SEMESTER	***DEPARTMENT***	***COURSE TITLE***
Third	*General Engineering*	*Analog Electronics I*
COURSE CODE	***HOURS:*** 3	***COURSE SPECIFICATIONS***
ET302	***UNITS :*** 3	*Theoretical Contents*

1. Diodes:

- Types of diodes.
- Diode operation, characteristics, and large and small models.
- AC-DC conversion using diodes.
- Diode rectifier circuits.
- The role of filters in smoothing the output of a rectifier.
- Diode limiter.
- The use of diode in shaping signals (clipper and clamp).
- Diode voltage multiplication circuits.

2. Zener Diode:

- The characteristics of Zener-diode.
- Zener-diode's specification and ratings.
- Zener-diode as a voltage regulator.
- Voltage regulation and its terminology.

3. Special Diodes:

- LED and LD functions.
- The uses of LED and its specification, rating and types.
- 7- segment display.
- The uses of LD and its specifications, rating and types.
- Photo detectors (PIN and APD).

4. Bipolar Junction Transistor (BJT):

- Operation, types, configurations, characteristics of a BJT.
- The methods by which a BJT is biased.
- Types of amplifiers using BJT, C.B, C.E, and C.C, and their parameters, gain, input / output resistances.

- Amplifier analysis using small- signal models.
- The Darlington-pair.

5. Field-Effect Transistor (FET):

- Characteristics and types of a FET.
- Bias a FET.
- Types of FET amplifier configurations.

References:

1. Ronald J. Tocci, ***Fundamentals of Electronic Devices***, Charles E. Merril 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 شاكر.
7. Paul B. Zbar, ***Basic Electronics***, McGraw-Hill.
8. Paul B. Zbar, ***Industrial Electronics****; A text-lab manual*, McGraw-Hill
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.