

SEMESTER <i>Third</i>	DEPARTMENT <i>General Engineering</i>	COURSE TITLE <i>Analog Electronics I Lab</i>
COURSE CODE <i>ET303</i>	HOURS: 3 UNITS: 1	COURSE SPECIFICATIONS <i>Practical Contents</i>
1. Diodes: <ul style="list-style-type: none"> ➤ Introduction to the basic instruments, e.g. DC-power supply, AVO, multi-meter, oscilloscope, waveform generator. ➤ Diode characteristics and parameters. ➤ Building simple dc-supply circuits using diodes and measure their performance. ➤ Build and test some of the following circuits: <ul style="list-style-type: none"> • Voltage limiters. • Clippers and clampers. • DC-restoration circuits and Voltage doublers. 		
2. Zener Diode: <ul style="list-style-type: none"> ➤ Zener diode characteristics. ➤ Building a simple voltage regulator using Zener diode. 		
3. Special Diodes: <ul style="list-style-type: none"> ➤ Build the circuit which drives a LED as a source of light (or optical signal). ➤ Build the circuit which drives an LD as a source of laser light. ➤ Build and operate an optical signal converter using PIN and/or APD diodes 		
4. Bipolar Junction Transistor (BJT): <ul style="list-style-type: none"> ➤ Current - Volt, V-I , characteristics of an NPN transistor or a PNP transistor. ➤ The biasing of a BJT, the operating point and the concept of the dc-load line. ➤ Build a single stage common-emitter amplifier. ➤ Build a single stage common-collector amplifier. ➤ Build a darlington pair from two transistors. 		
5. Field-Effect Transistor (FET): <ul style="list-style-type: none"> ➤ Test FET transistors (n-channel and p-channel types) by measuring the volt-current characteristics of an n-channel JFET transistor. 		

- Bias a FET, set its operating point and the dc-load line.
- Build a single stage common-source amplifier.

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 الإلكترونيات، تأليف: أي إن لورج، تعريب معن محمد شاكور.
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.