Course Specifications - Electrical Circuit Analysis E201

University: Benha University
Faculty: Benha Faculty of Engineering

Course specifications
Programme(s) on which the course is given: Electrical Engineering technology Dep. (All Branch)
Major or minor element of programmes: Major
Department offering the programme: Electrical Engineering technology Dep.
Department offering the course: Electrical Engineering technology Dep.
Academic year / Level: Second year – First Term
Date of specification approval: 2008

A- Basic Information

| Title: | A |
| Credit Hours: | N.A. |
| Tutorial: | 1 |

Code: E201

| Lecture: | 2 |
| Practical: | 2 |
| Total: | 5 |

B- Professional Information

1 - Overall aims of course
Upon successful completion of this course, the student should be able to:
1.1 Understand and analyze the resistive electrical networks using electrical networks laws and theorems.
1.2 Able to analyze the Sources for Electricity and the Voltage and Current Sources.
1.3 Understand the principals of the Electromagnetism, Capacitance and Inductance.

- The student shall attain the above mentioned objectives efficiently under controlled guidance and supervision

2- Intended Learning Outcomes of course (ILOs)

a. Knowledge and understanding:
b.1 Define and apply basic terms and relationships involving resistance, inductance and capacitance.
b.2 Define and apply basic terms and relationships involving Dc circuits.
b.3 Define and apply basic terms and relationships involving Electromagnetism.
b.4 Define and apply basic terms and relationships involving Transients response of the Dc circuits.

b. Intellectual skills
By the end of this course, the student should be able to:

b.1 Evaluate the steady state conditions of electric circuits based on the circuit configurations.
b.2 Recommend solutions for improving the performance of circuits.
b.3 Solve electrical circuits using circuit theorems
b.4 Analyze Pulse response steady-state and Transients-state circuits.

c- Professional and practical skills
By the end of this course, the student should be able to:

c.1 Use basic instruments that measure the electrical quantities.
c.2 Perform some experiments on the laboratory Kits.
c.3 State and apply basic electrical laws, components, definitions, and units.
c.4 Formulate circuit equations.
c.5 Identify the important variables in electric circuits.
c.6 Extract information from collected data in the lab.

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>Lecture Hours</th>
<th>Tutorial Hours</th>
<th>Practica l Hours</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitions and Basics Electric Concepts</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Resistance and Basic Circuits and Ohm’s law</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>10</td>
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<tr>
<td>Sources for Electricity</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Circuits Analysis, Kirchhoff’s laws, Superposition, Thevenin’s Theorem, and Norton’s Theorem</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>15</td>
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<tr>
<td>Properties of Electromagnetism and Applications.</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>10</td>
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<tr>
<td>Capacitance and Inductance</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Transients in DC Circuits</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>15</td>
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<tr>
<td><strong>Total Hours</strong></td>
<td><strong>30</strong></td>
<td><strong>15</strong></td>
<td><strong>15</strong></td>
<td><strong>75</strong></td>
</tr>
</tbody>
</table>
4- Teaching and learning methods

4.1 Class 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

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Week No.</th>
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<tbody>
<tr>
<td>Quiz</td>
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<tr>
<td>Midterm</td>
<td>10</td>
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<tr>
<td>Quiz</td>
<td>14</td>
</tr>
<tr>
<td>Oral and Practical exam</td>
<td>15</td>
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<tr>
<td>Final Written exam</td>
<td>(According to Exam-Plan)</td>
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Weighting of assessments

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-term examination</td>
<td>10%</td>
</tr>
<tr>
<td>Oral and Practical examination</td>
<td>20%</td>
</tr>
<tr>
<td>Semester work</td>
<td>10%</td>
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<tr>
<td>Final-term examination</td>
<td>60%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

6- List of references

6.1 Lecture notes (Developed by Course Lecturers, Reviewed by Course Supervisor)
6.2 Lab notes (Developed by Course Lecturers, Reviewed by Course Supervisor)
6.3 MatLab and Pspice notes.
6.4 Recommended books
   1- MatLab Manual Notes.
   2- Pspice Manual Notes.
   3- Suitable Books on the Net: Using Internet explorer and in Google searcher type: (Circuits) then click the suitable item from the displayed listing.
7- Facilities required for teaching and learning

7.1 Lecture rooms and Data show.
7.2 Tutorial section rooms
7.3 Experimental Labs

Course coordinator: Prof. Dr. Salah Ghazy Ramadan.
Head of Department: Ass. Prof. Ghada Amer.
Date: 30/12/2008