Course Specifications

University: Benha University  Faculty: Benha Faculty of Engineering

Course specifications
Programme(s) on which the course is given: Electrical Engineering technology Dep.
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: Fifth year
Date of specification approval: 2008

A- Basic Information
Title: Electrical Drives  Code: E563
Credit Hours: N.A.  Lecture: 3
Tutorial: 3  Practical: Total: 6

B- Professional Information

1 - Overall aims of course
Upon successful completion of this course, the student should be able to demonstrate knowledge of basic characteristics of operating models of drive motors, loads, torque and control, application of solid state controllers, choice and rating of motors. Power supplies and UPS. Speed and current control of DC systems, speed and current control of AC systems. ROM based control of converter, use of PIA(s) and microprocessors for speed control.

2- Intended learning outcomes of course (ILOs)

a. Knowledge and understanding:
   - Define Power supplies principles and types.
   - Describe the different motors used in industrial applications.
   - Illustrate the DC drives systems; AC drives systems, UPS and electrical vehicles.

b. Intellectual skills
By the end of this course, the student should be able to:
b.1 Analyze and Design DC power supplies.
b.2 Design of DC drives systems.
b.3 Analyze and Design of AC drives systems, UPSs and EVs.

c- Professional and practical skills
By the end of this course, the student should be able to:
c.1 Perform DC power supplies.
c.2 Experiment of DC drives systems in lab.
c.3 Design of AC drives systems in 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 Manage 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>Introduction</td>
<td>6</td>
<td>2</td>
<td>-/4</td>
</tr>
<tr>
<td>Review on power electronics</td>
<td>3</td>
<td>4</td>
<td>4/4</td>
</tr>
<tr>
<td>Review on power electronic circuits</td>
<td>8</td>
<td>4</td>
<td>4/-</td>
</tr>
<tr>
<td>Fundamental DC power supplies</td>
<td>13</td>
<td>5</td>
<td>4/4</td>
</tr>
<tr>
<td>DC motors drives systems</td>
<td>10</td>
<td>3</td>
<td>3/4</td>
</tr>
<tr>
<td>Rectifiers and choppers</td>
<td>8</td>
<td>2</td>
<td>2/4</td>
</tr>
<tr>
<td>AC motors drives systems</td>
<td>9</td>
<td>3</td>
<td>2/4</td>
</tr>
<tr>
<td>AC voltage controllers and inventers</td>
<td>6</td>
<td>3</td>
<td>3/-</td>
</tr>
</tbody>
</table>
Course Specification, Physics I

<table>
<thead>
<tr>
<th>UPSs</th>
<th>10</th>
<th>3</th>
<th>3/4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical vehicle</td>
<td>2</td>
<td>1</td>
<td>1/-</td>
</tr>
</tbody>
</table>

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

- Quiz 1 .......................Week No. 4
- Midterm ....................... Week No. 8
- Quiz 2 .......................Week No. 12
- Oral and Practical exam...........Week No. 14
- Final written exam ...............Week No. 15

Weighting of assessments

- Mid-term examination 12%
- Final-term examination 60%
- Oral and Practical examination 20%
- Semester work 8%
- Total 100%

6- List of references

6.1- Lecture notes
6.2- POWER ELECTRONICS"TIMOTHY L. SKVARENINA"
6.3- Recommended books
2. POWER LECTRONICS “HANDBOOK MUHAMMAD H. RASHID”.

7- Facilities required for teaching and learning

Lecture rooms – Tutorial section rooms – Experimental Labs - computers – Virtual simulation programs

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