EKLAVYA UNIVERSITY
ज्ञान प्राप्तये लक्ष्य संधानम्
Estd. by Madhya Pradesh Niji Vishvavidyalaya (Sthapna Evam Sanchalana) Adhyadesh, 2020

SCHOOL OF ENGINEERING

SYLLABUS

ELECTRONICS & COMMUNICATION ENGIEERING

Class		B.Tech. (EC)	L	T	P	C
Semester/Year		V SEM/III YEAR	2	1	-	3
Subject		Professional Practice Law & Ethics				
Subject Code		BLE20S501				
Paper	English					
	Hindi					
Max. Marks		100				

Course Objective:

1. To make the students understand the types of roles they are expected to play in the society as practitioners of the civil engineering profession.
2. To develop some ideas of the legal and practical aspects of their profession.

Course Outcomes:

By the end of the course students will be able to:

CO1. Explain what constitutes professional practice, introduction of various stakeholders and their respective roles; understanding the fundamental ethics governing the profession.

CO2. Evaluate insight into contracts and contracts management in civil engineering, dispute resolution mechanisms; laws governing engagement of labour.

CO3. Analyze Intellectual Property Rights, Patents.

CO4. Understand the types of roles they are expected to play in the society as practitioners of the civil engineering profession.

CO5. Develop good ideas of the legal and practical aspects of their profession.

Unit	Syllabus	Periods
UNIT-I	Professional Practice – Respective roles of various stakeholders: Government(constituting regulatory bodies and standardization organizations, prescribing norms to ensure safety of the citizens); Standardization Bodies (ex. BIS, IRC)(formulating standards of practice); professional bodies (ex. Institution of Engineers(India), Indian Roads Congress, IIA/ COA, ECI, Local Bodies/ Planning Authorities) (certifying professionals and offering platforms for interaction); Clients/ owners (role	**10**

	governed by contracts); Developers (role governed by regulations such as RERA); Consultants (role governed by bodies such as CEAI); contractors (role governed by contracts and regulatory Acts and Standards);Manufacturers/ Vendors/ Service agencies (role governed by contracts and regulatory Act sand Standards). Professional Ethics – Definition of Ethics, Professional Ethics, Business Ethics, Corporate Ethics, Engineering Ethics, Personal Ethics; Code of Ethics as defined in the website of Institution of Engineers (India); Profession, Professionalism, Professional Responsibility, Professional Ethics; Conflict of Interest, Gift Vs Bribery, Environmental breaches, Negligence, Deficiencies in state-of-the-art; Vigil Mechanism, Whistle blowing, protected disclosures.	
UNIT-II	General Principles of Contracts Management- Indian Contract Act, 1972 and amendments covering General principles of contracting; Contract Formation & Law; Privacy of contract; Various types of contract and their features; Valid & Voidable Contracts; Prime and sub-contracts; Joint Ventures & Consortium; Complex contract terminology; Tenders, Request For Proposals, Bids & Proposals; Bid Evaluation; Contract Conditions & Specifications; Critical /"Red Flag" conditions; Contract award & Notice To Proceed; Variations & Changes in Contracts; Differing site conditions; Cost escalation; Delays, Suspensions & Terminations; Time extensions & Force Majeure; Delay Analysis; Liquidated damages & Penalties; Insurance & Taxation; Performance and Excusable Non-performance; Contract documentation; Contract Notices; Wrong practices in contracting (Bid shopping, Bid fixing, Cartels); Reverse auction; Case Studies; Build-Own-Operate & variations; Public-Private Partnerships; International Commercial Terms.	**11**
UNIT-III	Arbitration, Conciliation and ADR (Alternative Dispute Resolution) system- Arbitration – meaning, scope and types – distinction between laws of 1940 and 1996; UNCITRAL model law – Arbitration and expert determination; Extent of judicial intervention; International commercial arbitration; Arbitration agreements – essential and kinds, validity, reference and interim measures by court; Arbitration tribunal – appointment, challenge, jurisdiction of arbitral tribunal, powers, grounds of challenge, procedure and court assistance; Award including Form and content, Grounds for setting aside an award, Enforcement, Appeal and Revision; Enforcement of foreign awards – New York and Geneva Convention Awards; Distinction between conciliation, negotiation, mediation and arbitration, confidentiality, resort to judicial proceedings, costs; Dispute Resolution Boards; LokAdalats.	
UNIT-IV	Engagement of Labour and Labour & other construction-related Laws: Role of Labour in Civil Engineering; Methods of engaging labour- on rolls, labour sub-contract, piece. rate work; Industrial Disputes Act, 1947; Collective bargaining; Industrial Employment (Standing Orders) Act, 1946;	

	Workmen's Compensation Act, 1923; Building & Other Construction Workers (regulation of employment and conditions of service) Act (1996) and Rules (1998); RERA Act 2017, NBC 2017.	**12**
UNIT-V	Law relating to Intellectual property-Introduction – meaning of intellectual property, main forms of IP, Copyright, Trademarks, Patents and Designs, Secrets; Law relating to Copyright in India including Historical evolution of Copy Rights Act, 1957, Meaning of copyright – computer programs, Ownership of copyrights and assignment, Criteria of infringement, Piracy in Internet – Remedies and procedures in India; Law relating to Patents under Patents Act, 1970 including Concept and historical perspective of patents law in India, Patentable inventions with special reference to biotechnology products, Patent protection for computer programs, Process of obtaining patent – application, examination, opposition and sealing of patents, Patent cooperation treaty and grounds for opposition, Rights and obligations of patentee, Duration of patents – law and policy considerations, Infringement and related remedies.	**10**

TEXT BOOKS:

1. B.S. Patil, Legal Aspects of Building and Engineering Contracts, 1974.The National Building Code, BIS, 2017, RERA Act, 2017.
2. Meena Rao (2006), Fundamental concepts in Law of Contract, 3rd Edn. Professional offset.
3. Neelima Chandiramani (2000), The Law of Contract: An Outline, 2nd Edn. Avinash Publications Mumbai.
4. Avtar singh (2002), Law of Contract, Eastern Book Co.

REFERENCE BOOKS:

1. T. Ramappa (2010), Intellectual Property Rights Law in India, Asia Law House.
2. Bare text (2005), Right to Information Act.
3. O.P. Malhotra, Law of Industrial Disputes, N.M. Tripathi Publishers.
4. K.M. Desai(1946), The Industrial Employment (Standing Orders) Act.
5. Rustam ji R.F., Introduction to the Law of Industrial Disputes, Asia Publishing House.

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SYLLABUS
ELECTRONICS & COMMUNICATION ENGIEERING

Class		**B. Tech. (EC)**	**L**	**T**	**P**	**C**
Semester/Year		**V SEM/III YEAR**	**2**	**1**	**-**	**3**
Subject		**Electromagnetic Theory**				
Subject Code		**BEC20S502**				
Paper	**English**					
	Hindi					
Max. Marks		**100**				

Course objectives:

1. To develop an understanding of fundamental concepts of electromagnetic fields with an emphasis on wave propagation and to create ability to relate basic electromagnetic concepts to the performance of devices, circuits, and systems.

