PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Bachelor of Technology** **Semester –VII**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External (70)	Internal (30)	Total (100)	External (Nil)	Internal (Nil)	Total
ECT-17101	Satellite Communication	3	1	-			Min: 40 (D Grade)			Nil

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 20	Assignment/Quiz/Attendance – Max. Marks: 10
Practical Internal Max Marks: Nil	Lab work & Sessional – Max Marks: Nil	Assignment/ Quiz/Attendance – Max. Marks: Nil

Pre-Requisite	To give the knowledge of broad treatment of the diverse subsystems that makes up a complete satellite communication system.
Course Outcome	1. To enable the student to become familiar with satellites and satellite services.
	2. Study of satellite orbits and launching.
	3. Study of earth segment and space segment components.

Unit	Contents (Theory)	Marks Weightage
I	**Overview of Satellite Systems**: Introduction, History of Satellites operations, Frequency allocations for satellite systems.**Orbits and launching methods**: Kepler's three laws of planetary motion, terms used for earth orbiting satellites, orbital elements, apogee and perigee heights, orbit perturbations, inclined orbits, local mean solar point and sun-synchronous orbits, standard time.	**14**
II	**The Geostationary Orbit**: Introduction, antenna look angles, polar mount antenna, limits of visibility, near geostationary orbits, earth eclipse of satellite, sun transit outage, launching orbits. **Polarization**: Antenna polarization, polarization of satellite signals, cross polarization discrimination. **Depolarization**: Ionospheric, rain, ice.	**14**
III	**The Space Segment**: Introduction, power supply, attitude control, station keeping, thermal control, TT&C subsystem, transponders, antenna subsystem, Morelos and Satmex 5, Anik-satellites, Advanced Tiros-N spacecraft. **The Earth segment**: Introduction, receive-only home TV systems, master antenna TV system, Community antenna TV system, transmit-receive earth station.	**14**
IV	**The Space Link & Link Design**: Introduction, Equivalent isotropic radiated power (EIPR), transmission losses, the link power budget equation, system noise, carrier-to-noise ratio (C/N), the uplink, the downlink, effects of rain, combined uplink and downlink C/N ratio, inter modulation noise, inter-satellite links. Interference between satellite circuits.	**14**
V	**Satellite Services: VSAT (Very Small Aperture Terminal) Systems**: overview, network architecture, access control protocols, basic techniques, VSAT earth station, calculation of link margins for a VSAT star network. **Direct Broadcast satellite (DBS) Television and Radio**: digital DBS TV, BDS TV system design and link budget, error control in digital DBS-TV, installation of DBS-TV antennas, satellite radio broadcasting.	**14**

Text Book/References Books/ Websites:

1. D. Roddy; Satellite Communications; 4th Edition, TMH, New Delhi.
2. T. Pratt, C. Bostian and J. Allnut; Satellite Communications; 2nd Edition, Wiley India Pvt. Ltd.
3. D.C. Agarwal; Satellite Communications; Khanna Publishers.

Suggested List of Laboratory Experiments :- (Expandable): Nil

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Bachelor of Technology** **Semester –VII**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External (70)	Internal (30)	Total (100)	External (Nil)	Internal (Nil)	Total
ECT-17102	Cellular & Mobile Communication	3	1	-			Min: 40 (D Grade)			Nil

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 20	Assignment/Quiz/Attendance – Max. Marks: 10
Practical Internal Max Marks: Nil	Lab work & Sessional – Max Marks: Nil	Assignment/ Quiz/Attendance – Max. Marks: Nil

Pre-Requisite	To understand mobile radio communication principles and to study the recent trends adopted in cellular systems and wireless standards.
Course Outcome	1. To understand the basic cellular system concepts.
	2. To have an insight into the various propagation models and the speech coders used in mobile communication.
	3. To understand the multiple access techniques and interference education techniques in mobile communication.

