MVN UNIVERSITY

ELECTRONICS & COMMUNICATION ENGINEERING DEPARTMENT

SCHEME & SYLLABUS
6th SEM

Integrated B. Tech.

MVN University, Palwal(Haryana)

Scheme of Studies & Syllabus 2013-14

6 year regular degree course: Integrated B Tech(ECE) with exit option after 3 years with a Diploma in Engineering

<div align="right">Semester:VI</div>

S. No	Course Title	Paper Code	Teaching Schedule			Total	Credit
			L	T	P		
1	Industrial Electronics	ECL062	3	1	2	6	5
2	Microprocessor	ECL070	3	1	2	6	5
3	Digital Communication	ECL066	3	1	2	6	5
4	Departmental Elective	*1	3	0	0	3	3
5	Repairing & Maintenance of Molbile & TV Set	ECP068	0	0	2	2	1
6	Project	ECD072	0	0	6	6	3
7	Language Communication - VI	AHP 062	1	0	2	3	NC
	Total		13	3	16	32	22

*1   Departmental Elective

		Data Communication
ECL074		Networks
		Optical
ECL076		Communication
		Microwave
ECL078		Engineering
ECL082		Robotics
		Agri
ECL084		Electronics
		Medical
ECL086		Instrumentation
		Integrated Engineering
ECL088		Concept

* Note: After Passing Diploma, students will be directly admitted in second year Of B.Tech. regular course

		L	**T**	**P**	**Cr**
ECL 062	**INDUSTRIAL ELECTRONICS**	**3**	**1**	**2**	**5**

Objective:
- To get an overview of different types of power semi-conductor devices and their switching characteristics.
- To understand the operation, characteristics and performance parameters of controlled rectifiers.
- To study the characteristics of DC and AC drives
- To learn the different modulation techniques of pulse width modulated inverters and to understand the harmonic reduction methods

THEORY:
Note: Question No 1 is compulsory and will be of short answer type from entire syllabus. Two questions are to be attempted out of three questions from each Section A & B.

SECTION – A

UNIT 1:Power Devices :
Power diode, Power transistor, Power MOSFET, SCR, TRIAC, GTO, IGBT.

UNIT 2:Converters
 Introduction to thyristor based Single phase half wave, full wave and bridge rectifiers, Dual converters, Introduction to cyclo converters.

UNIT 3: Choppers:
Concept of Choppers,Types, Working Principle & applications, chopper using MOSFET, PWM control circuit for driving MOSFET in chopper.

SECTION – B

UNIT 4: Inverters:
Concept of Inverter, Single phase inverters using thyristors, Output voltage control in inverter, Methods of obtaining sine wave output from an inverter, Voltage source inverters, Series inverter, Parallel inverter, Bridge inverter with R load, applications of inverters.

UNIT 5: DC and AC Drives
Steady state characteristic of dc motors, Control of DC motor using converters and choppers, Speed-torque characteristic of induction motor, Static stator voltage control, V/f control, Static rotor resistance control, Slip power recovery scheme.

UNIT 6: Other Applications
Electronic timers, Digital counters, Voltage regulators, Online and offline UPS, Switched mode power supply (SMPS).

Text Books:
1. G. K. Mithal, "Industrial Electronics", Khanna Publishers, Delhi, 2000.
2. Bhattacharya, "Industrial Electronics & Control" , Tata McGraw-Hill
3. P. S Bhimra, "Power Electronics", Khanna Publication, 2006.

Reference Books:
1. M. H. Rashid, "power Electronics Circuits, Devices and Application", PHI, 3rd edition, 2004
2. F. D. Petruzulla, "Industrial Elect
3. M. H. Rashid, "power Electronics Circuits, Devices and Application", PHI, 3rd edition, 2004

Note: At least ten experiments are to be performed during the semester. At least eight experiments should be performed from the list of experiments. Two experiments may either be performed from the given list of experiments or may be designed by the concern faculty in consultation with H.O.D as per the scope of syllabus.