Course Outcomes:

After successful completion of the course, students will be able to:

CO1. Solve the problems associated with static electromagnetic fields in different engineering situation.
CO2. Describe static and dynamic electric and magnetic field.

CO3. Apply boundary conditions for electric and magnetic fields at the interface of two different media.
CO4. Solve diverse engineering problems with the help of Maxwell equations.
CO5. Analyze the behavior of plane waves in different media.

Unit	Syllabus	Periods
UNIT - I	**Electrostatics:** Coulomb's Law, Electric field intensity, Electric flux and flux density, Gauss law, Boundary relations, Concept of divergence, Curl, Scalar and vector potential, Divergence theorem, Stokes theorem, Electric field in dielectric and conductor, Continuity equation, Poisson's and Laplace's equations.	**10**
UNIT - II	**Magnetostatics:** Lorentz force, Magnetic field intensity (H) – Biot–Savart's Law– Ampere's Circuit Law – H due to straight conductors, Circular loop, Infinite sheet of current, Magnetic fluxdensity –in free space and conductor, Magnetic materials –Magnetization.	**9**

UNIT - III	**Electrodynamic Fields:** Magnetic field in multiple media – Boundary conditions, Scalar and vector potential, Poisson's equation, Magnetic force, force between current carrying wires, Magnetic circuits – Faraday's law, Displacement current – Maxwell's equations (differential and integral form)–for steady, time varying and time harmonic fields.	**9**
UNIT - IV	**Electromagnetic Wave Equation:** General wave equation, Uniform plane wave in free space, Perfect dielectric, Lossy dielectric and conducting medium, Skin depth, Poynting vector and Poynting theorem.	**11**
UNIT - V	**Polarization and Reflection of Wave:** Wave Polarization- linear-elliptic-circular**,** Reflection of uniform plane waves, Normal incidence and Oblique incidence, Brewster angle, Total internal reflection.	**9**

Text Books:

1. Elements of Engineering Electromagnetic Third Edition- N.N. Rao- Prentice Hall, India.
2. Elements of Electromagnetic, Second Edition- Matthew N.O. Sadiku- Saunders coll Publishing.

Reference Books:

1. Fields & Waves in Communication Electronics - S.Ramo, J.R. Whinnery& T. Van Duzer- John Wiley & Sons.
2. Electromagnetic - J.D. Kraus-McGraw Hill.
3. Electromagnetic Waves & Radiating Systems - E.C. Jordan & K.G. Balmain- Prentice Hall.

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Class		**B. Tech. (EC)**	**L**	**T**	**P**	**C**
Semester/Year		**V SEM/III YEAR**	**2**	**1**	**-**	**3**
Subject		**Microprocessor and Interfacing**				
Subject Code		**BEC20S503**				
Paper	**English**					
	Hindi					
Max. Marks		**100**				

Course objectives:

1. To introduce the basic concepts of microprocessor and to develop assembly language programming skills along with the introduction of microprocessor applications.

Course Outcomes:

After successful completion of the course, students will be able to:

CO1. Explain the architecture and organization of 8085 microprocessors.

CO2. Develop assembly language programming skill for 8085.

CO3. Design the Interfacing circuitry of memory and I/O devices using interfacing chips/PICs with 8085.

CO4. Discuss the architecture and organization of 8086 microprocessors.

CO5. Describe the instruction set and architecture of 8051 microcontroller.

Unit	Syllabus	Periods
UNIT - I	**Introduction to Microprocessor:** History and evolution of microprocessor and their classification, Introduction to microprocessors and microcomputers, Study of 8 bit Microprocessor, 8085 pin configuration, Internal Architecture and operations, Interrupts, Interrupts and interrupt service routine.	10
UNIT - II	**8085 Assembly Language Programming:** 8085 instruction set, 8085 assembly language programming, Addressing modes, Counters and Time delays, Instruction cycle, Machine cycle, T-states, timing diagram for 8085 instructions.	9

UNIT - III	**Peripheral Devices and their Interfacing:** Introduction to memory interfacing and various interfacings chips like: Programmable input/output ports 8155/8255, Programmable interval timer 8253/8254, keyboard/display controller 8279, Programmable communication interface 8251 USART, Programmable interrupt controller 8259, DMA controller 8257.	9
UNIT - IV	**Architecture and Programming of 16-Bit Microprocessor:** 8086 Block diagram and Architecture, Pin configuration of 8086, Execution Unit (EU) and Bus Interface Unit(BIU), Minimum mode & Maximum mode operation, Memory segmentation, Instruction set and addressing modes of 8086, Introduction to 8086 assembly language programming.	11
UNIT - V	**Microcontrollers & Embedded Systems:** Introduction to microcontrollers and embedded systems, 8051 architecture, Pin description, I/O configuration, Interrupts, Addressing modes, an overview of 8051 instruction set, use of microcontrollers in real time embedded system design.	9

Text Book:

1. Ramesh. S. Gaonkar, Microprocessor architecture Programming and Application with 8085 - Penram International Publishing, 4th Edition.
2. B. Ram, "Fundamentals of Microprocessors and Microcomputer" Dhanpat Rai, 5th Edition.

Reference Books:

1. Douglas V Hall., "Microprocessor and Interfacing" Tata Mcgraw Hill.
2. A.K. Ray and K. M. Bhurchandi , "Advance Microprocessor and Peripheral", Tata Mcgraw Hill.

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Semester/Year		**V SEM/III YEAR**	**2**	**1**	**-**	**3**
Subject		**Linear Control Theory**				
Subject Code		**BEC20S504**				
Paper	**English**					
	Hindi					
Max. Marks		**100**				

Course Objectives:

1. Learning of control system theory and its implementation in practical systems using electronic devices.

Course Outcomes:

After successful completion of the course, students will be able to:

CO1. Determine the transfer function of linear control system.
CO2. Evaluate the time domain response of control system for different standard inputs.
CO3. Compute the steady state error for type 0,1,2systems.
CO4. Analyze the stability of control system using time and frequency domain methods.
CO5. Design proportional, integral, and derivative controller, PD, PI, PID controllers.

Unit	Syllabus	Periods
UNIT - I	**Introduction to Control Systems:** Basic control system terminology, Open loop and Closed loop system, Feedback control, Different modeling of physical systems, Linear approximation of physical systems. Transfer function of linear systems, Block diagram algebra and Signal flow graphs, Effects of negative feedback.	10
UNIT - II	**Time Domain Analysis:** Test input signals, First order systems, Second order systems, Effects of addition of poles and zeros to open and closed loop transfer functions, Steady state error, Constant and error coefficients for type 0, 1, and 2 systems	9
UNIT - III	**Stability Analysis:** Concept of stability of linear systems, Relation between the closed loop poles and stability, Relative stability, Absolute stability, Routh Hurwitz criteria and its applications, Root locus plot.	9

UNIT - IV	**Frequency Domain Analysis:** Performance specifications in frequency domain, Co-relation between frequency domain and time domain, Polar plots and Bode plots of transfer function, Nyquist stability criterion, Assessment of relative stability.	8
UNIT - V	**Introduction to Controllers:** Introduction to Proportional, Integral, and Derivative controller, PD controller, PI controller, PID controller, Design of various controllers and their limitations.	9

Text Books:

1. Control System Engineering- I. J. Nagrath& M. Gopal, New Age International.
2. Modern Control Engineering –K. Ogata, Prentice Hall.
3. Control System- A. Anand Kumar,PHI.
4. Control System Engineering – B.S. Manke, Khanna publications.