Unit	Contents (Theory)	Marks Weightage
I	**Introduction:** Introduction to cellular mobile system and concepts of GSM, a basic cellular system, performance criteria, Uniqueness of mobile radio environment, Operation of cellular systems, Planning of cellular system. Elements of Cellular Radio System Design: General description of problem, Concept of frequency reuse, channels, Co channel interference, reduction factor, Hand off mechanisms, Cell splitting, Consideration of the components of cellular systems.	**14**
II	**Interference & Antenna System:** Co-channel Interference, real time co-channel interference measurement at mobile radio transceivers, Design of antenna system - Omni directional and directional, Lowering the antenna height, Reduction of co-channel interference, Umbrella-Pattern effect, Diversity receiver, Designing a system to serve a predefined area that experiences Co-Channel Interference. Types of Non co-channel interference- adjacent channel Interference, Near-End-Far-End interference, Effects on Near-End mobile units, Cross-Talk, Effects on coverage and interference by applying power decrease, antenna height decrease, Beam Tilting, Effects of cell site Components, Interference between systems, UHF TV Interference, long	**14**
III	**Cell Coverage for Signal and Traffic :** General introduction, Obtaining the mobile point-to-point model, Propagation over water or flat open area, foliage loss, propagation in near in distance, long distance propagation, point-to-point prediction model, Cell site antenna heights and signal coverage cells, Mobile-to-mobile propagation. Cell site antennas and mobile antennas: Equivalent circuits of antennas, Gain and Pattern Relationship, Sum and Difference patterns, Antennas at cell site, mobile antennas.	**14**
IV	**Frequency Management and Channel Assignment:** Frequency management, Frequency spectrum utilization, Setup channels, Fixed channels assignment, Non-fixed channel assignment algorithms, Traffic and channel assignment. Handoffs and Dropped Calls: Types of Handoff, Initiation of Handoff, Delaying a Handoff, Forced Handoff, Queuing of Handoff, Power-Difference Handoff, Mobile Assisted Handoff and Soft Handoff, Cell-site Handoff and Intersystem Handoff, Dropped Call Rate.	**14**
V	**Digital Cellular System:** GSM, Architecture (working aspects of BTS & MSC), Layer Modeling, Transmission, GSM channels and Channel Modes, Multiple Access Scheme: CDMA, Terms of CDMA systems, output power limits and control, Modulation characteristics, Call processing, Hand off procedures. Miscellaneous Mobile Systems: TDD Systems, Cordless Phone, PDC, PCN, PCS, Non Cellular Systems, Mobile Integrated Radio Systems, Mobile Satellite Communication.	**14**

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Bachelor of Technology** **Semester –VII**

Text Book/References Books/ Websites:

1. W.C.Y. Lee; Mobile Cellular Telecommunications; Tata McGraw Hill, 2rd Edn., 2006.
2. Gordon L. Stuber; Principles of Mobile Communications; Springer International 2nd Edition, 2007.
3. G Sasibhushana Rao; Mobile Cellular Communication; Pearson.

Suggested List of Laboratory Experiments :- (Expandable): Nil

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Bachelor of Technology** **Semester –VII**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External (70)	Internal (30)	Total (100)	External (Nil)	Internal (Nil)	Total
ECT-17103	Advanced Data Networks	3	1	-			Min: 40 (D Grade)			Nil

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 20	Assignment/Quiz/Attendance – Max. Marks: 10
Practical Internal Max Marks: Nil	Lab work & Sessional – Max Marks: Nil	Assignment/ Quiz/Attendance – Max. Marks: Nil

Pre-Requisite	To give knowledge of fundamental concepts, protocols, analysis and modelling techniques, architectures, and applications pertaining to data communications networks.
Course Outcome	1. Understand the basic concepts of data communication architectures and protocols.
	2. Understand networking techniques including scheduling, routing, and switching.
	3. Understand data network applications.