List of Experiments:

1. To Study the working characteristic of CRO, Function Generator and Multi meter.

2. To Study the performance of Series regulator.

3. To study the V-I characteristic of SCR.

4. To study the Single phase half/full converter.

5. To study the characteristic Diac.

6. To study and implement 5 volt regulated power supply.

7. To Study of Jone's Chopper.

8. To study the switch mode power supply.

9. To study Characteristics of DC shunt motor.

10. To study Speed control of induction motor.

11. To study the Full wave Rectifier using SCR.

ECL 070	**MICROPROCESSORS**	**L**	**T**	**P**	**Cr**
		3	1	2	5

Objective: The objective of this course is to provide extensive knowledge of microprocessor based systems and interfacing techniques. Microprocessor is a required course for graduate students in the Engineering program. The student will be able to incorporate these concepts into their electronic designs for other courses where control can be achieved via a microprocessor implementation.

THEORY:
Note: Question No 1 is compulsory and will be of short answer type from entire syllabus. Two questions are to be attempted out of three questions from each Section A & B.

SECTION – A

UNIT 1: 8085 Microprocessor
Introduction to microprocessor and its evaluation, 8085 microprocessor: Architecture and its specifications, hardware and programming model.

UNIT 2: 8085 Microprocessor Programming:
pin diagram,Assembler instruction format, instruction set, Assembly language programming.
, .

UNIT 3:Interrupts of 8085:
addressing modes ,timing diagram, Interrupt and interrupt structure, instruction execution timing.
.

SECTION – B

UNIT 4: 8086 Microprocessor:
Introduction, block diagram of 8086, details of sub-blocks such as EU, BIU, hardware and programming model, pin diagram and description of various signals, arithmetic instructions.

UNIT 5: Interfacing devices:
keyboard and seven segment display, Direct Memory access, and 8237 DMA controller.

UNIT 6: Peripheral Devices:
8255 Programmable peripheral interface, 8254(8253) programmable interval timer, 8259A programmable interrupt controller.

Text Books:
1.   Microprocessor Architecture, Programming & Applications with 8085 : Ramesh S Gaonkar; Wiley Eastern Ltd.
2. The Intel Microprocessors 8086- Pentium processor : Brey; PHI

Reference Books:
1. Microprocessors and interfacing : Hall; TMH

2. The 8088 & 8086 Microprocessors-Programming, interfacing ,Hardware Applications :Triebel & Singh; PHI
3. Microcomputer systems: the 8086/8088 Family: architecture, Programming & Design : Yu- Chang Liu & Glenn A Gibson; PHI.
4. Advanced Microprocessors and Interfacing : Badri Ram; TMH

Note: At least ten experiments are to be performed during the semester. At least eight experiments should be performed from the list of experiments. Two experiments may either be performed from the given list of experiments or may be designed by the concern faculty in consultation with H.O.D as per the scope of syllabus.

List of Experiments:

1. WAP for addition of two 8 bit numbers using 8085 up.

2. WAP for subtraction of two 8 bit numbers using 8085 up.

3. WAP for multiplication of two 8 bit numbers using 8085 up.

4. WAP for division of two 8 bit numbers using 8085 up

5. WAP for addition with carry using 8085 up.

6. WAP for finding 2's complement of 8 bit number using 8085 up.

7. WAP for addition and subtraction of two 16 bit numbers using 8086 up.

8. WAP for multiplication and division of two 16 bit numbers using 8086 up.

9. WAP for finding largest number in a data array using 8085 up.

10. WAP for finding smallest number in a data array using 8085 up.

ECL 066	DIGITAL COMMUNICATION	L	T	P	Cr
		3	1	2	5

Objective: This course concentrates on the field of digital communication. After completion of this course, the students will be able to get some idea about modern digital communication techniques like delta modulation, multiplexing, ASK, FSK, PSK etc.

THEORY:
Note: Question No 1 is compulsory and will be of short answer type from entire syllabus. Two questions are to be attempted out of three questions from each Section A & B.

SECTION – A

UNIT 1: Pulse Code Modulation :
Idea of digital communication – Advantages of digital communication over analog communication BASIC STEPS IN PCM SYSTEM: Filtering – Sampling – Quantizing – Encoding – Line coding (HDB3, AM1, CM1, NRZ, RZ). Block schematic description of transmitter and receiver of PCM system, Principles of linear and non-linear quantization – Companding.

