Faculty of Engineering at shoubra

Model No.12
Course Specifications : Industrial Electronics

University : Benha university

Faculty : Faculty of Engineering at Shoubra

Department : Electrical Engineering Department

1- Course Data

Course Code : ECE 444 Course Title : Industrial Electronics Study Year : Fourth Year

Specialization :
Teaching Hours:
Lecture : 4 Tutorial : 2 Practical :

2- Course Aim

For students undertaking this course, the aims are to:

2.1- Describing the role of Electronics in industry

3- Intended Learning Outcomes of Course (ILOS)

a- Knowledge and Understanding

On completing this course, students will be able to:

a.1Describe principles of design including elements design, process and/or a system related to Industrial control Electronics.(a5)

a- 2- Demonstrate methodologies of data collection interpretation and solving Industrial control problems.(a6)

a- 3.Describe principles of analyzing and design of Industrial electronics systems.(a20)

b- Intellectual Skills

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

b- 1 - Select appropriate modeling for industrial electronics. (b2)

b- 2 – Combine different ideas, views, and knowledge of industrial electronics from a range of sources.(b5)

b- 3 - Synthesize and integrate control algorithms of systems for Industrial functions. (b18)

c- Professional Skills

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

c- 1 - Professionally merge the control system knowledge, understanding, and feedback to improve the design.(c2)

c- 2 - Create and/or re-design a process, component or system, and carry out specialized control designs. (c3)

d- General Skills

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

d- 1 - Collaborate effectively within multidisciplinary team.(d1)

d-2 Work in stressful environment and within constraints.(d2)

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4- Course Contents

No.	Topics	No of hours
1	Introduction.	3

2	4 layer devices	3
3	power electronic devices gate control	3
4	dc to Ac converter and vice versa	3
5	Different industrial control systems	3
6	Advanced topics and new technology	3
7	Analog Signal Conditioning	3
8	Digital Signal Conditioning	3
9	Control Algoritms	3
10	Machine Control	3
11	Basics of PLC	3
12	Programming of PLC	3
13	SCADA Systems	3

5- Teaching and Learning Methods

5.1- Modified Lectures
5.2- Class activity
5.3- Case study
5.4- Assignments / homework

6- Teaching and Learning Methods of Disables

6.1- nothing

7- Student Assessment

a- Student Assessment Methods

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

b- Assessment Schedule

No.	Assessment	Week
1	on	2, 5, 9, 11
2	Quizzes on	4, 6, 10, 12
3	Mid-term exam on	8
5	Final exam on	15

c- Weighting of Assessments

Assessment	Weight
Mid_Term Examination	13 %
Final_Term Examination	67 %
Oral Examination	0 %
Practical Examination	0 %
Semester work	20 %
Other types of assessment	0 %
Total	100 %

8- List of References

a- Books

1- Curtis Johnson, Process Control Instrumentation Technology, 8/E, Prentice Hall, 2006.

b- Recommended Books

1- William C. Dunn, Introduction to Instrumentation, Sensors, and Process Control, Artech House Sensors Library, 2008

c- Web Sites

1- www.plcs.net
2- www.controlglobal.com.

- Course Coordinator : Dr. Ashraf Mohammed Hafez Ghoneim

- Head of Department : Prof. Dr. Sayed Aboo-Elsood Ward

Shoubra
Faculty of
Engineering

Model No.11A
Course Specifications : Industrial Electronics

University : Benha university

Faculty : Faculty of Engineering at Shoubra

Department : Electrical Engineering Department

Matrix of Knowledge and Skills of the course

No.	Topics	week	Basic Knowledge	Intellectual Skills	Professional Skills	General Skills
1	Introduction.	1	a1,a2	b1		
2	4 layer devices	2	a2,a3	b3, b3		
3	power electronic devices gate control	3,5	a1, a3	b1,b3	c2	
4	dc to Ac converter and vice versa	4,6, 7,9	a2,a3	b1,b3	c2	
5	Mid term exam	8	a1, a2, a3			d2,d1
6	Different industrial control systems	10,11,12	a2,a3	b2, b3,	c2	
7	Advanced topics and new technology	13,14	a2,a3	B3	c1	
8	Final Exam	15	a1, a2, a3	b1, b3		d2,d1

- Course Coordinator : Dr. Ashraf Mohammed Hafez Ghoneim

- Head of Department : Prof. Dr. Sayed Aboo-Elsood Ward

Matrix of course content and ILO's

Course Title: Industrial Electronics **Code**: ECE 444
Lecture: 4 **Tutorial**: 2 **Practical**: -
Total:6
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: **Fourth** Year / **first** Semester 2014-2015
Date of specifications approval: 20/6/2010

Course content	a1	a2	a3	b1	b2	b3	**c1**	**c2**	**d1**	**d2**
Introduction	✓	✓		✓			✓	✓	✓	
4 layer devices		✓	✓			✓		✓		✓
ModulationChracteristics of Light Sources	✓	✓		✓		✓	✓		✓	✓
power electronic devices gate control	✓				✓			✓		
dc to Ac converter and vice versa			✓			✓			✓	
Different industrial control systems				✓	✓			✓		
Advanced topics and new technology	✓		✓			✓	✓			✓

Matrix of course aims and ILO's

Course Title: Industrial Electronics **Code**: ECE 444
Lecture: 4 **Tutorial**: 2 **Practical**: -
Total:6
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Course content	a1	a2	a3	b1	b2	b3	**c1**	**c2**	**d1**	**d2**
By the end of the course the students will be able to Understanding the role of Electronics in industry	✓		✓		✓		✓	✓		✓
Gain advanced knowledge and nderstanding of s specialist topics in ndustrial Electronics		✓		✓		✓			✓	

Course coordinator: **Dr. Ashraf Mohammed Hafez Ghoneim**

Head of department: Prof. Dr. Sayed Abo-Elsood Ward