Unit	Contents (Theory)	Marks Weightage
I	**Principles of Wireless Networks:** Network Planning: Introduction, wireless network topologies, cellular topology. Wireless network operation: introduction, mobility management, radio resources and power management, security in wireless networks.	**14**
II	**Mobile Data Networks:** Introduction, the data-oriented CDPD network, GPRS and higher data rates, short messaging services in GSM, mobile application protocols. **Wireless LANs (WLAN):** Introduction, historical overview of the LAN industry, evolution of the WLAN industry, new interest from military and service providers, a new explosion of market and technology, wireless home networking.	**14**
III	**IEEE 802.11 WLANs:** Introduction, what is IEEE 802.11? The PHY layer, MAC sub layer, MAC management sub layer. **HIPERLAN:** What is HIPERLAN? HIPERLAN-2. **Wireless Geo-location Systems:** Introduction, what is Wireless Geo-location? Wireless geo-location system architecture, technologies for wireless geo-location, geo-location standards for E-911 services, performance measures for geo-location systems.	**14**
IV	**Wireless Personal Area Network (WPAN):** Introduction, what is IEEE 802.15 WPAN? What is HomeRF? What is Bluetooth? Interference between Bluetooth and 802.11. **Satellite Networks :** Satellite navigation and global positioning system: Introduction, radio and satellite navigation, GPS position location principles, GPS time, GPS receivers and codes, the C/A code, Satellite signal acquisition, GPS signal levels, timing accuracy, GPS receiver operation, GPS C/A code accuracy, differential GPS.	**14**
V	**Optical Networks:** Network Concepts: terminology, categories, layers. Network topologies: performance of passive linear buses, performance of star architectures. SONET/SDH, transmission formats and speeds, optical interfaces, SONET/SDH rings, SONET/SDH networks. **High Speed Light-Wave Links:** links operating at 10, 40 and 160 Gbps. Optical add/drop multiplexing (OADM): OADM configurations, reconfigurable OADM. **Optical Switching:** Optical cross-connect, wavelength conversion, wavelength routing, optical packet switching, optical burst switching. WDM network examples: wideband long-haul WDM networks, narrowband metro WDM networks, passive optical network. Mitigation of transmission impairments: chromatic dispersion compensating fiber, bragg grating dispersion compensators, polarization mode dispersion compensation, optical amplifier gain transients.	**14**

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Bachelor of Technology** **Semester –VII**

Text Book/References Books/ Websites:

1. K. Pahlavan and P. Krishnamurthy; Principles of Wireless Networks; PHI Learning.
2. G. Keiser; Optical Fiber Communications; 4th Edition, TMH New Delhi.
3. T. Pratt, C. Bostian and J. Allnut; Satellite Communications; 2nd Edition, Wiley Indian Pvt. Ltd.

Suggested List of Laboratory Experiments :- (Expandable): Nil

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Bachelor of Technology** **Semester –VII**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External (70)	Internal (30)	Total (100)	External (Nil)	Internal (Nil)	Total
ECT-1702	CMOS VLSI Design	3	1	-			Min: 40 (D Grade)			Nil

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 20	Assignment/Quiz/Attendance – Max. Marks: 10
Practical Internal Max Marks: 15	Lab work & Sessional – Max Marks: 10	Assignment/ Quiz/Attendance – Max. Marks: 05

Pre-Requisite	To learn basic CMOS Circuits, CMOS process technology, concepts of designing VLSI Subsystems.
Course Outcome	1. Introduce CMOS devices and manufacturing technology.
	2. Ability to find Propagation delay, noise margins, and power dissipation in the digital VLSI circuits.
	3. Ability to design Memory in VLSI circuits.