UNIT 2: Delta Modulation:
Block schematic description of delta modulation technique Limitations of delta modulation – Slope overload and granular noise. Concept of adaptive delta modulation technique.

UNIT 3: Multiplexing:
IDEA of multiplexing and its necessity. TYPES of multiplexing: TDM and FDM, TDM: Principles of time division multiplexing and synchronization in a digital communication system.
PCM – TDM in modern applications (plesiochronous digital hierarchy and synchronous digital hierarchy). Frequency division multiplexing with practical examples, phase locked loop. Merits and demerits of TDM and FDM.

SECTION – B

UNIT 4: RFModulation For Base Band Signal:
Concepts of binary modulation techniques. Principles of amplitude shift keying, frequency shift keying and phase shift keying. Comparison between ASK, FSK and PSK.

UNIT 5: Performance & Testing of Digital Communication Link Information Theory:
Relationship between data speed and channel bandwidth – Shannon-Hartley theorem –
Theory of line coding.

UNIT 6: Error Correction Techniques:
Parity checking and cyclic redundancy check. Brief description of inter-symbolic interference and interpretation of eye pattern.

Text Books:
1. Electronic Communication System / Kennedy / Tata McGraw-Hill
2. Communication System / Simon Haykin / WI Ltd.

Reference Books:
1. Communication Electronics / Frenzel / Tata McGraw-Hill
2. Principles of Communication System / Taub & Schilling / Tata McGraw-Hill
3. Electronic Communication / Roddy & Coolen / Prentice Hall of India, N. Delhi
4. Telemetry Principles / D. Patranabis / Tata McGraw-Hill
5. Electronic Communication System / Dungan / Vikash Publishing House

Note: At least ten experiments are to be performed during the semester. At least eight experiments should be performed from the list of experiments. Two experiments may either be performed from the given list of experiments or may be designed by the concern faculty in consultation with H.O.D as per the scope of syllabus.

List of Experiments:

1. Study of ASK Modulator

2. Study of ASK De-Modulator

3. Study of FSK Modulator

4. Study of FSK De-Modulator

5. Study of PSK Modulator

6. Study of PSK De-Modulator

7. Observe and plot waveforms of QPSK modulation.

8. Observe and plot waveforms of QPSK demodulation.

9. Observe and plot waveforms of QAM modulation

10. Observe and plot waveforms of QAM demodulation

11. Study pulse data coding & Decoding techniques for various formats.

ECL 074	DATA COMMUNICATION NETWORKS	L	T	P	Cr
		3	0	0	0

Objective: This course concentrates on the field of Data communication & networks. After completion of this course, the students will be able to get some idea about data communication protocols, TDM, FDM and internet.

THEORY:
Note: Question No 1 is compulsory and will be of short answer type from entire syllabus. Two questions are to be attempted out of three questions from each Section A & B.

SECTION – A

UNIT 1: Data Communications:
Introduction, history of data communication, standard organization for data communication, data communication circuits, data communication codes, error control, synchronization, data communications hardware, serial interfaces: parallel interfaces

UNIT 2: The Telephone Network: DDD network, private- line service, the telephone circuit, data modems: synchronous modems, asynchronous modems, modem synchronization.

UNIT 3: Data Communications Protocols And Network Configurations : Introduction, open system interconnection (OSI), data transmission mode, asynchronous protocols, synchronous protocols, public data network, integrated services digital network (ISDN), local area networks.

SECTION – B

UNIT 4: Time Division Multiplexing:
Introduction, time division multiplexing, T1 digital carrier system, CCITT time division multiplexed carrier systems, CODECS, COMBO chips, line encoding, T-CARRIERS, frame synchronization, bit interleaving VS word interleaving,

UNIT 5: Frequency Division Multiplexing:
AT&T's FDM hierarchy, composite base band signal, formation of a master group.

UNIT 6: Internet:
Introduction, history, use of Internet, accessing the Internet, Internet addresses, security on the internet.

Text Books:
1. Data Communication and Networking (2nd -edition): Forauzan.

