



Model No.12  
Course Specifications : Electrical Circuit 2

Faculty of Engineering at  
Shoubra

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**University :** Benha university

**Faculty :** Faculty of Engineering at Shoubra

**Department :** Electrical Engineering Department

**1- Course Data**

Course Code : ECE122      Course Title : Electrical Circuit 2      Study Year : First Year

Specialization :

Teaching Hours:

Lecture : 3

Tutorial : 2

Practical :

**2- Course Aim**

For students undertaking this course, the aims are to:

- 2.1- Recognize the broad classifications of various theorems & laws related to the course of Electric Circuits.
- 2.2- List all related applications
- 2.3- Demonstrate how to solve any problems in this field.

**3- Intended Learning Outcomes of Course (ILOS)**

**a- Knowledge and Understanding**

On completing this course, students will be able to:

- a.1- Define concepts and theories of the three phase system, inductively coupled circuits and resonant circuits.(a.2)
- a.2 - Demonstrate characteristics of capacitor and inductors in electric circuits. (a.4)
- a.3 - Demonstrate methodologies of data collection interpretation and solving engineering problems to analyze electric circuits using the computer program Proteus.(a.6)

**b- Intellectual Skills**

At the end of this course, the students will be able to:

- b.1 - Select appropriate mathematical methods for modeling electric circuits. (b.2)
- b.2 - Select appropriate solutions for engineering problems based on analytical thinking for electric circuits elements. (b.3)
- b.3 - Think in a creative and innovative way in problem solving and design resonant circuits. (b.4)
- b.4 - Assess and evaluate the characteristics and performance of components as Inductors and capacitors , systems and processes.(b.6)
- b.5 - Analyze results of numerical models of Electrical circuits and appreciate their limitations in three phase (b.12)

**c- Professional Skills**

On completing this course, the students are expected to be able to:

- c.1 - Apply knowledge of mathematics, science, information technology, design, business context and engineering practice to solve transient of electrical circuits of first and second order. (c.1)

- c.2 - Use computational facilities and techniques, measuring instruments, workshops and laboratories equipment to design suggested resonance circuit as application of electrical circuits, collect, analyze and interpret results.(c.5)
- c.3- Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to electrical circuits and develop required computer programs.(c.6)
- c.4- Apply numerical modeling methods to solve electrical circuits.(c.7)

**d- General Skills**

At the end of this course, the students will be able to:

- d. 1 – Collaborate effectively within AC and DC circuit analysis team. (d.1)
- d. 2 - Work in stressful environment and within constraints. (d.2)
- d. 3 - Communicate effectively. (d.3)

**4- Course Contents**

No.	Topics	No. of hours
1	Resonant circuits.	9
2	Inductively coupled Circuits,	6
3	Transient & steady state in electric circuits.	6
4	Three phase system. Loads in three phase system.	6
5	Unbalanced operation in electric circuits.	6
6	Electric circuit's analysis using the computer program (Proteus).	9

**5- Teaching and Learning Methods**

- 5.1- Modified lectures
- 5.2- Class activity
- 5.3- Case study
- 5.4- Assignments / homework
- 5.5- Computer simulation

**6- Teaching and Learning Methods of Disables**

- 6.1- No Thing.

**7- Student Assessment**

**a- Student Assessment Methods**

1	Assignments to assess knowledge and intellectual skills.
2	Quiz to assess knowledge and intellectual skills.
3	Mid-term exam to assess knowledge and intellectual skills.
4	Oral exam to assess knowledge, intellectual skills, professional and general skills.
5	Final exam to assess knowledge and intellectual skills.