Unit	Contents (Theory)	Marks Weightage
I	**Transistor Principle:** NMOS and PMOS transistors, Process parameters for MOS and CMOS, Electrical properties of CMOS circuits and device modeling, Scaling principles and fundamental limits, CMOS inverter scaling, propagation delays, Stick diagram, Layout diagrams	**14**
II	**Combinational Logic Circuits:** Examples of Combinational Logic Design, Elmore‟s constant, Pass transistor Logic, Transmission gates, static and dynamic CMOS design, Power dissipation – Low power design principles	**14**
III	**Sequential Logic Circuits:** Static and Dynamic Latches and Registers, Timing issues, pipelines, clock strategies, Memory architecture and memory control circuits, Low power memory circuits, Synchronous and Asynchronous design.	**14**
IV	**Designing Arithmetic Building Blocks:** Data path circuits, Architectures for ripple carry adders, carry look ahead adders, High speed adders, accumulators, Multipliers, dividers, Barrel shifters, speed and area tradeoff	**14**
V	**Implementation Strategies**: Full custom and Semi custom design, Standard cell design and cell libraries, FPGA building block architectures, FPGA interconnect routing procedures.	**14**

Text Book/References Books/ Websites:-

1. N.Weste, K.Eshraghian; Principles of CMOS VLSI Design; Second Edition, Addision Wesley.

2. R.Jacob Baker, Harry W.LI., David E.Boyee; CMOS Circuit Design, Layout and Simulation; Prentice Hall of India 2005

3. A.Pucknell, Kamran Eshraghian; BASIC VLSI Design; Third Edition, Prentice Hall of India, 2007.

Suggested List of Laboratory Experiments :- (Expandable):Nil

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Bachelor of Technology** **Semester –VII**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total (100)			Total (50)
ECT-1703	Antenna & Wave Propagation	3	1	1	External (70)	Internal (30)	Min: 40 (D Grade)	External (35)	Internal (15)	Min: 20 (D Grade)

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 15	Assignment/Quiz/Attendance – Max. Marks: 15
Practical Internal Max Marks: 15	Lab work & Sessional – Max Marks: 10	Assignment/ Quiz/Attendance – Max. Marks: 05

Pre-Requisite	Basic Knowledge Antenna and Wave Propagation.
Course Outcome	1. To give insight of the radiation phenomena.
	2. To give a thorough understanding of the radiation characteristics of different types of antennas.
	3. To create awareness about the different types of propagation of radio waves at different frequencies.

Unit	Contents (Theory)	Marks Weightage
I	**Introduction to Antenna:** Antenna terminology, radiation, retarded potential, radiation field from current element, radiation resistance of short dipole and half wave dipole antenna, network theorems applied to antenna, self and mutual impedance of antenna, effect of earth on vertical pattern and image antenna.	**14**
II	**Antenna Arrays:** Antenna array of point sources, two element array, end fire and broad side arrays, uniform linear arrays of n-elements, linear arrays with non-uniform amplitude distribution (binomial distribution and Chebyshev optimum distribution), arrays of two-driven half wave length elements (broad side and end fire case), principle of pattern multiplication.	**14**
III	**Types of Antennas & Designing:** Babinet's principles and complementary antenna, horn antenna, parabolic reflector antenna, slot antenna, log periodic antenna, loop antenna, helical antenna, biconical antenna, folded dipole antenna, Yagi-Uda antenna, VHF & UHF antennas, lens antenna, turnstile antenna. Long wire antenna: resonant and travelling wave antennas for different wave lengths, V-antenna, rhombic antenna, beverage antenna, microstrip antenna.	**14**
IV	**Antenna Array Synthesis: I**ntroduction, continuous sources, methods-Schelknoff polynomial method, Fourier transform method, Woodward- Lawson method, Taylor's method, Laplace transform method, Dolph- Chebychev method, triangular, cosine and cosine squared amplitude distribution, line source, phase distribution, continuous aperture sources.	**14**
V	**Propagation of Radio Wave:** Structure of troposphere, stratosphere and ionosphere, modes of propagation, ground wave propagation, duct propagation. Sky wave propagation: Mechanism of Radio Wave Bending by Ionosphere, critical angle and critical frequency, virtual height, skip distance and LUF, MUF. Single hop and multiple hop transmission, influence of earths magnetic field on radio wave propagation, Fading Space Wave Propagation: LOS, effective earth's radius, field strength of space or tropospheric propagation.	**14**