Reference Books:
1. Electronic Communications Systems (4th Ed.) : Wayne Tomasi; Pearson

ECL 076	OPTICAL COMMUNICATION	L	T	P	Cr
		3	0	0	3

Objective: To understand the different kind of losses, signal distortion in optical wave guides and
other signal degradation factors. Design optimization of SM fibers, RI profile and cut-off wave length. To learn the various optical source materials, LED structures, quantum efficiency, Laser diodes

THEORY:
Note: Question No 1 is compulsory and will be of short answer type from entire syllabus. Two questions are to be attempted out of three questions from each Section A & B.

SECTION – A

UNIT 1: Semiconductors and Diodes
Evolution of fiber optic system- Element of an Optical Fiber Transmission link- Ray Optics- Optical Fiber Modes and Configurations

UNIT 2: Signal degradation in optical fiber
Attenuation - Absorption losses, Scattering losses, Bending Losses, Core and Cladding losses, Signal Distortion in Optical Wave guides-Information Capacity determination -Group Delay-Material Dispersion, Wave guide Dispersion, Signal distortion in SM fibers-Polarization Mode dispersion, Intermodal dispersion,

UNIT 3: Optical Source LED

Direct and indirect Band gap materials-LED structures -Light source materials -Quantum efficiency and LED power, Modulation of a LED,

SECTION – B

UNIT 4 Optical Sources LASER
lasers Diodes-Modes and Threshold conditions ,External Quantum efficiency, Introduction to Quantum laser, Fiber amplifiers- Power Launching and coupling, Lancing schemes, Fiber -to-Fiber joints, Fiber splicing.

UNIT 5: Optical Detectors

PIN and APD diodes -Photo detector noise, SNR, Detector Response time, Avalanche Multiplication Noise -Comparison of Photo detectors -Fundamental Receiver Operation - preamplifiers, Error Sources -Receiver Configuration -Probability of Error - Quantum Limit.

UNIT 6: Optical Networks

Point-to-Point links System considerations -Link Power budget -Rise - time budget -Noise Effects on System Performance-Operational Principles of WDM

Text Books:
1. Gerd Keiser, "Optical Fiber Communication" McGraw -Hill International, Singapore, 3rd ed., 2000

Reference Books:

1. J.Senior, "Optical Communication, Principles and Practice", Prentice Hall of India, 1994.
2. J.Gower, "Optical Communication System", Prentice Hall of India, 2001.

ECL 078	MICROWAVE ENGINEERING	L	T	P	Cr
		3	0	0	3

Objective: The objective of the course is to introduce the fundamentals of Waveguides and transmission lines, Providing an in-depth understanding of Microwave components, Tubes and Microwave Measurements.

THEORY:
Note: Question No 1 is compulsory and will be of short answer type from entire syllabus. Two questions are to be attempted out of three questions from each Section A & B.

SECTION – A

UNIT 1: Introduction to Microwaves:
Introduction to microwaves and its application, classification of frequency bands (HF, VHF, UHF, L, S, C, X, KU, K, KA, mm, Sub mm)

UNIT 2: Waveguides:
Definition of waveguide, modes of waveguide(TM, TE, TEM, HE),Application of rectangular and circular waveguide, cut off wavelength, guide wavelength and their relationship with free space wavelength (no mathematical derivation)

UNIT 3: Microwave components:
Constructional features ,characteristics and application of tees, bends, matched termination, twists, detect mount, slotted line section, directional coupler, isolator, attenuators.

SECTION – B

UNIT 4: Microwave devices:
Working principles and application of klystron amplifier,reflex klystron,Gun diode,Impatt diode

UNIT 5: Radar systems:
Introduction to radar,its various application,radar range equation(no derivation) and its application

UNIT 6: Transmission line:
Definition of transmission line, types of transmission line,basic parameters of transmission line,Voltage standing wave ration.

Text Books:
1.Microwave devices and circuits :Samuel Liao;PHI
2.Microwave devices & Radar Engg :M .Kulkarni;Umesh

Reference Books:
1. Microwaves and Radar : A.K. Maini; Khanna

ECL 082	ROBOTICS	L	T	P	Cr
		3	0	0	3

OBJECTIVE: To understand the basic principles of Robots their applications and programming methodologies.

THEORY:
Note: Question No 1 is compulsory and will be of short answer type from entire syllabus. Two questions are to be attempted out of three questions from each Section A & B.

SECTION – A

UNIT 1: Basic Configuration of Robotics and its Working
Introduction – definition – basic configuration of robotics and its working – robot components manipulator, end effectors, drive system, controller, sensors – mechanical arm – degrees of freedom – links and joints – construction of links, types of joint – classification of robots –cartesian, cylindrical, spherical, horizontal articulated (SCARA), vertical articulated – structural characteristics of robots – mechanical rigidity – effects of structure on – control - work envelope and work volume - robot work volumes and comparison – wrist rotations – mechanical transmission, pulleys, belts, gears, harmonic drive – conversion between linear and rotary motion and its devices.

UNIT 2: Robot Controller, Servo Systems
Robot controller – level of controller – open loop and closed loop controller – servo systems – microprocessor based control system – robot path control – point to point – continuous path control – sensor based path control – controller programming – actuators – dc servo motors – stepper motors – hydraulic and pneumatic drives - feedback devices – potentiometers – optical encoders – dc tachometers.

UNIT 3: Robot Motion Analysis

Robot motion analysis – robot kinematics – robot dynamics - end effectors – grippers and tools - gripper design – mechanical gripper – vacuum gripper – magnetic grippers – sensors – transducers – tactile sensors – proximity sensors and range sensors – force and moment sensors and its applications and problems - photoelectric sensors – vision system – image processing and analysis – robotic applications – robot operation aids – teach pendent – MDI and computer control.

SECTION – B

UNIT 4: Robot Programming:
 Robot programming – lead through methods and textual robot languages – motion specification - motion interpolation - basic robot languages – generating of robot programming languages – On-Line & Off-Line programming - robot language structure – basic commands – artificial intelligence and robotics.

UNIT 5: Robot Application In Manufacturing

Sensors for fuel level in tank- Engine cooling water temperature sensor – engine oil pressure sensor – Speed sensor – Air pressure sensor – Engine oil temperature sensor – Oil pressure warning system – Engine over heat warning system – Air pressure warning system – Speed warning system – Door Lock Indicators.

UNIT 6: Robot Application In Auto Electronics

Robot application in manufacturing – material handling –assembly finishing – adopting robots to work station - requisite and non – requisite robot characteristics – stages in selecting robot for individual application – precaution for robot –future of robotics

Text Book

1. Industrial Robotics – Technology – Programming and Applications -Mikell P. Groover, Mite chell weiss, Roger Negal and Nicholes G. Odress.
2. Robotics – An Introduction – Doughales – R. Halconnjr.

Referance Book

1. JUDGE. AW – Modern Electric Equipments for Automobile – Chapman & Hall London 1975
2. Walter E Billet & Leslie. F GOINGS – Automotive Electric Systems

		L	T	P	Cr
ECL 084	**AGRI ELECTRONICS**	**3**	**0**	**0**	**3**

Objective: India is a developing country and economy of India depends on agriculture. Therefore, it is mandatory to take help of technology for farming so that the Indian farmer can achieve what he deserves which will lead to the development of country. This course describes the basic concepts of technological advancements in the field of agriculture.

THEORY:
Note: Question No 1 is compulsory and will be of short answer type from entire syllabus. Two questions are to be attempted out of three questions from each Section A & B.

SECTION – A

UNIT 1: Basics of Agriculture:
Introduction to Soil Science- Soil structure, Soil properties, Soil processes Formation of Soil, types of soils, Organisms and soil processes, Soil as a medium for plant growth, Soil moisture & efficiency soil pH values and crop production

UNIT 2: Chemical analysis of soil:
Water bearing capacity, soil erosion and conservation, measurement of soil parameters.

UNIT 3: Introduction to Crop Science:
Elementary crop science, Basic principles and advances in photosynthesis. Paste and disease management, Post harvesting, Role of fertilizers, Different types of crops.

