Course Specifications

University: Benha University
Faculty: Benha Faculty of engineering

Course specifications
Programme(s) on which the course is given: Electrical Engineering technology.
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: Third year
Date of specification approval: 2009

A- Basic Information

Title: Engineering Applications
Code: E330
Credit Hours: N.A.
Lecture: 2
Tutorial: 0
Practical: 2
Total: 4

B- Professional Information

1 - Overall aims of course
By the end of this course the, the student will be familiar with the following; Identification of network analysis. Network Technology. Network graph theory (graph, tree, cotree, cutest, tieset). Formulation of node-voltage and loop-current methods. State space approach. Tolerance analysis. Exercises on Orcad and SMART-WORK. Introduction to SPICE, GROUND rules of SPICE, Linear dependent sources (Linear VCVS, CCVS, VCCS, CCCS), Types of analysis and control statements (DC, AC, transfer function, sensitivity, distortion, noise, Fourier, temperature analysis). Semiconductors in SPICE (describing diode, BJT, JFET to SPICE). Transmission lines in SPICE (lossless T.L, T.L, T.L element line, T.L input impedance). Introduction to TUTSIM (Development of block diagram model, utility commands, block syntax). Laboratory exercises on SPICE and TUTSIM.

2- Intended learning outcomes of course (ILOs)
a. Knowledge and understanding:
   - Explain network identification analysis and network graph theory.
   - Define node-voltage, loop-current methods and state space approach.
   - Describe Orcad and SMART-WORK.
• Describe SPICE and TUTSIM.

b. Intellectual skills
• Apply the basic concepts of network analysis.
• Evaluate the working with Orcad and SMART-WORK.
• Develop a model on SPICE and TUTSIM.
• Evaluate laboratory exercises on SPICE and TUTSIM.

c- Professional and practical skills
• Collect the basic tools of Orcad and SMART-WORK programs.
• Collect the basic tools of SPICE and TUTSIM programs.
• Perform simple lab projects.
• Diagnose information from collected data in the lab.

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

3- Contents

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<td>Identification of network analysis</td>
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4–Teaching and learning methods

- Lectures.
- Practice in Laboratories.
- Internet collected information and Self-study projects.

5-Student assessment methods

- Written exams (Final and Midterm), assignments and quizzes to assess knowledge and understanding.
- Oral exams to assess the abilities of discussing physical concepts.
- Practical exam to assess measuring and professional skills.

Assessment schedule

Midterm …………………… Week No. 8
Oral and Practical exam………..Week No. 14
Final written exam ……………..Week No. 15

Weighting of assessments

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<tr>
<td>Final-term examination</td>
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<tr>
<td>Oral and Practical examination</td>
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<tr>
<td>Total</td>
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6-List of references

6.1- Lecture notes.
6.2- Recommended books.
  PSpice for Basic Circuit Analysis. (Joseph G. Tront)

7-Facilities required for teaching and learning

Lecture rooms –Computer Labs.

Course coordinator:

Head of Department: Prof Ghada Amer

Date: