

Course Title	ELECTRONICS-II
Course Code	MPHY-372
Credit Hours	CH3
Pre- requisites	MPHY-371
Learning outcomes	To be capable of designing rectifiers, amplifiers, oscillators, and multi vibrators and to design circuit
Contents	Amplifiers and their frequency response: 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: Feedback concepts, 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. Oscillators: Oscillator, operation and feedback principles, the oscillatory circuit and frequency stability, oscillators with LC, RC feedback circuits, Phase-shift Oscillator. Power and operational amplifiers: differential Amplifier Circuit, Common mode rejection ratio, operational amplifier (Op-Amp), Inverting and Non-inverting configuration, Op-Amp Applications, Multivibrators: Basic types of Multivibrators, A stable Multivibrator, Mono-stable Multivibrator, Bi-stable Multivibrator, Flip-flop. Digital electronics: Binary systems, octal and hexadecimal numbers and their conversions, complements, arithmetic addition and subtraction, binary codes "BCD", Excess-3", "Gray 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.
Teaching-learning Strategies	Classroom teaching / Lecturing, practical
Assignments- Types and Number	Problem sheet: 3-4
Assessment and Examinations	Mid-Term Assessment: 35% Formative Assessment: (25%): It includes classroom participation, attendance, assignments and presentations, homework, attitude and behavior, hands-on-activities, short tests, quizzes etc. Final Term Assessment: 40%
Text Books	1. Electronic Devices (Conventional Current ver) by T. L. Floyd, Pearson, 10th Ed, (2017) 2. Electronics Fundamentals: Circuits, Devices and Applications, by 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 Ed, (2015) 5. Grob's Basic Electronics, by M. E Schultz, McGraw-Hill Education, 12th Edition, (2015) 6. Electronic Devices and Circuit Theory, by Robert L. Boylestad, Louis Nashelsky, Pearson, 11th Edition, (2012) 7. J. D. Ryder and Charles M. Thomson "Electronic circuits and systems" Prentice Hall 8. Introductory Electronic Devices and Circuits (Conventional Flow Version), by Robert T. Paynter, Prentice Hall, 7th Edition, (2005) 9. Digital Fundamentals, by T. L. Floyd, Pearson, 11th Edition, (2014).