SECTION – B

UNIT 4: Agricultural Measurements:
Introduction to agriculture measurement techniques,: Agricultural parameters (Temperature, pH, Conductivity, Salinity, Soil Moisture,) operating principles of sensors and actuators for Agriculture, Measurement of temperature, Measurement of pH and conductivity, Soil analysis and soil testing, soil moisture measurement

UNIT 5: Green House Instrumentation:
Green House Instrumentation: Green House Technology introduction, instrumentation required for tissue culture techniques, Use of simple electronic circuits for control for physical parameters like temperature, humidity and irrigation, and indication of physical parameters.

UNIT 6: Agricultural Automation
A case study on Automatic drip irrigation

Text Books:
1. Treaties on Agro-Physics & Agri electronics : Dr. G.N. Acharya & Dr. D.G. Hapse
2. Principles of Agricultural Engineering – A.M. Michale

Reference Books:
1. Fundamentals of remote sensing: George Joseph
2. Fundamentals of Soil: V.N. Sahi- Kalyani Publication
3. Spatial information technology I.V. Muralikrishna Vol I & II BS Pub.

ECL 086	**MEDICAL INSTRUMENTATION**	**L**	**T**	**P**	**Cr**
		3	**0**	**0**	**3**

Objective: A large number of electronic equipment s are being used in hospitals for patient care and diagnosis or carry out advanced surgeries. This subject will enable the students to learn the basic principles of different instruments used in medical science.

THEORY:
Note: Question No 1 is compulsory and will be of short answer type from entire syllabus. Two questions are to be attempted out of three questions from each Section A & B.

SECTION – A

UNIT 1: Anatomy and physiology:
Elementary ideas of cell structure, Heart and circulatory system, Central nervous system, Muscle action, Respiratory system, Body temperature and reproduction system.

UNIT 2: Overview of Medical Electronics Equipments:
Classification, application and specifications of diagnostic, therapeutic and clinical laboratory equipment, method of operation of these instruments

UNIT 3: Electrodes:
Bioelectric signals, Bio electrodes, Electrode, Electrode tissue interface, contact impedance, Types of Electrodes, Electrodes used for ECG , EEG

SECTION – B

UNIT 4: Transducers:
Typical signals from physiological parameters, pressure transducer, flow transducer, temperature transducer, pulse sensor, respiration sensor.

UNIT 5: Patient Monitoring Systems & Recorders
Block diagram description and application of following instruments ECG Machine, EEG Machine, EMG Machine, Heart rate measurement, Pulse rate measurement, Respiration rate measurement, Blood pressure measurement, Principle of defibrillator and pace mark, Use of Microprocessor in patent monitoring.

UNIT 6: Safety Aspects of Medical Instruments
Gross current shock, Micro current shock, Special design from safety consideration, Safety standards.

Text Books:
1. Handbook of biomedical Instrumentation by RS Khandpur
2. Biomedical Instrumentation by Cromwell,

Reference Books:
1. Modern Electronics Equipment by RS Khandpur, TMMH, New Delhi
2. Introduction to BioMedical Electronics by Edward J. Perkstein; Howard Bj, USA

ECL 088	INTEGRATED ENGG. CONCEPTS	L	T	P	Cr
		3	0	0	3

Objective: The objective of the course is to provide fundamental knowledge of electronic circuit designing concepts. It covers basic principle of operations and usefulness of some of the electronic circuits. It is also helpful to design electronic circuits using Operational amplifier.

THEORY:
Note: Question No 1 is compulsory and will be of short answer type from entire syllabus. Two questions are to be attempted out of three questions from each Section A & B.

SECTION – A
UNIT 1: Operational Amplifiers
Introduction of Op-Amps, Pin configuration of LM 741 IC, its ideal characteristics, inverting, non- inverting, differential configuration of OP-Amps, transfer characteristics of a differential amplifier.

UNIT 2: Linear Applications Of Operational Amplifiers :
Scale changer, phase shifter, adder, Subtractor voltage to current converter, current to voltage converter, voltage follower, Integrator, differentiator.

UNIT 3: Non-linear Applications of Operational Amplifiers :
Comparators, Logarithmic amplifier, anti-log amplifier, logarithmic multiplier, waveform generators, regenerative comparator (Schmitt Trigger).