Reference Books:

1. Automatic Control System— B. C. Kuo,Wiley.
2. Control System Engineering- Norman Nise, John Wiley & Sons.

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Class		**B. Tech. (EC)**	**L**	**T**	**P**	**C**
Semester/Year		**V SEM/III YEAR**	**2**	**-**	**-**	**2**
Subject		**Digital Communication**				
Subject Code		**BEC20S505**				
Paper	**English**					
	Hindi					
Max. Marks		**100**				

Course Objectives:

1. The main objective of this course is to understand the basic concepts of digital modulations, signal-space analysis and digital transmission techniques.

Course Outcomes:

After successful completion of the course, students will be able to:

CO1: Explain the process of sampling and pulse modulation.
CO2: Analyze digital modulation systems and line coding schemes.
CO3: Describe the different band pass data transmission techniques with spectral analysis.
CO4: Determine the base band pulse transmission techniques and error probability.
CO5: Illustrate the concepts of information theory and source coding.

Unit	Syllabus	Periods
UNIT - I	Sampling theorem for Low pass and Band pass signals, Ideal sampling, Natural sampling and Flat top sampling, Crosstalk, Aliasing, Time division multiplexing, PAM, PWM and PPM their generation and detection.	10
UNIT - II	Pulse Code Modulation, Quantization, Quantization noise, Companding, Inter symbol interference, Eye pattern, Delta modulation, Adaptive delta modulation and DPCM. Encoding techniques: On-Off signaling, Polar signaling, RZ signaling, Bipolar signaling, AMI, Manchester code, Differential encoding their advantage and disadvantages.	9
UNIT - III	ASK, Binary phase shift keying (BPSK), QPSK, DPSK, Coherent and Non coherent BFSK, Minimum shift keying, QAM, Concept of M-ray PSK and M-ray FSK, Spectral properties of QPSK and MSK.	9

UNIT - IV	Matched filter and Correlator detector, Gram Schmidt orthogonalization procedure and Concept of signal space for the computation of probability of error, Calculation of error probability for BPSK, QPSK, QAM and coherent BFSK, Comparison of different modulation techniques.	8
UNIT - V	Concept of information theory, Entropy and Information rate, Channel capacity, Shannon's theorem, Shannon Hartley theorem , BW and signal to noise ratio trade off, Sources encoding, Extension of zero memory source. Error correcting codes**:** Properties of linear block codes, Encoding and Decoding of linear block codes and cyclic codes, Burst error correcting codes, Concept of convolution codes.	9

Text Books:

1. Singh, R.P. & Sapre, S.D, "Communication Systems: Analog & Digital", Tata McGraw-Hill, 5th reprint, 2000.
2. John G. Proakis, "Digital Communication", McGraw Hill Inc, 5th Edition, 2008.

Reference Books:

1. Simon Haykin, "Communication Systems", John Wiley & Sons, 4th Edition, 2000.
2. Taub & Schilling, "Principle of Communication Systems", 2nd Edition, 2003.

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Class		**B. Tech. (EC)**	**L**	**T**	**P**	**C**
Semester/Year		**V SEM/III YEAR**	**-**	**-**	**2**	**1**
Subject		**Minor project-I**				
Subject Code		**BEC20S506**				
Paper	**English**					
	Hindi					
Max. Marks		**50**				

Course objectives:

1. This course gives the basic introduction of electronics hardware system and provides hands-on training with familiarization, identification, testing, assembling, dismantling, fabrication and repairing such system by making use of the various tools and instruments available in the electronics workshop.

Course Outcomes:

After successful completion of the workshop, students will be able to:

CO1. **Identify** electronics components and their testing.

CO2. **Operate** measuring instruments (such as multi-meter) and electronics equipment's likes CRO, dual-power tracking power supply &function generator.

CO3. **Design** the electronics circuits on bread-board.

CO4. **Perform** soldering and de-soldering of the circuit components properly.

CO5. **Troubleshoot** a not working electronic circuit and to rectify it.

List of Exercise/ Experiments

1. Familiarization/Identification of electronics component with specification (Functionally, type, size, colour coding, package, symbol, cost etc. [Active, Passive, Electrical, Electronic, Electronic- Mechanical, Wires, Cables, Connectors, Fuses, Switches, Relays, Crystals, Displays, Fasteners, Heat sink etc.]
2. Drawing of electronic circuit diagrams using symbols, Interpret data sheets of discrete components and IC's, Estimation and costing.
3. Familiarization/application of testing instruments and commonly used tools. (Multimeter, function generator, power supply, CRO etc.) (soldering iron, De-soldering pump, Pliers, Cutters, Wire strippers, Screw drivers, Tweezers, Crimping tool, Hot air soldering and de-soldering station etc).

4. Testing of electronic component (Resistor, Capacitor, Diode, Transistor, UJT and JFET using multimeter.)
5. Inter-connecting methods and soldering practices.[Bread board, Wrapping, Crimping, Soldering – types-selections of materials and safety precautions, Soldering practice in connectors and general purpose PCB, Crimping.
6. Printed circuit board (PCB) [Types, Single sided, Double sided, Processing methods, Design and fabrication of a single sided PCB for a simple circuit with manual etching (Ferric chloride) and drilling.]

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Class		**B. Tech. (EC)**	**L**	**T**	**P**	**C**
Semester/Year		**V SEM/III YEAR**	**-**	**-**	**6**	**3**
Subject Name		**Summer Internship Project-II**				
Subject Code		**BEC20S507**				
Paper	**English**					
	Hindi					
Max. Marks		**25**				

COURSE OBJECTIVES:

1. To encourage students to read, study & understand different topics of Computer Science engineering.
2. To make student acquire good oral & written communication skills.
3. To promote the habit of lifelong learning.

COURSE OUTCOMES:

Upon completion of the course, the students will be able to:

CO1: Observe various activities in field.
CO2: Examine the utility of general and specific Software tool for Development.
CO3: Differentiate the construction projects individually and in team.
CO4: Develop the writing and communication skills for various engineering problems.
CO5: Adapt lifelong learning for benefit of society.

Syllabus:

Each candidate shall have to undergo 15 days in house summer internship related to soft skills at the institute after the completion of their 4th Semester exams (in summer vacations) and after successful completion of internship they have to submit detailed report.

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Class		**B. Tech. (EC)**	**L**	**T**	**P**	**C**
Semester/Year		**V SEM/III YEAR**	**-**	**-**	**2**	**1**
Subject Name		**Self-learning/Presentation**				
Subject Code		**BEC20S508**				
Paper	**English**					
	Hindi					
Max. Marks		**25**				

Course Objectives:

1. To encourage students to read, study & understand different topics of Computer science engineering published in articles, literatures.
2. To help in presenting different topics of Computer Science engineering and related subjects to supplement theoretical knowledge gained in class.
3. To make student acquire good oral & written communication skills.
4. To promote the habit of lifelong learning.
5. To prepare students develop adequate soft skills to be able to present their topic effectively to listeners.

Course Outcomes:

Upon completion of the course, the students will be able to:

CO1: Analyze contemporary issues in Computer Science engineering & its allied areas through literature survey.

CO2: Distinguish state of art & relevance of the topic in national & international arena.

CO3: Demonstrate good oral & written communication skills.

CO4: Develop poster and power point presentations for effective communication.

CO5: Display lifelong learning.

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Class		B. Tech. (EC)	L	T	P	C
Semester/Year		V SEM/III YEAR	-	-	2	1
Subject Name		Microprocessor & interfacing Lab				
Subject Code		BEC20S509				
Paper	English					
	Hindi					
Max. Marks		50				

List of Experiments

1. Write an assembly language program to perform different arithmetic operations of 8 bit numbers using 8085microprocessor.
2. Write an assembly language program to find whether the number is even or odd using 8085 microprocessor.
3. Interface Stepper Motor to the 8085 microprocessor system and write an 8085 assembly language program to control the Stepper Motor.
4. Write an assembly language program to generate standard waveforms using DAC and display waveforms on CRO with 8085microprocessor.
5. Write an assembly language program to obtain 2's complement of a given number using 8086 microprocessor.
6. Write an assembly language program to perform arithmetic operations of two BCD numbers using 8086microprocessor.
7. Write an assembly language program to interfacing 8253 Timer with 8086 microprocessor for different modes.
8. Write an assembly language program to interface ADC card with 8051 microcontroller and display the digital value on the LCD.

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Class		**B. Tech. (EC)**	**L**	**T**	**P**	**C**
Semester/Year		**V SEM/III YEAR**	**-**	**-**	**2**	**1**
Subject Name		**Linear control theory Lab**				
Subject Code		**BEC20S510**				
Paper	**English**					
	Hindi					
Max. Marks		**50**				

List of Experiments

1. Control the Angular Position of a Load using the Synchronous (Motor) Transmitter &Receiver.
2. Control the Luminosity of a Bulb using the Magnetic Amplifier Kit.
3. Plot the Graph between Speed (rpm) and Voltage of DC Motor.
4. Obtain the Characteristics of Stepper Motor.
5. Demonstrate the Input-Output Relationship of AC – Servo Motor.
6. Obtain the Time Response of a Simulated Linear System and to Correlate with Theoretical Result.
7. Evaluate the Performance of P, PI, PD and PID Controllers.
8. Simulation of 2nd order Linear Time-Invariant Control Systems using MATLAB.

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Class		**B. Tech. (EC)**	**L**	**T**	**P**	**C**
Semester/Year		**V SEM/III YEAR**	**-**	**-**	**2**	**1**
Subject Name		**Digital communication Lab**				
Subject Code		**BEC20S511**				
Paper	**English**					
	Hindi					
Max. Marks		**50**				

List of Experiments

1. To perform sampling and reconstruction.
2. To identify the various encoding schemes for a given data stream.
3. To analyze pulse amplitude modulation.
4. To analyze pulse width modulation.
5. To generate amplitude shift key signal.
6. To generate amplitude shift key signal using MATLAB.
7. To generate phase shift key signal using MATLAB software.
8. To generate frequency shift key signal using MATLAB.
9. To generate quadrature phase shifted key signal using MATLAB.

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Class		**B. Tech. (EC)**	**L**	**T**	**P**	**C**
Semester/Year		**V SEM/III YEAR**	**3**	**-**	**-**	**-**
Subject		**Indian Constitution & Traditional Knowledge**				
Subject Code		**BIC20S509**				
Paper	**English**					
	Hindi					
Max. Marks		**100**				

Course Objectives:

1. The course aims to provide students with the continuous, comprehensive and cumulative understanding of Indian Knowledge Tradition (Philosophy, Language, Art) and its modern interpretation and analysis.
2. It intends to connect the students' modern advanced knowledge system with the roots of Indian Knowledge Tradition for their development and better understanding of the essentials of thought process, intellection and inference.

Course Outcomes:

After successful completion of the course, the students will be able to

CO1. **Know** the rich Indian traditions and the Indian constitution.
CO2. **Appraise** the utility and significance of tradition and its applicability in present times.
CO3. **Employ** the knowledge of the constitutional norms as laid in the constitution and abide bythe practices stated therein.
CO4. **Create** a better society and living standards for themselves as well as for others.
CO5. **Recognize** the basic concepts of ethics and morality pertaining to Indian culture and tradition.

Unit	Syllabus	Periods
UNIT - I	Introduction to Basic Structure of Indian Knowledge System, Homogeneity of modern science and Indian Knowledge Tradition, Yoga: Promoting positive health and personality, Case Studies.	10

UNIT - II	Indian Philosophy or Darshanas: Jainism, Buddhism, Yoga, Śaiva and Vedanta, Indian Linguistic Tradition: Panini's Ashtadhyayi, Indian Art: Mauryan art, Buddhist art, Gupta art, Muslim Art & Culture Contemporary art, Case Studies.	9
UNIT - III	Introduction to Political Science: Nature and scope of political science, Definition, elements and theories of origin of State (Social Contract and Evolutionary), Meaning and features of Civil Society, Indian Political The Electronics & Communication Engieering: Raja Ram Mohan Roy, Swami Vivekanand, Gandhi, Ambedkar.	9
UNIT - IV	Concept of Government and Its Organs: Government: Definition and its characteristics, Types and meaning of Legislature: Composition, Function and Role of the Parliament (Lok Sabha and RajyaSabha), The Powers, Position and Role of the President, Prime Minister and the Cabinet, The Powers, Position and Role of the Governor and the Chief Minister; Composition and the role of Supreme Court, Judicial Review and Judicial Activism.	8
UNIT - V	Salient features of Indian Constitution Preamble, Conventions, Sovereignty of the Constitution and the Rule of Law, Parliamentary Democracy, Federalism, Secularism and Socialism, Fundamental Rights, Directive Principles of State Policies and Fundamental Duties, Election Commission and Electoral Reforms.	9

Text Books:

1. Krishna Chaitanya. Arts of India, Abhinav Publications, 1987.
2. SC Chaterjee and DM Datta, An Introduction to Indian Philosophy, university of Calcutta, 1984.
3. A L Basham, The Wonder That was India.

Reference Books:

1. O.P. Gauba, Political Theory, Macmillan, (latest edition).
2. D.D. Basu, Introduction to the Constitution of India, (Latest Edition).
3. N.G. Jayal & Pratap Bhanu Mehta, The Oxford Companion of Politics in India, 2000.
4. W.H. Morris-Jones, The Government and Politics of India.

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SCHOOL OF ENGINEERING

SYLLABUS
ELECTRONICS & COMMUNICATION ENGIEERING

Class		**B. Tech. (EC)**	**L**	**T**	**P**	**C**
Semester/Year		**VI SEM/III YEAR**	**2**	**1**	**-**	**3**
Subject		**Digital Signal Processing**				
Subject Code		**BEC20S601**				
Paper	**English**					
	Hindi					
Max. Marks		**100**				

Course Objectives:

1. Understanding of the fundamental concepts of digital signal processing, designing of digital filters, and brief knowledge about the Multi rate digital signal processing.

