

**Programme:** M. Sc. (Physics)

**Course Code:** PHC-305

**Title of the Course:** Electronic Practical-II

**Number of Credits:** 4

**Effective from AY:** 2018-19

<b><u>Prerequisites for the course:</u></b>	Should have studied B. Sc. Physics. The students have undergone practical courses prescribed at B.Sc. The student knows the criterion of performing experiments and working in a laboratory.	
<b><u>Objective:</u></b>	This course aims at developing advance level experimental skills in Electronics. At the end of this course the student should be in a position to design and construct various operational electronic circuits using advance level electronic components mentioned in the syllabus. The ideas and circuits learned in this course can be extended for various practical applications.	
<b><u>Content:</u></b>	<ol style="list-style-type: none"><li>1. Study of R-S, D/T, J-K Flip-Flops.</li><li>2. Study of counters: Ripple, Mode 3, Mode 5, Mod 7, Mod 9, Mod 12 counters.</li><li>3. Study of Shift Register.</li><li>4. Study of Binary weighted and R-2R D/A Converter.</li><li>5. Study of Random Access Memory (RAM) Read Only Memory. (ROM)</li><li>6. Study of A/D Converter.</li><li>7. Experiment with Microprocessor</li><li>8. Convert BCD in to HEXADECIMAL</li><li>9. Design and construction Analog Multiplexer</li><li>10. Design and construction of Sample and Hold Circuits</li><li>11. Full adder and subtractor</li><li>12. Solving of Differential Equation by analog computation using OPAMPS</li><li>13. Design and construction of Amplitude modulation and Demodulation Circuit.</li><li>14. Design and construction of frequency modulation and demodulation Circuit.</li><li>15. Design and construction of variable voltage (0-25V; 1Amp ) Regulated power Supply.</li><li>16. Design and construction of low voltage SMS power supply.</li></ol> <p>Any <b>eight</b> experiments to be completed</p>	
<b><u>Pedagogy:</u></b>	Practical, tutorials/assignments/self-study	
<b><u>References/Readings</u></b>	<ol style="list-style-type: none"><li>1. Charles Roth, Fundamental of Logic Design 4/e: Jaico Publications, New Delhi (2002)</li><li>2. M. Morris Mano, Digital Design : Prentice Hall India, New Delhi (2008).</li><li>3. Donald Leach, Albert Malvino, Goutam Saha, Digital Principles and Applications, Tata McGraw Hill Education Private limited (2011).</li></ol>	

	4. Charles H. Roth, Digital System Design using VHDL: Jaico Publishers, New Delhi 5. Stephen Brown, Fundamentals of Digital Logic with VHDL Design: TMH, New Delhi (2009).	
<b><u>Learning Outcomes</u></b>	1. Designing of Digital circuits for various types. 2. The basic circuits designed and constructed can be modified to suit different applications. 3. Development of intensive experimental skills in electronics.	