SECTION – B
UNIT 4: Feedback Amplifiers
Feedback concept, transfer gain with feedback, general characteristics of negative feedback amplifiers, voltage series feedback, current series feedback, current shunt feedback, voltage shunt feedback.
UNIT 5: Oscillators
Criteria for oscillations, Barkhausen criterion, general form of oscillator circuit, R-C Phase shift Oscillator, Wein Bridge Oscillator.
UNIT 6: Power Amplifiers:
Class A, B, and C operations; Class A large signal amplifiers, transformer coupled power amplifier, class B amplifier, class A and class B push-pull amplifiers; class C power amplifier.

Text Books:
4. Sedra A S and Smith K C, "Microelectronic Circuits" 4th Ed., New York, Oxford University Press, New York (1997).
5. Millman and Halkias, "Electronics Devices and Circuits" 2nd Ed., Tata McGraw-Hill, New Delhi (2008).

Reference Books:
4. Operational Amplifiers:Gaikwad
5. Electronic Circuit Analysis and Design (Second edition) : D.A.Neamen; TMH
6. NN Bhargave, "Basic Electronics & Linear Circuits" Tata McGraw Hill(2007).

ECP 068	REPAIRING & MAINTENANCE OF MOLBILE & TV SET	L	T	P	Cr
		0	0	2	1

Note: At least ten experiments are to be performed during the semester. At least eight experiments should be performed from the list of experiments. Two experiments may either be performed from the given list of experiments or may be designed by the concern faculty in consultation with H.O.D as per the scope of syllabus.

List of Experiments:

1. Proper use of Micro Iron, SMD Rework, Airgun,Etc.

2. Soldering & Desoldering Practice.

3. Chip Component Removing & Replacing.

4. Driver IC Jumper Practice. (SIM IC Jumper,Keypad I.C.Jumper,Display I.C.Jumper etc.)

5. Ribben & Patta changing Practice .

6. Jack Changing Practice (Sim Jack,Charging Jack,Hand free Jack,Battery Connector).

7. Bluetooth Module Changing Practice.

8. To Study the block diagram of TV receiver

9. To Study the need for keyed AGC circuit

10. To study the working principle of typical video amplifier.

11. To study the horizontal output stage with various controls.

12. To study the remote control IR transmitter and IR receiver.

13. To Study about modern cable TV system.

14. To know the operation of VCD and DVD players in play back mode.

ECD 072	PROJECT	L	T	P	Cr
		0	0	6	3

Objective: The main objective of the Project is to make familiar the students with real life examples of the field of Electronics & Communication Engineering. The students have to prepare a hardware/Software based project related to the field of their interest. The project may be classified as hardware / software / modeling / simulation based project. It may comprise any elements such as analysis, synthesis and design.

The department will appoint a project coordinator who will coordinate the following:

• Allotment of projects and project guides.
• Conduct project - seminars. Each student must be directed to decide on the following aspects
• Organization.
• Internal / External guide.

Each student must present a seminar based on the above aspects as per the following guidelines:
1. Submit a one page synopsis before the seminar talk for display on the notice board.
2. Give a 20 minutes presentation through OHP, PC followed by a 10 minutes discussion.
3. Submit a report on the project giving the list of references.
Project Seminars are to be scheduled from the 3rdweek to the last week of the semester.
The internal marks will be awarded based on preparation, presentation and participation.

AHP 062	LANGUAGE COMMUNICATION-VI	L	T	P	Cr
		1	0	2	0

Objective: As the importance of English is budding with each day as a global language for professionals. Therefore, this course has been designed by keeping in mind its importance.

UNIT-1: Phonetics
- Phonetic Transcription of Words-IV
- Words Commonly Mispronounced- IV
- Word Stress-II

UNIT-2: Reading Practice
- Reading newspaper articles
- Reading story books
- Reading magazines

UNIT-3: Oral Practice
- Group Discussion
- Debate
- Role Plays and Simulations
- Mock Interview
- Classroom Presentations

UNIT-4: Study Skills
- Commonly Misspell Words-IV
- Dictation
- Looking up a dictionary
- Learning pronunciation from a dictionary (Practical implementation of IPA symbols)
- Learning classification and context of words from the dictionary
- Crosswords