Course Outcomes:
After successful completion of the course, students will be able to:

CO1. **Analyze** discrete time system using transform methods.
CO2. **Compute** DFT using FFT algorithms.
CO3. **Design** IIR Filters.
CO4. **Design** FIR Filters.
CO5. **Apply** the concept of multi-rate signal processing in practical applications.

Unit	Syllabus	Periods
UNIT - I	Review of discrete time signals and systems, Properties and applications of discrete time Fourier transform, Review of Z transform, Analysis of minimum phase, maximum phase and inverse system.	10
UNIT - II	Introduction and properties of DFT, Computation of circular convolution using DFT, Decimation in time FFT algorithm, Decimation of frequency FFT algorithm with radix-2, and radix-4.	9
UNIT - III	Digital Filters (Part-I): Characteristics of practical frequency selective filters, Various signal flow graph structure of IIR filters. IIR Filter design: Overview of Butterworth, Chebyshev and Elliptic approximations, Design of discrete time IIR filters using Impulse invariant, and Bilinear transformation methods, Spectral transformation of IIR filters.	9

UNIT - IV	Digital Filters Part-II: Introduction and Signal flow graph structure of FIR Filter.FIR Filter design: Symmetric, and Asymmetric FIR filters, Design of linear phase FIR filters using windows, and Frequency sampling method, Design of Optimum Equiripple linear phase FIR filters, Design of FIR differentiators.	8
UNIT - V	Multirate Digital Signal Processing: Introduction, Decimation and Interpolation, Sampling rate conversion by a Rational factor. Implementation of Sampling rate Conversion: Sampling rate conversion with Cascaded integrator, Comb filters, Polyphase structures for decimation, and interpolation filters, Application of multi rate signal processing.	9

Text Books:

1. John. G. Proakis, "Digital Signal Processing", 4th Edition, Pearson Education.
2. Oppenheim and Schafer, "Digital Signal Processing", 2nd Edition, PHI Learning.

Reference Books:

1. Johnny R. Johnson, "Introduction to Digital Signal Processing", 1st Edition, PHI Learning.
2. Rabiner and Gold, "Theory and Application of Digital Signal Processing",3rd Edition, PHI Learning.
3. Ingle and Proakis, "Digital Signal Processing- A MATLAB based Approach", 3rd Edition, Thompson, Cengage Learning.

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SYLLABUS
ELECTRONICS & COMMUNICATION ENGIEERING

Class		**B. Tech. (EC)**	**L**	**T**	**P**	**C**
Semester/Year		**VI SEM/III YEAR**	**2**	**-**	**-**	**2**
Subject		**Data Communication**				
Subject Code		**BEC20S602**				
Paper	**English**					
	Hindi					
Max. Marks		**100**				

Course objectives:

1. To provide an introduction to fundamental computer network architecture concepts and their applications.

Course Outcome:

After successful completion of the course, students will be able to:

CO1. Examine the concept of different layers in data communication networks.
CO2. Analyze the error and flow control in communication network.
CO3. Explain the concepts of MAC layer.
CO4. Identify the different types of routing used in IP.
CO5. Classify the transport mechanism in TCP/UDP.

Unit	Syllabus	Periods
UNIT - I	**Introduction to Switching Techniques:** Circuit switching, Message switching, Packet switching, Protocols, Layered network architecture and architecture OSI & TCP/IP reference model, Physical layer transmission medium, RS 232 C, Modem, Topologies	10
UNIT - II	**Data Link Layer:** Framing BSC, HDLC. ARQ: Stop and wait, Sliding window, Efficiency, Error detection and Error correction, Hamming codes, Parity checks – CRC, Checksum, HARQ.	9
UNIT - III	**MAC Layer:** MAC sub layer – LAN protocols, ALOHA, Slotted and pure ALOHA, CSMA, CSMA/CD, Token bus, Token Ring, TDMA, CDMA, FDMA, Ethernet, Bridge, Router, Gateway, Switch.	9
UNIT - IV	**Network Layer:** Routing – Data gram and Virtual Circuit, Distance vector and Link state Routing, Dijkstra's Algorithms, Congestion Control: Leaky bucket algorithm, Slow start, ATM model and ATM traffic management – AAL, X.25, IP layer, IP addressing	8

UNIT - V	**Network Layer:** Routing – Data gram and Virtual Circuit, Distance vector and Link state Routing, Dijkstra's Algorithms, Congestion Control: Leaky bucket algorithm, Slow start, ATM model and ATM traffic management – AAL, X.25, IP layer, IP addressing	9

Text Books:

1. Data Communication & Networking – B.A. Forouzan, Tata Mc-Graw Hill.
2. Data and Computer Communication – W. Stallings, Pearson.

Reference Books:

1. LANs – Keiser,ata Mc-Graw Hill.
2. Internetworking with TCP/IP – VOL-I – D.E. Comer, PHI.
3. ISDN and Broad band ISDN with Frame Relay & ATM – W. Stalling, Pearson.

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ELECTRONICS & COMMUNICATION ENGIEERING

Class		**B. Tech. (EC)**	**L**	**T**	**P**	**C**
Semester/Year		**VI SEM/III YEAR**	**2**	**-**	**-**	**2**
Subject		**Optical Communication**				
Subject Code		**BEC20S603**				
Paper	**English**					
	Hindi					
Max. Marks		**100**				

Course objectives:

1. This course gives information to the students about the basics of signal propagation through optical fibers, fiber fabrication, fiber losses, device components of optical fiber communication and optical networks.

Course Outcomes:

After the completion of this course students will be able to:

CO1. Explain the basic elements of optical fiber transmission.

CO2. Discuss fiber fabrication, splicing and optical connectors.

CO3. Describe the working of optical sources and optical detectors.

CO4. Calculate the channel impairments like losses and dispersion.

CO5. Discuss Coherent optical transmission system and optical networks.

Unit	Syllabus	Periods
UNIT - I	**Overview of Optical Fiber Communications:** Optical laws and definitions, Optical fiber modes and configurations, Mode theory, Step Index and Graded Index (GI) fibers ,Single mode and Multimode, Derivation for numerical aperture, V number and modes supported by step index fiber, Mode field diameter, Modes supported by GI fibers.	10
UNIT - II	**Fabrication and Coupling of Optical Fiber:** Fiber materials: Glass fiber, Active glass fiber, Plastic optical fiber, Fiber fabrication techniques: Outside vapour phase oxidation, Vapour phase axial deposition, Modified chemical vapour deposition, Plasma activated chemical vapour deposition, Fiber splicing techniques, Optical fiber connectors and couplers.	9
UNIT - III	**Optical Sources and Detectors:** Introduction to optical sources, LED'S, LASER diodes, Model reflection noise, Power launching and Coupling, Population inversion, Photo-detectors, PIN, Avalanche detector, Response time, Avalanche multiplication noise.	9

UNIT - IV	**Signal Degradation in Optical Fibers:** Signal degradation in optical fibers, Attenuation losses, Signal distortion in optical wave guides, Material dispersion, Wave guide dispersion, Chromatic dispersion, Inter-modal distortion, Pulse broadening in Graded index fibers, Mode coupling.	8
UNIT - V	**Optical Communication and Networks:** Coherent optical fiber communication, Modulation techniques for Homodyne and Heterodyne systems, Rise time budget and link power budget, eye pattern, optical network elements and topologies, SONET / SDH.	9

Text Books:

1. Optical Fiber Communication – By G. Keiser , Tata McGraw-Hill Education.
2. Optical Fiber Communication- By John M. Senior, Prentice Hall.

