Course Specifications

University: Benha University  Faculty: Benha Faculty of Engineering

Course specifications

Programm(s) on which the course is given: Electrical Engineering technology Dep.

Major or minor element of programmes: Major

Department offering the programm: Electrical Engineering technology Dep.

Department offering the course: Electrical Engineering technology Dep.

Academic year / Level: second year

Date of specification approval: 2009

A- Basic Information

Title: Digital logic circuit  Code: E212
Credit Hours: N.A.  Lecture: 2
Tutorial: 1  Practical: 2  Total: 5

B- Professional Information

1 - Overall aims of course

Upon successful completion of this course, the overall course objectives are to provide a basic foundation for understanding and designing digital logic systems ranging from simple combinatorial circuits to sequential designs and to complete the introduction to instruction sets, computer architecture, and processor design methodology. Students the fundamental concepts, methods of analysis, and design of digital logic devices and systems.

2- Intended learning outcomes of course (ILOs)

a. Knowledge and understanding:

- Students develop an understanding of designing a digital logic circuit.
- Analyze and synthesize logic networks using both traditional techniques.
- Students develop an ability to conduct experiments.
- Define a test procedure (including objectives and equipment set-up) to measure the characteristics of an electronic device or circuit (analog or digital)

b. Intellectual skill

- Students develop an understanding of designing a digital logic circuit ;
- Students develop an ability to conduct experiments;
- Work as members of a team to complete a project ;
c- Professional and practical skills
   c.1 knowledge of Analysis and design combinational logic circuits;
   c.2 knowledge of sequential circuits flip flops triggering;
   c.3 knowledge of digital integrated logic circuits;
   c.4 knowledge of design of logic blocks such as registers, counters and design of sequential circuits;

d- General and transferable skills
By the end of this course, the student should be able to:
   d.1 Work cooperatively and effectively in a group
   d.2 Find information independently

3- Contents

<table>
<thead>
<tr>
<th>Topic</th>
<th>No. of Hours</th>
<th>Lecture</th>
<th>Tutorial/Practical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis and design combinational logic circuits building blocks</td>
<td>15</td>
<td>6</td>
<td>6/3</td>
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<tr>
<td>(decimal adder, subtractors, multiplication, magnitude comparator, decoders)</td>
<td></td>
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<tr>
<td>Introduction to sequential circuits flip flops triggering registers</td>
<td>10</td>
<td>4</td>
<td>6/-</td>
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<tr>
<td>Synchronous counters, ripples counters, RAM, D/A and D/A converters</td>
<td>20</td>
<td>8</td>
<td>4/8</td>
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<tr>
<td>Digital integrated logic circuit families (RTL, DTL, TTL, and ECL)</td>
<td>10</td>
<td>4</td>
<td>4/2</td>
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<tr>
<td>Design of logic block such as registers, counters, and the design of sequential circuits</td>
<td>15</td>
<td>6</td>
<td>3/6</td>
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<tr>
<td>Total</td>
<td>70</td>
<td>18</td>
<td>42</td>
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4- Teaching and learning methods
   4.1- Lectures
4.2- Tutorials
4.3- Practice in Laboratories
4.4- Internet collected information and Self-study projects

5- Student assessment methods
5-1 Written exams (Final and Midterm), assignments and quizzes to assess knowledge and understanding, solving problems skills and interpretation capabilities of physical phenomena.
5-2 Oral exams to assess the abilities of discussing physical concepts.
5-3 Practical exam to assess measuring and professional skills.

Assessment schedule
Midterm ......................... Week No. 8
Final written exam .................. Week No. 15

Weighting of assessments
Mid-term examination 20%
Oral and Practical exam 20%
Final-term examination 60%
Total 100%

6- List of references
6.1- Lecture notes
6.2- Internet Facility
6.3- Recommended books
1- DIGITAL LOGIC DESIGN " MORIS MANO "
2- DIGITAL LOGIC DESIGN , FOURTH EDITTION
   BY BRION HOLDSWORTH
3- DIGITAL LOGIC APPLICATION AND DESIGN
   BY R.M.MARSTON

7- Facilities required for teaching and learning
Lecture rooms – Tutorial section rooms – Experimental Labs - computers – Virtual simulation programs

Course coordinator: ............................
Head of Department: Assoc. Prof. Ghada Amer
Date: