

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري لمادة الالكترونيات

	Material Covered
Week	Syllabus
1	Atoms, Bohr model, electrons and shells, energy levels, valence electron, Ionization, the quantum model, material classifications; conductors, insulators, and semiconductors, band gap, Silicon and germanium atoms.
2	Semiconductor materials: Ge, Si, and GaAs, Covalent bonding, intrinsic and extrinsic semiconductor materials, currents in semiconductors; electron and hole current flow, majority and minority carriers, p-type and n-type semiconductor materials
3	PN-junction and barrier potential. semiconductor diode, characteristics of diode, Silicon diode versus germanium diode, ideal diode versus practical, current-voltage relationship, temperature effect.
4	Diode resistance level, Diode equivalent circuits, transition and diffusion Capacitance, reverse recovery time.
5	Other types of diodes; light emitting diode and Zener diode.
6	Transistors; transistors types; Bipolar junction transistor BJT; transistor construction, transistor operation, transistor configurations; common base configuration, common emitter configuration, common collector configuration.
7	BJT DC biasing, operation point, limits of operation, pnp transistors, bias stabilization, troubleshooting techniques.
8+9	BJT AC analysis; amplification in AC domain, BJT modeling, the 're' transistor model, early voltage, Determining the current and voltage gain.
10	The hybrid equivalent model, complete hybrid equivalent model,
11+12	Field effect transistor FET; FET types, construction and characteristics of JFET; P-channel and n-channel, voltage-controlled resistor, transfer characteristics, thermal characteristics, electrical characteristics, operation region, FET biasing.
13+14	Depletion type MOSFET; basic construction, basic operation and characteristics, p-channel depletion type- MOSFET, Enhancement type MOSFET; basic construction, basic operation and characteristics, p-channel Enhancement type MOSFET.
15	VMOS and UMOS power MOSFETs, CMOS, MESFETs.
Week 16	Final Exam