Reference Books:

1. Optical Fiber Communication – By G. Keiser , Tata McGraw-Hill Education.
2. Optical Fiber Communication- By John M. Senior, Prentice Hall.

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SYLLABUS
ELECTRONICS & COMMUNICATION ENGIEERING

Class		**B. Tech. (EC)**	**L**	**T**	**P**	**C**
Semester/Year		**VI SEM/III YEAR**	**2**	**-**	**-**	**2**
Subject		**ANTENNA AND WAVE PROPAGATION**				
Subject Code		**BEC20S604**				
Paper	**English**					
	Hindi					
Max. Marks		**100**				

Course objectives:

1. To develop the students basic understanding of antenna operation and develop the students' ability to calculate and interpret basic antenna performance parameters.

Course Outcome:

After the completion of this course students will be able to:

CO1. Evaluate various parameters of the antenna.
CO2. Analyze the design parameters and radiation mechanism of wire antennas.
CO3. Design antenna array for the given radiation characteristics.
CO4. Analyze the design parameters and radiation characteristics of Aperture and special antennas..
CO5. Describe effects of earth and its atmosphere on radio wave propagation.

Unit	Syllabus	Periods
UNIT - I	**Introduction to antenna:** Definition of antenna parameters – Radiation Density, Radiation Intensity, Gain, Directivity, Radiation Resistance, Band width, Beam width, Input Impedance, Effective Height, Effective aperture, Network theorems applied to antenna, Self and mutual impedance of antenna.	10
UNIT - II	**Radiation Fields of Wire Antennas**: Radiation from current element, Short dipole, Quarter wave Monopole and Half wave Dipole, Loop antenna, Helical antenna.	9
UNIT - III	Antenna Arrays Antenna arrays of point sources, Two element array, End fire and Broad side arrays, Principle of Pattern multiplication, 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).	9
UNIT - IV	**Aperture and special Antennas:** Radiation from rectangular apertures, Horn antenna, Reflector antenna, Babinet's principles and complimentary antennas, Slot antennas, Log periodic antenna, Yagiuda antenna, Travelling wave antenna, Image antenna.	8

UNIT - V	**Propagation of radio wave:** Modes of propagation , Structure of atmosphere , Ground wave propagation , Tropo spheric propagation , Duct propagation, Flat earth and Curved earth concept, Sky wave propagation – Virtual height, Critical frequency , Maximum usable frequency – Skip distance, Fading , Multi hop propagation.	9

Text Books:

1. Antenna theory- J.D. Kraus, 4^{th} edition, Tata Mc- Graw Hill.
2. Electromagnetic Fields & Radiating System - Jordan & Balmain, 2nd edition, PHI.

Reference Books:

1. Antennas(for all applications)-Kraus, Marshfka, khan, Tata Mc-Graw Hill.
2. Antenna Wave Propagation-K D Prashad, New Delhi :Satya Prakashan.

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Class		**B. Tech. (EC)**	**L**	**T**	**P**	**C**
Semester/Year		**VI SEM/III YEAR**	**2**	**-**	**-**	**2**
Subject		**Telecommunication Switching and Networks**				
Paper	**English**	**BEC20S605**				
	Hindi					
Max. Marks		**100**				

Course Objectives:

1. To introduce fundamentals functions of a telecom switching office, namely, digital multiplexing, digital switching and digital subscriber access and to introduce a mathematical model for the analysis of telecommunication traffic.

Course Outcomes:

After the completion of this course students will be able to:

CO1. Describe fundamentals of telecommunication systems and associated technologies.
CO2. Design multi stage switching structures involving time and space switching stages.
CO3. Analyze and evaluate the fundamental telecommunication traffic models.
CO4. Examine the working of Telephone Networks.
CO5. Demonstrate broad knowledge of fundamental principles and technical standards underlying Data Networks.

Unit	Syllabus	Periods
UNIT - I	**Introduction:** Evolution of Telecommunications, Simple Telephone Communication, Manual switching system, Stronger Switching System, Crossbar Switching System, major telecommunication Networks (PSTN, ISDN, WLAN, Ad Hoc Network).	8
UNIT - II	**Switching:** Circuit Switching, Store and Forward Switching, Electronic Space Division Switching, Stored Program Control, Centralized SPC, Distributed SPC, Enhanced Services, Two stage networks, three stage network n-stage networks. Time multiplexed Space Switching, Time Multiplexed time switching, combination Switching, Three stage combination switching, n-stage combination switching.	9

UNIT - III	**Traffic Engineering:** Network Traffic load and parameters, Grade of service and blocking probability, Modeling Switching Systems, Incoming Traffic and Service Time Characterization, Blocking Models and Loss Estimates, Delay systems.	9
UNIT - IV	**Telephone Networks:** Subscriber Loop Systems, Switching Hierarchy and Routing, Transmission Plan, Transmission Systems, Numbering Plan, Charging Plan, Signaling Techniques, In channel signaling, common channel signaling, Cellular mobile telephony.	8
UNIT - V	**Data networks:** Data transmission in PSTNs, Modems, ISO-OSI/TCP-IP Reference Model, Satellite based data networks, Data network standards (ISDN, DSL / ADSL, Token Ring, Token BUS , Bluetooth , WLAN, Zig Bee, SONET / SDH).	9

Text Book :

1. Thiagarajan Vishwanathan, "Telecommunication Switching Systems and Networks" PHI Publications.

Reference Books:

1. J. E. Flood, "Telecommunications Switching, Traffic and Networks", Pearson Education.
2. John C. Bellamy, "Digital Telephony", Third Edition; Wiley Publications.

SYLLABUS

B.TECH.

Class		**B.Tech. (EC/EX/CSE/ME/CE)**	**L**	**T**	**P**	**C**
Semester/Year		**VI/III**	**2**	**-**	**-**	**2**
Subject Name		**Modelling and Simulation of Dynamic Systems**				
Subject Code		**BOC20S606**				
Paper	**English**					
	Hindi					
Max. Marks		**100**				

Course Objectives:

1. Students will understand the techniques of modeling in the context of hierarchy of knowledge about a system and develop the capability to apply the same to study systems through available software.
2. Students will learn different types of simulation techniques.
3. Students will learn to simulate the models for the purpose of optimum control by using software.

Course Outcomes:

CO1. Define, describe and apply basic concepts related to modeling and simulation.

CO2. Construct bond graphs for the type of systems mentioned above, simplify and analyze the bond graph according to causality conflicts, and from a given bond graph without conflicts.

CO3. Use conservation laws and constitutive relationships and other physical relations to model mechanical, electrical and flow systems, and combinations of these.

CO4. Find dynamic response and transfer function using various tools for system modeling.

CO5. Model and simulate mechanical and electrical systems using the computer tools Simulink.

