Phys 3702	ELECTRONICS-II	(CR3)
Preq.	Phys 3701	

Objectives

To be capable of designing rectifiers, amplifiers, oscillators, and multivibrators and to design circuits.

Syllabus

Cascade amplifier, The Amplifier pass band, the frequency plot (Bode plot), Low frequency analysis, Low frequency limit, the un-bypassed emitter resistor, high frequency equivalent circuit and analysis, The Miller Effect, high frequency limit of transistor, bandwidth of a cascade amplifier. Feedback Amplifiers, Positive and Negative feedback, Principle of feedback amplifier, stabilization of gain by negative feedback, Bandwidth improvement, Reduction of nonlinear distortion, control of amplifier output and input resistance, current series feedback circuit, voltage shunt feedback circuit. Oscillator operation and feedback principles, the oscillatory circuit and frequency stability, oscillators with LC, RC feedback circuits, Power Amplifiers, differential Amplifier Circuit, Common mode rejection ratio, operational amplifier (Op-Amp), Inverting and Non-inverting configuration, Op-Amp Applications, Basic types of Multivibrators, Astable Multivibrator, Mono-stable Multivibrator, Bi-stable Multivibrator, Flip-flop. Binary systems, octal and hexadecimal numbers and their conversions, complements, arithmetic addition and subtraction, binary codes "BCD", Excess-3", "Gray code", "ASCII characters code", boolean algebra and logic gates, basic theorems and properties of boolean algebra, boolean functions, canonical and standard forms, digital logic gates, digital logic functions, gate-level minimization, Karnaugh-map, product of sum and sum of products simplifications, NAND and NOR implementation.

Recommended Books

1. *Electronic Devices (Conventional Current Version), by T. L. Floyd, Pearson, 10th Edition, (2017)*
2. *Electronics Fundamentals: Circuits, Devices and Applications, by Thomas L. Floyd , David M. Buchla, Prentice Hall, 8th Edition, (2009)*
3. *Electronic Principles, by A. P. Malvino, D. J. Bates, McGraw-Hill, 8th Edition, (2015)*
4. *Solid State Electronic Devices, by B. Streetman and S.K. Banerjee, Pearson, 7th edition, (2015)*
5. *Grob's Basic Electronics, by M. E Schultz, McGraw-Hill Education, 12th edition, (201)5*
6. *Electronic Devices and Circuit Theory, by Robert L. Boylestad, Louis Nashelsky, Pearson, 11th edition, (2012)*
7. *Introductory Electronic Devices and Circuits (Conventional Flow Version), by Robert T. Paynter, Prentice Hall, 7th edition, (2005)*
8. *Digital Fundamentals, by T. L. Floyd, Pearson, 11th Edition, (2014)*