Course Specifications

Program(s) on which this course is given:	Electronics & Electrical Communications Engineering
Major or Minor element of programs:	Major
Department offering the program:	Department of Electronics & Electrical Communications Engineering
Department offering the course:	Department of Electronics & Electrical Communications Engineering
Academic year / Level:	Third
Date of original/modified specification approval:	2003
Semester of course offering:	First

A- Basic Information

1.a. Title:	Electronics (3)			**1.b. Code:**	ELC 301			
2. Units/Credit hours per week:	2.a. Lectures	4	2.b. Tutorial	2	2.c. Practical	0	2.d. Total	6

B- Professional Information

1. Overall Aims of the Course:

The course introduces the student to nonlinear applications of OP-AMPs, fundamentals of digital electronics, and the use of electronic circuits in commercial radio, TV receivers, video cameras, PLLs, and display devices.

2. Intended Learning Outcomes of Course (ILOs):

a) Knowledge and Understanding

1. Recognize non-linear applications of op-amps (1.1)
2. Describe waveform generation using electronic circuits (1.2, 1.7)
3. Identify the topology and characteristics of bipolar and MOSFET logic gates (1.2)
4. Investigate the use of electronic circuits in communication electronic circuits in radio and TV receivers and video camera (1.7)

b) Intellectual Skills

1. Modify methods of linear analysis to be used with non-linear circuits while recognizing the limitations (3.1)
2. Analyze the function of astable and metastable circuits (3.4)
3. Compare the performance of MOSFET and bipolar logic (3.4)
4. Distinguish factors affecting delay, area, and power in digital electronics (3.4)

c) Professional and Practical Skills

1. Develop an understanding of application of theory to consumer electronics [radio, TV receivers, video camera, CD] (2.5)

d) General and Transferable Skills

1. Rate data obtained from variable sources (4.6)
2. Produce high standard academic written material (4.8)

3. Contents

Topic	Total hours	Lectures	Tutorial/ Practical
Op-amp wave generation	7	5	2

Oscillators	7	5	2
Multipliers	7	5	2
Log-anti log	5	3	2
Phase detection	5	3	2
CMOS digital design	25	15	10
Radio, TV receivers	13	9	4
PLL	13	7	4
Video camera and displays	2	2	-

4. Teaching and Learning Methods	Lectures (Y)	Practical Training/ Laboratory (N)	Seminar/Workshop (N)
	Class Activity (Y)	Case Study (N)	Projects (Y)
	E-learning (N)	Assignments /Homework (Y)	Other:

5. Student Assessment Methods	
5.a. Method	**To assess (with reference to the ILOs)**
-Mid-term exam	a1, a2, a3, a4, b1, b2, b3, b4
-Project	c1
-Final Exam	a1, a2, a3, a4, b1, b2, b3, b4, c1
5.b. Assessment Schedule	**Week**
- Mid-term exam	8
- Project	12
- Final exam	15
5.c. Weighting of Assessments	
- Mid-Term Examination	15 %
- Project	14 %
- Final-term Examination	66 %
- Quizzes and homeworks	5 %
- Total	100 %

6. List of References

6.a. Course Notes

6.b. Essential Books (Text Books)

- Microelectronic Circuits, Sedra & Smith
- Communications Electronics, M. Sameh, Said

6.c. Recommended Books.

- Analysis and design of analog integrated circuits, Gray et. al.

6.d. Periodicals, Web Sites, … etc: N/A

7. Facilities Required for Teaching and Learning

- Small group
- Computer lab

Course Coordinator:	**Prof. Dr. Sameh Saiid**

Head of Department:	**Prof. Dr. Mahmoud El-Hadidy**
Date:	**May 2011**