Syrian Arab Republic		الجمهورية العربية السورية
Ministry of Higher Education		وزارة التعليم العالـــي
Syrian Virtual University		الجامعة الافتراضية السورية

Course Description: Electronic circuits

1- Basic Information:

Course Name	**Electronic circuits**
Course ID	**Ise_ec**
Contact Hours (Registered Sessions)	**9**
Contact Hours (Synchronized Sessions)	**16**
Mid Term Exam	**-**
Exam	**75 min**
Registered Sessions Work Load	**13.5 h**
Synchronized Session Work Load	**24 h**
Credit Hours	**4**

2- Pre-Requisites:

Course	ID
Mathematical Analysis 1, 2	MA1, MA2

3- Course General Objectives:

To introduce the electronic components at the basis of computers they are dealing with, that forms the CPU, memories and interface circuits: Analog to Digital converters and Digital to Analog convertors. …….. .

4- Intended Learning Outcomes (ILO):

Code	Intended Learning Outcomes
ILO1	Electrical circuits analysis to find their currents and voltages
ILO2	Circuit behavior analysis when we change working frequencies
ILO3	Understanding Diode characteristics and its applications
ILO4	Understanding BJT and FET transistors characteristics and its applications
ILO5	Logic circuits design and electronic memories
ILO6	Transistor amplifiers
ILO7	Operational amplifiers and their applications A/D and D/A
ILO8	

5- Course Syllabus (16 sessions of 1 hour and a half each of total synchronized sessions;9 sessions of 1 hour and a half each of total Recorded Sessions)

- **RS:** Recorded Sessions**; SS:** Synchronized Sessions**;**

ILO	Course Syllabus	RS	SS	Type	Additional Notes
ILO1	General definitions, Ohm law, Thevenin and Norton theories and superposition theories to resolve electric circuits and find their currents and voltages	1.5	3	√Exercises √Assignments ☐ Seminars ☐ Projects ☐ Practices ☐ Others	
ILO2	Laplace Transforms and their properties. Complex impedance, transfer functions and Baud diagrams to show frequency responses	1.5	3	√Exercises √Assignments ☐ Seminars ☐ Projects ☐ Practices ☐ Others	
ILO3	Understanding semi-conductors, P and N semiconductors, Diode characteristics, modeling. Diodes types and applications	1.5	3	√Exercises √Assignments ☐ Seminars ☐ Projects ☐ Practices ☐ Others	

ILO4	The Transistor effect. Bipolar Transistor and MOSFET Transistor, characteristics, working modes, modeling and amplifications, circuit configurations, Comparison between both types.	3	4.5	√Exercises √Assignments ☐ Seminars ☐ Projects ☐ Practices ☐ Others	
ILO5	Digital circuits characteristics and design using the technologies: CMOS, NMOS, TTL, ECL Electronic memories		1.5	√Exercises √Assignments ☐ Seminars ☐ Projects ☐ Practices ☐ Others	New for F16 semister
ILO6	Transistor amplifiers: small signal modeling, different configurations: common emitter (CE), CB, CC, CS, CG, CD Multi-transistor amplifiers, Miller theory and frequency response. Amplifier bandwidth.	3	4.5	√Exercises √Assignments ☐ Seminars ☐ Projects ☐ Practices ☐ Others	
ILO7	Differential amplifier: circuits, common mode and differential mode amplification. Operational amplifier and its components. Linear applications (adder, subtractor, integrator, differentiator, filter) and non-linear applications (log-amplifier, comparators). Analog to Digital convertors ADC, and DAC.	3	4.5	√Exercises √Assignments ☐ Seminars ☐ Projects ☐ Practices ☐ Others	ADC, DAC added f16 semister

6- Assessment Criteria (Related to ILOs)

ISC	Interactive Synchronized Collaboration		Ex	Exams		Rpt	Reports
PF2F	Presentations and Face-to-Face Assessments		PW	Practice Work			

ILO Code	ILO	Intended Results	Assessment Type				
			ISC	PW	Ex	PF2F	Rpt
ILO1	Electrical circuits analysis to find their currents and voltages	**Circuit analysis**	√	□	√		√
ILO2	Circuit behavior analysis when we change working frequencies	Baude Diagram drowing	√	□	√		√
ILO3	Understanding Diode characteristics and its applications	**Diode types and applications**	√	□	√		√
ILO4	Understanding BJT and FET transistors characteristics and its applications	**How transistors work**	√	□	√		√
ILO5	Logic circuits design and electronic memories	**Digital circuits design**	√	□	√		□
ILO6	Transistor amplifiers	Basic transistor amplifiers analysis	√	□	√		□
ILO7	Operational amplifiers and their applications A/D and D/A	operational amplifier and its applications	√	□	√		□

7-Practice Tools:

Tool Name	Description
Course Name	

8-Main References

- "Electric circuits" by Dr Khaled Chahine, in Arabic, Damascus university,

Informatics faculty, 2000.

- "Electronic circuits" by Dr Oumayma Al Dakkak, in Arabic, Damascus university, Informatics faculty, 2000.

9-Additional References

-"Microelectronic Circuits", by SEDRA & SMITH, 5th edition, 2004, Oxford University Press.

-"Linear Circuit Analysis" by DeCarlo, LIN, 2nd edition, 2001, Oxford University Press.