

**PHY5205 Experimental Physics II**

Course Code	PHY5205	Semester	II
Course Title	<i>Condensed Matter Physics</i>		
Credits	4	Type	Core

**Course Outcome**

In Students achieve ability to:

1. Set up testing strategies and select proper instruments to evaluate performance characteristics of electronic circuit
2. hands on training on different types of electronic circuit and analyse their operation at different operating conditions

**Course Structure**

Theory: Measurement and instrumentation. Transducers. Bridge circuits. Noise reduction techniques. 555 timer and PLL applications. Active filters.

General Physics: Thermo-luminescence, optoelectronics devices, dielectric constant, Faraday rotation, magnetic hysteresis, Franck-Hertz experiment, Compton effect, Balmer series, GM counter etc.

Electronics: Instrumentation amplifier, active filters, multivibrators, waveform generation, PLL: capture range and lock range, FM modulation and detection, transducer with bridge, AC bridge circuits, A/D and D/A converter, precision voltmeter, peak detector etc.

(Selection of experiments shall be done by instructor)

**Suggested Books**

1. D.W. Preston and E.R. Dietz, The Art of Experimental Physics, Wiley (1991)
2. R.A. Dunlap, Experimental Physics: Modern Methods, Oxford (1997)
3. A.C.Melissinos and J. Napolitano, Experiments in Modern Physics, Academic Press (2003)
4. S. Franco, Design with Operational Amplifiers, McGraw Hill (2002)
5. M.M.S. Anand and L.K.Maheshwari, Laboratory Experiments and PSpice Simulation in Analogue Electronics, PHI (2006)
6. A.Peyton, Analogue Electronics with Op-Amps, Cambridge (1993)
7. T.H. O'Dell, Circuits for Electronic Instrumentation, Cambridge (2005)