
Boolean algebra		x		x					x	x	x	x			x			
Functions simplification		x	x	x									x	x				
Canonical logic functions.								x										
Combination logic design														x				
Flip flops					x													
State diagram representations						x												
Sequential logic circuits design							x											

9-2 Learning Methods /ILOs Matrix

Learning Methods	a1	a2	a3	a4	a5	a6	a7	a8	b1	b2	b3	b4	c1	c2	c3	d1	d2	d3
Lectures	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
Tutorial Exercises									x	x	x	x	x	x	x			

Discussions.										x	x	x	x	x	x	x	x	x	x
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9-3 Assessment Methods /ILOs Matrix

Assessment Methods	a1	a2	a3	a4	a5	a6	a7	a8	b1	b2	b3	b4	c1	c2	c3	d1	d2	d3
Mid Term Exam	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
Final Exam	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
Course Work & Quizzes	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

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