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Bachelor of Technology** **Semester –VII**

Text Book/References Books/ Websites:-

1. John D Kraus; Antennas for all Applications; 3rd Edition, Mc Graw Hill, 2005.
2. Robert S.Elliott;Antenna Theory and Design; Wiley Student Edition, 2006.
3. K. D. Prasad; Antennas and Wave Propagation; Satya Prakashan.

Suggested List of Laboratory Experiments :- (Expandable):

1. To Plot the radiation pattern of a simple dipole λ/2 antenna.
2. To Plot the radiation pattern of a rhombus antenna.
3. To Plot the radiation pattern of a parabolic reflector antenna.
4. To Plot the radiation pattern of a log periodic antenna.
5. To Plot the radiation pattern of a ground plane antenna.
6. To Plot the radiation pattern of a folded dipole antenna.
7. To Plot the radiation pattern of a yagi antenna.
8. To Plot the radiation pattern of a collinear antenna.
9. To Plot the radiation pattern of a broad side antenna.
10. To Plot the radiation pattern of a square roof antenna.

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Bachelor of Technology** **Semester –VII**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total (100)			Total (50)
ECT-1704	Optical Communication	3	1	1	External (70)	Internal (30)	Min: 40 (D Grade)	External (35)	Internal (15)	Min: 20 (D Grade)

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 20	Assignment/Quiz/Attendance – Max. Marks: 10
Practical Internal Max Marks: 15	Lab work & Sessional – Max Marks: 10	Assignment/ Quiz/Attendance – Max. Marks: 05

Pre-Requisite	To expose the students to the basics of signal propagation through optical fibers, fiber impairments, components and devices and system design.
Course Outcome	1. Recognize and classify the structures of Optical fiber and types, losses, dispersions.
	2. Classify the Optical sources and detectors and to discuss their principle.
	3. Familiar with Design considerations of fiber optic systems.

Unit	Contents (Theory)	Marks Weightage
I	**Optical Fibers**: Generation and motivation of the Optical technologies, optical spectral bands, key elements of optical fiber systems, basic optical laws and definitions, optical fiber modes and configurations, mode theory for circular waveguides, single mode fibers, graded-index fiber structure, fiber materials, photonic crystal fibers, fiber fabrication, fiber optic cables.	**14**
II	**Optical Sources: S**tructures, materials, quantum efficiency of Light emitting diodes, LED power, modulation of an LED. Laser diodes: modes, threshold conditions, laser diode rate equations, external quantum efficiency, resonant frequencies, structure and radiation patterns, single mode lasers, modulation of laser diodes. 3dB frequency concept. **Power Launching and Coupling**: Source to fiber power launching, fiber to fiber joints, LED coupling to single mode fibers, fiber splicing, and optical fiber connectors.	**14**
III	**Photo Detectors**: PIN, Photo detector, avalanche photodiodes, photo detector noise, detector response time, avalanche multiplication noise, **Signal Degradation in Optical Fibers:** Attenuation: units, absorption, scattering losses, bending losses, core and cladding losses. Signal distortion in fibers: overview of distortion origins, modal delay, factors contributing to delay, group delay, material dispersion, waveguide dispersion, polarization-mode dispersion. Characteristics of single mode fibers: refractive index profiles, cutoff wavelength, dispersion calculations, mode field diameter, bending loss calculation. Specialty fibers.	**14**
IV	**Optical Receivers**: Fundamental receiver operation, digital receiver performance, eye diagrams, coherent detection: homodyne and heterodyne, burst mode receiver, analog receivers. **Digital links**: Point to point links, link power budget, rise time budget, power penalties. **Analog links**: Overview of analog links, carrier to noise ratio, multichannel transmission techniques.	**14**
V	**Wavelength Division Multiplexing (WDM) Concepts**: Operational principles of WDM, passive optical star coupler, isolators, circulators, and active optical components: MEMS technology, variable optical attenuators, tunable optical filters, dynamic gain equalizers, polarization controller, chromatic dispersion compensators. **Optical Amplifiers**: Basic applications and types of optical amplifiers, Erbium Doped Fiber Amplifiers (EDFA): amplification mechanism, architecture, power conversion efficiency and gain. Amplifier noise, optical SNR, system applications. **Performance Measurement and Monitoring**: Measurement standards, basic test equipment, optical power measurements, optical fiber characterization, eye diagram tests, optical time-domain reflectometer, optical performance monitoring.	**14**

