



**List of Courses Focus on Employability/ Entrepreneurship/
Skill Development**

Department : Pure and applied physics

Programme Name : B.Sc. (Hon.) Electronics

Academic Year : 2017-18

List of Courses Focus on Employability/ Entrepreneurship/Skill Development

Sr. No.	Course Code	Name of the Course
01.	BE-302	Basic Electronics- III
02.	BE-501	Microprocessor & microcontroller
03.	BE-503	Electronic Instrumentation & Digital Signal Processing
04.	BE-504	Analog Communication -I
05.	BE-601	Analog Communication-II
06.	BE-602	Digital Communications
07.	BE-603	Advanced Electronic Instrumentation
08.	BE-604	Fiber Optics and Optoelectronics



Scheme and Syllabus

5 Year Integrated U.G. in Electronics

Semester-I	Marks	Semester-III	Marks
BE-101 Network theorem & AC circuits	50	BE-301 Digital Electronics- II	50
BE-102 Basic electronics –I	50	BE-302 Basic Electronics- III	50
BE-103 Laboratory-I	50	BE-303 Lab-III	50
Semester-II	Marks	Semester-IV	Marks
BE-201 Digital Electronics-I	50	BE-401 Electromagnetic Theory	50
BE-202 Basic Electronics –II	50	BE-402 Numeric Technique	50
BE-203 Laboratory-II	50	BE-403 Laboratory-IV	50
Semester-V	Marks	Semester-VI	Marks
BE-501 Microprocessor & microcontroller	50	BE-601 Analog Communication-II	50
BE-502 Wave propagation	50	BE-602 Digital Communications	50
BE-503 Electronic Instrumentation & Digital Signal Processing	50	BE-603 Advanced Electronic Instrumentation	50
BE-504 Analog Communication -I	50	BE-604 Fiber Optics and Optoelectronics	50
BE-505 Laboratory-V	50	BE-605 Laboratory-VII	50
BE-506 Lab.-VI	50	BE-606 Project Work	150



Semester V

Paper-XIII (BE-501): Microprocessors and Microcontrollers

Unit I: Fundamentals of Microprocessors:

Introduction, An ideal microprocessor, the data bus, address bus, control bus, microprocessor based system- basic operation, microprocessor operation, microprocessor architecture, instruction set, 8085 and 8086 microprocessor

Unit II: Programming of microprocessors: Introduction, assembly languages, High-Level Language,

application of various language, stacks, subroutines, system software, Programmable DMA controller, Programmable interrupt controller (PIC), programmable communication interface

Unit III: Microprocessor based data Acquisition system: Introduction, analog to digital convertor,

clock for A/D convertor, sample and Hold circuit, Analog multiplexer, ADC 0800,

Unit IV: Microprocessor applications: Delay subroutines, 7-segment LED display, Microprocessor

based protective relay, Microcomputer development system, single chip microcomputer, I/O processor, Coprocessor.

References:

1. Fundamental of Microprocessor and microcomputers by B. Ram
2. Digital Computer Electronics- an introduction to microcomputers by A. P. Malvino
3. Digital Computer Electronics by Malvino and Brown

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Paper XVI (BE-504): Electronic Instrumentation & Digital Signal Processing

Unit I Basic Measurement Instruments: DC measurement: dc voltmeter, ohmmeter and ammeter. Digital type voltmeter, ammeter and ohmmeter, digital multimeter, AC measurement, voltmeter, ammeter. Digital frequency meter: elements of frequency meter, universal counter and its different modes, measurement errors and extending the frequency range. Digital LCR-Q meter, digital wattmeter.

Unit II Signal Generators: Types of generators and their operation: The sine wave generator, Audio oscillator, Function generators, Pulse generators, AF signal generator, RF generators, Random noise generators.

Unit III Probes and Connectors: Test leads, active and passive probes, shielded cables, connectors, low capacitance probes, high voltage probes, RF demodulator probes, special probes for IC's, current probes.

Unit IV: Digital Signal Processing (DSP): Introduction to signals, signal processing systems, concept of signal processing, basic elements of digital signal processing (DSP), comparison between DSP and analog signal processing

References:

1. Electronic Instrumentation by H.S. Kalsi
2. Elements of Electronic Instrumentation and Measurement by Joseph J. Carr
3. Instrumentation Devices and Systems by C.S.Rangan, G.S.Sarna and V.S.Man
4. Digital Signal Processing by Oppenheim and Schaffer

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Semester VI

Paper XIX (BE-601)

Analog Communications – II

Unit I Demodulation/ Detection, essentials of AM detection, diode detector for AM signals, transistor detector for AM signals, FM detection, Quadrature detector, radio receivers, difference between FM and AM receiver, Discriminator Detector, PAM Demodulators.

Unit II: Transmitters & Receivers

Transmitters: AM transmitter, block diagram and working of Low Level and High Level Transmitters, FM transmitter **Receivers:** Block Diagram of Receiver, Receiver parameters: sensitivity, selectivity and fidelity, Super Heterodyne Receiver, Double Conversion Receiver. AM receivers, FM receivers.

Unit III: Transmission line & cable

Transmission line, line constants, phase velocity and line wavelength, characteristics impedance, propagation coefficient, phase and group velocities, standing waves, lossless lines at radio frequencies, voltage standing wave ratio, transmission lines as circuit elements, smith chart

Unit IV: Propagation of Radio waves:

Propagation in free space, tropospheric propagation, Ionospheric propagation, surface wave, low frequency propagation, and very low frequency propagation, extremely low frequency propagation

References:

1. Analog and Digital Communication system by Roden
2. Electronic Communication System by Schweber
3. Electronic Communications by Roddy and Coolen

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