Unit	Syllabus	Periods
UNIT - I	Introduction to modeling, Examples of models, modeling of dynamic system, Introduction to simulation, MATLAB as a simulation tool, Bond graph modeling, causality, generation of system equations.	10
UNIT - II	Methods of drawing bond graph model- Mechanical systems & Electrical systems, some basic system models- Mechanical systems, Thermal systems, hydraulic systems, pneumatic systems and electrical systems.	9
UNIT - III	Linearity and non linearity in systems combined rotary and translatory system, electro mechanical system, hydro- mechanical system.	8

UNIT - IV	Dynamic response of 1^{st} order system and 2^{nd} order system, performance measures for 2^{nd} order system, system transfer function, transfer function of 1^{st} and 2^{nd} order system Block diagram algebra, signal flow diagram, state variable formulation, frequency response and bode plots.	9
UNIT - V	Simulation using SIMULINK, examples of simulation problems- simple and the compound pendulum, planner mechanisms, validation and verification of the simulation model, parameter estimation methods, system identifications, introduction to optimization.	8
	Text Books: 1. H. Siegfried and R. Waddington, "Grid integration of wind energy conversion systems" John Wiley and Sons Ltd., 2006. 2. G. N. Tiwari and M. K. Ghosal, "Renewable Energy Applications", Narosa Publications, 2004. 6. J. A. Duffie and W. A. Beckman, "Solar Engineering of Thermal Processes", John Wiley & Sons, 1991.	
	Reference books: 1. T. Ackermann, "Wind Power in Power Systems", John Wiley and Sons Ltd., 2005. 2. G. M. Masters, "Renewable and Efficient Electric Power Systems", John Wiley and Sons, 2004. 3. S. P. Sukhatme, "Solar Energy: Principles of Thermal Collection and Storage", McGraw Hill, 1984.	

SYLLABUS

B.TECH.

Class		**B.Tech. (EC/EX/CSE/ME/CE)**	**L**	**T**	**P**	**C**
Semester/Year		**VI/III**	**2**	**-**	**-**	**2**
Subject Name		**INTRODUCTION TO SMART GRID**				
Subject Code		**BOC20S607**				
Paper	**English**					
	Hindi					
Max. Marks		**100**				

Course Objectives:

1. Power Quality & EMC in Smart Grid
2. Present development & International policies in Smart Grid.
3. Reforms and restructuring in Indian power sector.
4. Knowledge about intelligent and Strategic issues related to growth & development of Indian Power Business.

Course Outcomes:

CO1: Introduction to Smart Grid.

CO2: Understand to Smart Meters, Real Time Prizing, Smart Appliances.

CO3: Understand Smart Grid Technologies.

CO4: Micro grids and Distributed Energy Resources.

CO5: Define Power Quality Management in Smart Grid.

Unit	Syllabus	Periods
UNIT - I	Introduction to Smart Grid: Evolution of Electric Grid, Concept of Smart Grid, Definitions, Need of Smart Grid, Functions of Smart Grid, Opportunities & Barriers of Smart Grid, Difference between conventional & smart grid, Concept of Resilient & Self Healing Grid, Present development & International policies in Smart Grid. Case study of Smart Grid. CDM opportunities in Smart Grid.	10

UNIT - II	Introduction to Smart Meters, Real Time Prizing, Smart Appliances, Automatic Meter Reading (AMR), Outage Management System (OMS), Plug in Hybrid Electric Vehicles (PHEV), Vehicle to Grid, Smart Sensors, Home & Building Automation	9
UNIT - III	Smart Substations, Substation Automation, Feeder Automation, Geographic Information System (GIS), Intelligent Electronic Devices (IED) & their application for monitoring & protection, Smart storage like Battery, SMES, Pumped Hydro, Compressed Air Energy Storage, Wide Area Measurement System (WAMS), Phase Measurement Unit (PMU), PMUs application to monitoring & control of power system.	9
UNIT - IV	Concept of microgrid, need & application of microgrid, formation of microgrid, Issues of interconnection, protection & control of microgrid, Plastic & Organic solar cells, thin flim solar cells, Variable speed wind generators, fuel cells, microturbines, Captive power plants, Integration of renewable energy sources	8
UNIT - V	Power Quality & EMC in Smart Grid, Power Quality issues of Grid connected Renewable Energy Sources, Power Quality Conditioners for Smart Grid, Web based Power Quality monitoring.	8

Text Books:

1. Ali Keyhani, Mohammad N. Marwali, Min Dai, "Integration of Green and Renewable Energy in Electric Power Systems", Wiley.
2. Clark W. Gellings, "The Smart Grid: Enabling Energy Efficiency and Demand Response", CRC Press.
3. Janaka Ekanayake, Nick Jenkins, KithsiriLiyanage, Jianzhong Wu, Akihiko Yokoyama, "Smart Grid: Technology and Applications", Wiley.
4. Jean Claude Sabonnadiere, Nouredine Hadjsaid, "Smart Grids", Wiley Blackwell 19.
5. Stuart Borlase, "Smart Grids (Power Engineering)", CRC Press.

Reference books:

1. Andres Carvallo, John Cooper, "The Advanced Smart Grid: Edge Power Driving Sustainability", Artech House Publishers July 2011.
2. James Northcote, Green, Robert G. Wilson "Control and Automation of Electric Power Distribution Systems (Power Engineering)", CRC Press.
3. Mladen Kezunovic, Mark G. Adamiak, Alexander P. Apostolov, Jeffrey George Gilbert "Substation Automation (Power Electronice and Power Systems)", Springer.
4. R.C. Dugan, Mark F. McGranghan, Surya Santoso, H. Wayne Beaty, "Electrical Power System Quality", 2nd Edition, McGraw Hill Publication.
5. Phadke, A.G., Thorp, J.S., "Synchronized Phasor Measurements and Their Applications", Springer.
6. James Momoh, "Smart Grid: Fundamentals of Design and Analysis", Wiley.

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SYLLABUS

B.TECH.

Class		**B.Tech.(EC/EX/CSE/ME/CE)**	**L**	**T**	**P**	**C**
Semester/Year		**VI/III**	**2**	**-**	**-**	**2**
Subject Name		**Safety Engineering**				
Subject Code		**BOC20S608**				
Paper	**English**					
	Hindi					
Max. Marks		**100**				

Course Objectives:

1. To understand Safety philosophy.
2. To discuss Safety Management.
3. To obtain Standard Operating Procedure (SOP) for various mechanical equipment's.

Course Outcomes:

CO1. Discuss Safety philosophy and principles of accident prevention.
CO2. Explain Safety Management.
CO3. Explain Safe working condition and their development.
CO4. Safety in Operation and Maintenance.
CO5. Safety in Storage and Emergency Planning.