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Bachelor of Technology** **Semester –VII**

Text Book/References Books/ Websites:

1. Keiser; Optical Fiber Communications; 4th Edition, TMH New Delhi.
2. J. M. Senior; Optical Fiber Communication-Principles and Practices; 2nd Edition, Pearson Edu.
3. G. P. Agarwal; Fiber Optic Communication Systems; 3rd Edition, Wiley India Pvt. Ltd.

Suggested List of Laboratory Experiments :- (Expandable):

1. To study a 650 nm fiber optical analog links. Also study the relationship between input and output signal
2. To study a 650 nm fiber optical digital links. Also study the relationship between input and output signal
3. To the study of intensity modulation technique using analog input signal.
4. To the study of intensity modulation technique using digital input signal.
5. To study frequency modulation.
6. To study pulse width modulation.
7. To measure propagation attenuation loss in optical fiber.
8. To study bending loss.
9. To determine the numerical aperture of optical fiber.
10. To study the effect of optical receiver characteristics on a system performance.

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Bachelor of Technology** **Semester –VII**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total			Total (50)
ECT-1705	CMOS VLSI Lab	-	-	1	External (Nil)	Internal (Nil)	Nil	External (Nil)	Internal (50)	Min: 20 (D Grade)

Duration of Theory (Externals): Nil

Theory Internal- Max Marks: Nil	Best of Two Mid Semester Test – Max Marks: Nil	Assignment/Quiz/Attendance – Max. Marks: Nil
Practical Internal Max Marks: 50	Lab work & Sessional – Max Marks: Nil	Assignment/ Quiz/Attendance – Max. Marks: 50

Pre-Requisite	Nil
Course Outcome	1. An ability to design CMOS logic circuits.
	2. Simulate circuits within a CAD tool and compare to design specifications.
	3. To analyze the results of logic and timing simulations and to use these simulation results to debug digital systems.

Unit	Contents (Theory)	Marks Weightage
-	This lab teaches you the basics of how to use the computer-aided design (CAD) tool to design, simulate, and verify schematics and layout of logic gates. It also serves as a stand-along tutorial to quickly get up to speed with the Cadence tools. The first step is to draw a schematic indicating the connection of transistors to build cells such as NAND gates, NOR gates, and NOT gates. These cells are simulated by applying digital inputs and checking that the outputs match expectation. A symbol for the cell is also created. The next step is to draw a layout indicating how the transistors and wires are physically arranged on the chip. The layout is checked to ensure it satisfies the design rules and that the transistors match the schematic.	**50**

Text Book/References Books/ Websites: Nil

Suggested List of Laboratory Experiments :- (Expandable):

1. To Design and implement logic inverter using MOSFETs.
2. To Design and implement CMOS NAND and NOR logic gates.
3. To Design basic differential amplifier using current mirror logic.
4. To Design and implement 2 bit parallel adder.
5. To Design Schmitt trigger circuit with UTP=0.8V and LTP=0.2V. plot transfer curve analysis.
6. To Design and simulation of Common source amplifier and common gate amplifier.
7. To Estimate of frequency response of common source amplifier and common gate amplifier.
8. To design and simulation of differential amplifier.
9. To design and simulation of feedback amplifier.
10. To design and simulation of ring oscillator and L-C oscillator.