**b- Assessment Schedule**

No.	Assessment	Week
1	Assignments on	2, 5, 9, 11
2	Quizzes on	4, 6, 10, 12
3	Mid-term exam on	8

4	Oral Exam on	14
5	Final exam on	15

**c- Weighting of Assessments**

Assessment	Weight
Midterm Examination	15 %
Final Term Examination	60 %
Oral Examination	20 %
Practical Examination	0 %
Semester work	5 %
Other types of assessment	0 %
Total	100 %

**8- List of References**

**a- Books**

- 1- Circuit Analysis – Theories and Practice (Robinson & Miller)
- 2- Fundamentals of Electric Circuits (Alexander and Sadiku)
- 3- Principles of Electric Circuits (Floyd )

**b- Recommended Books**

Schaum's Outline Of Theory And Problems Of circuits



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**Matrix of Knowledge and Skills of the course**

No.	Topics	week	Basic Knowledge	Intellectual Skills	Professional Skills	General Skills
1	Review in Electric Circuits Basics and Resonance Circuits	1, 2, 3	a.1,a.2, a.3	b.1, b.2, b.3, b.4,b.5	c.2,c.3	d.3
2	Electric circuit's analysis using the computer program (Proteus).	4, 5		b.2,b.3	c.6	
3	Inductively coupled Circuits.	6, 7	a.1, a.3	b.1, b.2, b.3, b.4	c.2, c.4	d.1
4	Midterm exam	8	a.1, a.3	b.1, b.2, b.3, b.4,b.5		d.2
5	Transient & steady state in electric circuits.	9, 10	a.1, a.3	b.1, b.2, b.3, b.4	c.2, c.4	d.1, d.3
6	Three phase system. Loads in three phase system.	11,	a.1	b.1	c.1	d.3
7	Unbalanced operation in electric circuits.	13	a.1, .3	b.1, b12		d.3
8	Oral exam	1 4	a.1,a.2, a.3	b.1, b.2, b.3, b.4,b.5	c1,c.2,c.3,c.4	d.1,d.2, d.3
9	Final exam	1 5	a.1,a.2, a.3	b.1, b.2, b.3, b.4,b.5		d.2

- **Course coordinator:**

**Course instructor: Basem Mamdoh Hagag**

- **Head of Department :** Prof. Dr. Sayed Abo-Elsood Ward

**Matrix of Course Content and ILO's**

**Course Title:** Electrical Circuit 2

**Code:** ECE122

**Lecture:** 3      **Tutorials:** 2

**Practical:** -

**Total:** 5

**Program on which the course is given:** B.Sc. Electrical Engineering (Communications)

**Major or minor element of program:** Major

**Department offering the program:** Electrical Engineering Department

**Department offering the course:** Electrical Engineering Department

**Academic year / level:** **First Year / Second Semester** 2014-2015

**Date of specifications approval:** 20/6/2010

<b>Course Content</b>	<b>a.1</b>	<b>a.2</b>	<b>a.3</b>	<b>b.1</b>	<b>b.2</b>	<b>b.3</b>	<b>b.4</b>	<b>b.5</b>	<b>c.1</b>	<b>c.2</b>	<b>c.3</b>	<b>c.4</b>	<b>c.6</b>	<b>d1</b>	<b>d2</b>	<b>d3</b>
Review in Electric Circuits Basics and Resonance Circuits	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓					✓
Electric circuit's analysis using the computer program (Proteus).					✓	✓							✓			
Inductively coupled Circuits.	✓		✓	✓	✓	✓	✓			✓		✓		✓		
Transient & steady state in electric circuits.	✓		✓	✓	✓	✓	✓			✓		✓		✓		✓
Three phase system. Loads in three phase system.	✓															✓
Unbalanced operation in electric circuits.	✓		✓	✓				✓				✓				✓

**- Course coordinator:**

**Course instructor:** Basem Mamdoh Hagag

**Date:** / /

**- Head of Department :** Prof. Dr. Sayed Abo-Elsood Ward

**Matrix of Course Aims and ILO's**

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<b>Course Aims</b>	<b>a.1</b>	<b>a.2</b>	<b>a.3</b>	<b>b.1</b>	<b>b.2</b>	<b>b.3</b>	<b>b.4</b>	<b>b.5</b>	<b>c.1</b>	<b>c.2</b>	<b>c.3</b>	<b>c.4</b>	<b>c.6</b>	<b>d.1</b>	<b>d.2</b>	<b>d.3</b>
Recognize the broad classifications of various theorems & laws related to the course of Electric Circuits.	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓				
List all related applications	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	
Demonstrate how to solve any problems in this field.	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓			✓	✓

**- Course coordinator:**

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