Programme: M. Sc. (Physics)
Course Code: PHY-521 **Title of the Course:** Electronics Practical
Number of Credits: 2
Effective from AY: 2022-23

Prerequisites for the course:	Nil	
Course Objectives:	This course provides laboratory training in designing, and constructing electronics circuits commonly used in a Physics laboratory.	
Content:	Experiments are to be performed on following topics (minimum 8) with emphasis on designing and constructing the circuit on a bread board. 1. Operational Amplifier parameters 2. Design and Construction of Wien Bridge Oscillator 3. Design and Construction of phase shift oscillator 4. Design and Construction of Astable Multivibrator 5. Design and Construction of Monostable Multivibrator 6. Schmitt Trigger circuit and its use as a zero crossing detector and squaring circuit 7. Voltage Regulator 8. Constant Current Source 9. Design and Construction of DC differential amplifier using op-amps 10. Design and Construction of Function generator 11. Design and construction of Negative nonlinear resistor 12. J. K. flip-flop counter: Scale of 16 and 10 using IC 13. Adder and Subtractor Circuits	60 hours
Pedagogy:	Laboratory Experiments	
References/Readings	1. D. P. Leach, A. P. Malvino and G. Saha, Digital Principles and Applications. Tata Mc Graw Hill 7e, 2011. 2. J. Millman and C. C. Halkias, Integrated Electronics: Analog and Digital Circuits and Systems. McGraw Hill International Student Ed., 1972. 3. LM317 – 3 Terminal Adjustable Voltage regulator datasheet Rev. X, Texas Instruments 4. Wikibooks – Negative resistance, Negative differential resistance. https://en.wikibooks.org/wiki/Circuit_Idea	

Course Outcome:	Student will be able to 1. Prepare for laboratory work, by reading from books / laboratory manual / datasheet. 2. Design and construct electronic circuits by identifying and fetching different components. 3. Record observations from different measuring instruments and record them neatly. 4. Plot graphs and analyze the results. 5. Demonstrate the ability to maintain a laboratory notebook. 6. Prepare lab reports in standard scientific format.	