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Bachelor of Technology** **Semester –VII**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total			Total (150)
ECT-1706	Minor Project	-	-	3	External (Nil)	Internal (Nil)	Nil	External (105)	Internal (45)	Min: 60 (D Grade)

Duration of Theory (Externals): Nil

Theory Internal- Max Marks: Nil	Best of Two Mid Semester Test – Max Marks: Nil	Assignment/Quiz/Attendance – Max. Marks: Nil
Practical Internal Max Marks: 45	Lab work & Sessional – Max Marks: 40	Assignment/Quiz/Attendance – Max. Marks: 05

Pre-Requisite	Nil
Course Outcome	1. Design of structures.
	2. To develop acumen for higher education and research.
	3. To master the art of working in group, and develop understanding of technical dissertation presentation and writing

Unit	Contents (Theory)	Marks Weightage
-	The Major Project Work provides students an opportunity to do something on their own and under the supervision of a guide. Each student shall work on an approved project, which should be selected from some real life problem as far as possible, which may involve fabrication, design or investigation of a technical problem. The project work involves sufficient work so that students get acquainted with different aspects of manufacturing, design or analysis. The student also have to keep in mind that in final semester they would be required to implement whatever has been planned in the major project in this semester. It is possible that a work, which involves greater efforts and time, may be taken up at this stage and finally completed in final semester, but partial completion report should be submitted in this semester and also evaluated internally. At the end of semester, all students are required to submit a synopsis.	**150**

Text Book/References Books/ Websites: Nil

Suggested List of Laboratory Experiments :- (Expandable):

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Bachelor of Technology** **Semester –VII**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total			Total (100)
ECT-1707	Industrial Training-II	-	-	2	External (Nil	Internal (Nil)	(Nil)	External (70)	Internal (30)	Min: 40 (D Grade)

Duration of Theory (Externals): Nil

Theory Internal- Max Marks: -Nil	Best of Two Mid Semester Test – Max Marks: -Nil	Assignment/Quiz/Attendance Max. Marks: -Nil
Practical Internal Max Marks: 30	Lab work & Sessional – Max Marks: 25	Assignment / Quiz/ Attendance Max. Marks: 5

Pre-Requisite	Fundamental Engineering concepts of concern discipline.
Course Outcome	1. Enrich their practical learning and they will be better equipped to integrate the practical experiences with the classroom learning process. 2. Interact with real World of Work and should try to learn as much as possible from real life experiences by involving with industry staff.

Unit	Contents (Theory)	Marks Weightage
-	The objective of undertaking industrial training is to provide work experience so that student's engineering knowledge is enhanced and employment prospects are improved. Industrial training of the students is essential to bridge the wide gap between the classroom and industrial environment. As a part of B. Tech. curriculum, ECT-707, Industrial Training -II is a Practical course, which the students should undergo in reputed Private / Public Sector / Government organization / companies as industrial training of minimum two weeks to be undergone by the student in the semester break after VI semester theory examinations. **Training period**: Minimum of Four weeks or 30 (Thirty) Days. **Evaluation:** Seventh semester **Companies / Areas covered**: Any field related to concern branch / discipline of Engineering. **Grading**: As per Scheme. **Note:** Presentation will take place the following week after completion your training. The presentation is evaluated by your class in charge. Report must be submitted during power point presentation. A Viva voce comprising comprehensive questions based on your presentation and training undergone. **Etiquettes:** Dress properly, Behave well, Portray good image as a university student, Be punctual, Observe work ethics, Concern for safety, Be professional.	**100**

Text Book/References Books/ Websites: Nil

Suggested List of Laboratory Experiments :- (Expandable): Nil