Unit	Syllabus	Periods
UNIT - I	Introduction, accident, injury, unsafe act, unsafe condition, reportable accidents, need for safety, break down of accidents, hazardous industries. Theories & principle of accidents casualty, cost of accident, computation of cost, utility of cost data. Accident reporting & Investigation, Identification of the key facts, corrective actions, classification of facts. Regulation- American (OSHA) and Indian Regulation.	10
UNIT - II	Division of responsibility, location of Safety function, size of safety department, qualification, for safety specialist, safety committee – structure and functions.	9

UNIT - III	Standard Operating Procedure (SOP) for various mechanical equipments, incidental safety devices and methods, statutory of provisions related to safeguarding of Machinery and working condition.	9
UNIT - IV	Operational activities and hazards, starting and shut down procedures, safe operation of pumps, compressor, heaters, reactors, work permit system, entry into continued spaces.	8
UNIT - V	Safety in storage, handling of chemicals and gases, storage layout, ventilation, safety in chemical laboratories, emergency preparedness on site plan, off site plan, toxic hazard control.	8

Text Books:

1. Safety Management: Strategy And Practice - Pybus R - Butterworth Heinmann, Oxford.
2. Safety and Accident Prevention in Chemical Operation – H.H. Faweett and Wood.
3. Industrial Safety Management- Trafdar N K, Tarafdar K J – Dhapat Rai, New Delhi.
4. Safety Management In Industry- Krishna, N V- Jaico Publication House; New Delhi.
5. Industrial Safety And Pollution Control Hand Book - Nagraj, J N & Ramesh chandar, R V - Associate Publisher, Securndabad.

Reference books:

1. Fire and Safety Manual Refineries and Petrochemical Panel - National Safety Counsil, Bombay.
2. Safety in Use of Compressed Gas Cylinders - National Safety Counsil, Bombay.
3. Encyclopaedia of Occupational Health and Safety - Stallman I M, Mccann M, Warshaw L, Brabant C - International Labour Office, Geneva.
4. Industrial Safety Environmental Pollution Health Hazard And Nuclear Accidents - A Chand - Mittal Publication, New Delhi.
5. Personal Protective Equipment – National Safety Counsil, Bombay.
6. Accident Prevention Manual for Business and Industrial Administration and Programs - Krieger, G R Montgomer ji - National Safety Council, Ittenois.
7. Major Hazard Control A Practical Manual – ILO - National Safety Counsil, Bombay.

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SYLLABUS
ELECTRONICS & COMMUNICATION ENGIEERING

Class		**B. Tech. (EC)**	**L**	**T**	**P**	**C**
Semester/Year		**VI SEM/III YEAR**	**2**	**-**	**-**	**2**
Subject		**Disaster Management**				
Subject Code		**BDM20S609**				
Paper	**English**					
	Hindi					
Max. Marks		**100**				

Course objectives:

1. To understand basic concepts in Disaster Management.
2. To understand Definitions and Terminologies used in Disaster Management.
3. To understand Types and Categories of Disasters.
4. To understand the Challenges posed by Disaster.
5. To understand Impact of Disasters key skills.

Course Outcomes:

After successful completion of the course, the students will be able to

CO1. Identify disaster prevention and mitigation approaches.

CO2. Classify global and national disasters, their trends and profiles.

CO3. Determine the impacts of various disasters.

CO4. Apply Disaster Risk Reduction in management.

CO5. Infer the linkage between disasters, environment and development.

Unit	Syllabus	Periods
UNIT - I	Introduction to disaster management, concepts and definitions: disaster, vulnerability, risk severity, frequency and details, capacity impact, prevention, mitigation.	8
UNIT - II	Disasters – Disasters classification, demographic aspects (gender, age, special needs); hazard locations; global and national disaster trends, hazard and vulnerability profile of India.	9
UNIT - III	Disaster Impacts – Disaster impact (environmental, physical, social, ecological, economic, political, etc.); health, psycho-social issues, impact of natural disasters (floods, cyclones, volcanoes, earthquakes, tsunami, landslides etc.), impact of manmade disasters (industrial pollution, artificial flooding in urban areas, urban disasters, transportation accidents etc.).	9

UNIT - IV	Disaster Risk Reduction (DRR) - Disaster management cycle- its phases; prevention, mitigation, preparedness, relief and recovery; structural and non- structural measures; risk analysis, vulnerability and capacity assessment; early warning systems, Post disaster environmental response. Roles and. responsibilities of government, community, local Institutions, NGOs and other stakeholders: Policies and legislation for disaster management. DRR programs in India and the activities of National Disaster Management Authority.	8
UNIT - V	Disasters, Environment and Development – Factors affecting vulnerability such as impact of development projects and environmental modifications (including of dams, land use changes, urbanization etc.), sustainable and environmental friendly recovery; reconstruction and development methods.	9

Text Books:

1. Pradeep Sahni, 2004, Disaster Risk Reduction in South Asia, Prentice Hall.
2. Ghosh G.K., 2006, Disaster Management, APH Publishing Corporation.
3. Srivastava H.H. & Gupta G.D., Management of Natural Disasters in developing countries, Daya Publishers Delhi, 2006.

Reference Books:

1. http://ndma.gov.in (Home page of National Disaster Management Authority).
2. http://www.ndmindia.nic.in / (National Disaster Management in India).
3. Singh B.K., 2008, Handbook of Disaster Management: Techniques & Guidelines, Rajat Publication.
4. National Disaster Management Policy, 2009,GOI.
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SCHOOL OF ENGINEERING

SYLLABUS
ELECTRONICS & COMMUNICATION ENGIEERING

Class		**B. Tech. (EC)**	**L**	**T**	**P**	**C**
Semester/Year		**VI SEM/III YEAR**	**-**	**-**	**4**	**2**
Subject		**Minor Project-II**				
Subject Code		**BEC20S610**				
Paper	**English**					
	Hindi					
Max. Marks		**100**				

Course objective:

1. Main aim of the course is to enable students to design & fabricate their own innovative hardware project.

Course outcome:

After successful completion of the lab, students will be able to:

CO1. Design the project.

CO2. Impart skills in fault finding and troubleshooting.

List of Exercise/ Experiments:

1. Hardware project should consist of circuit design, PCB fabrication assembling & testing of digital or analog application circuit.
2. Students are required to use standard software available for drawing circuit schematic, simulating the design and PCB (single/double sided) layout of circuit.
3. Project should consist of details of work carried out including layout, circuit, datasheets, list of component cost.

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ELECTRONICS & COMMUNICATION ENGIEERING

Class		**B. Tech. (EC)**	**L**	**T**	**P**	**C**
Semester/Year		**VI SEM/III YEAR**	**-**	**-**	**2**	**1**
Subject		**Digital Signal Processing Lab**				
Subject Code		**BEC20S611**				
Paper	**English**					
	Hindi					
Max. Marks		**50**				

List of Experiments

1. To generate the following signals:-Unit Impulse Signal, Unit Step Signal, Unit Ramp Signal, Exponential Growing and Decaying Signal, Sine Signal And Cosine Signal.
2. Verification of sampling theorem.
3. To perform the Discrete Fourier Transform (DFT) and Inverse Discrete Fourier Transform(IDFT)
4. To perform the Linear Convolution of given sequences using DFT and IDFT.
5. To perform the Circular Convolution of given sequences.
6. To perform the Linear Convolution using Circular Convolution.
7. To perform autocorrelation of a given sequence and verify of its Properties.
8. To perform the computation of N-point DFT of a given sequence also to plot magnitude and phase spectrum.
9. To analyze the spectral parameters of the given window functions.