

SEMESTER <i>Fifth</i>	DEPARTMENT <i>Telecommunications Engineering</i>	COURSE TITLE <i>Analog Electronics III Lab.</i>
COURSE CODE <i>ET503</i>	HOURS 3 UNITS 1	COURSE SPECIFICATIONS <i>Practical Content</i>
1. Build and Test Passive and Active Filters using operational amplifier: <ul style="list-style-type: none"> ➤ Measuring and plotting the frequency response of RC-LPF and HPF ➤ Determining the cut-off frequencies. ➤ Measuring and plotting the frequency response of second-order LP and HP active filters. ➤ Determining the cut-off frequencies of the second order filters. ➤ Measuring and plotting the frequency response of band pass filter and band reject filter. 		
2. Waveform Generator and Sinusoidal Oscillator Circuits using operational amplifier: <ul style="list-style-type: none"> ➤ Building and testing phase shift oscillator. ➤ Investigation of the relationship between amplitude, frequency and circuit components of the generated sine wave. ➤ Building and testing Wein-bridge oscillator. ➤ Building and testing Colpitts oscillator. ➤ Building and testing a crystal oscillator, a square wave generator and triangular generator. 		
3. Phase-Locked Loop (PLL): <ul style="list-style-type: none"> ➤ Using PLL in voltage to frequency conversion. ➤ Using PLL in frequency to voltage conversion. 		
4. Voltage Regulators and Switched-Mode Power Supplies: <ul style="list-style-type: none"> ➤ Building and testing voltage regulator built from discrete transistors. ➤ Building and testing voltage regulator built from operational amplifier. ➤ Testing integrated circuit voltage regulator. 		
5. Semiconductor Switches: <ul style="list-style-type: none"> ➤ Testing and using a Schottky diode in a relaxation oscillator and vary its frequency of oscillation. 		

- Testing a typical Thyristors circuit.
- Building and testing an over voltage protection circuit that uses Thyristors.

References:

1. Ronald J. Tocci, *Fundamentals of Electronic Devices*, Charles E. Merrill Publishing.
2. Theodore F. Bogart, *Electronic Devices and Circuits*, Prentice-Hall.
3. Ralph J. Smith, *Circuits, Devices and Systems*, John Wiley.
4. Jacob Millman and Arvin Grabel, *Microelectronics*, McGraw Hill.
5. Micheal Jacob, *Applications and Design with Analog Integrated Circuits*, Prentice Hall.
6. أساسيات الالكترونيات، تأليف: أي إن لورج، تعريب معن محمد شاکر.
7. Paul B. Zbar, *Basic Electronics*, McGraw-Hill Book Company.
8. Paul B. Zbar, *Industrial Electronics; A text-lab manual*, McGraw-Hill book company
9. Horwitz and Robinson, *Laboratory manual for the art of electronics*, Cambridge University Press.
10. Phillip Cutler, *Linear Electronic Circuits with Illustrative Problems*, McGraw-Hill Inc.