PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Electronics & Communication Engineering
SYLLABUS FOR 6th Sem BTech PROGRAMME
Digital Communication (03107351)

Type of Course: BTech

Prerequisite: Knowledge of Signals & Systems and Analog Communication.

Rationale: The main objective of this subject is to make students acquainted with provide fundamentals of digital communication system. EC Engineers are expected to be design a reliable, efficient and secured digital communication system. The course presents the detail theory of digital signals and systems. It aims to familiarize students, concept of probability theory, CDF, PDF and also includes error detection and error correction codes.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		T	P	T	CE	P	
3	0	2	4	60	30	20	20	20	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Probability Theory & Random Variables**: Information, Probability, Conditional Probability of independent events, Raleigh Probability Density, CDF, PDF, Random Variables and Variance, Statistical Averages (Means), Mean and Variance of sum of Random variables, Central limit theorem, Gaussian PDF, Threshold Detection, Statistical Average, Chebyshev inequality, Concept of correlation.	15%	7
2	**Base Band Modulation**: Base band system, Sampling theorem, Sampling and signal reconstruction, Aliasing, Types of sampling, Quantization, PCM, Companding, DPCM, ADPCM, Delta modulation, Adaptive delta modulation, T1 carrier system.	15%	7
3	**Principal of Digital Data Transmission**: Components of digital communication system, line coding, pulse shaping, Scrambling, Regenerative Repeater, Eye Diagram, Timing Extraction, Detection Error Probability, M-ary communication, Digital Carrier Systems.	14%	6
4	**Digital Modulation Techniques**: Modulation techniques for ASK, QASK, FSK, M-ary FSK, BPSK, DPSK, DEPSK, QPSK, M-ary PSK, QAM, MSK, GMSK.	14%	6

5	**Digital Carrier Demodulation Techniques**: Coherent and non coherent detection of ASK, QASK, FSK, PSK, QPSK, M-ary PSK, DPSK, Noise temperature, Noise bandwidth, Noise figure.	12%	5
6	**Introduction to Information Theory**: Measure of information, Entropy, Source encoding, Error free communication over noisy channel, channel capacity of discrete memory less channel, Channel capacity of continuous channel, Practical communication system in lights of Shannon theorem.	15%	7
7	**Error Correcting Codes**: Introduction, Linear Block Code, Cyclic Code, Burst error detecting and correcting codes, Interlace codes for burst and random error correction, Convolution Code, Comparison of coded and uncoded system.	15%	7

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Modern Digital and Analog Communication Systems
   B. P. Lathi, Zhi Ding; Oxford University Press; 4th Edition
2. Digital communication - Fundamentals and Applications
   Bernard Sklar; Pearson Education
3. Principles of Communication Systems
   Taub & Schilling; Tata McGraw Hill Publication
4. Communication systems
   S. Haykin; John Wiley
5. Digital Communication
   Bhattacharya Amitabh; Tata McGraw-Hill

Course Outcome:

After Learning the course the students shall be able to:

1. Know probability, random variable and various statistical analysis methods.
2. Convert analog signal into digital signal using different techniques like PCM, DM, and ADM.
3. Understand behavior of various modulation-demodulation techniques in presence of noise.
4. Implement Source encoding for given source symbols.
5. Understand behavior of digital communication channel.
6. Analyze various error correcting codes and implement it reliable for communication system.

List of Practical:

1. To perform sampling and reconstruction on analog signal.
2. To perform PCM data regeneration i.e. A/D quantization & A/D conversion with associated control signal.
3. To observe and study the control signal sequences and data framing necessary to generate TDM-PCM digital data to be transmitted.
4. To perform TDM over PAM using 1 link, 2 link and 3 link.
5. To perform delta modulation & demodulation.
6. To perform Adaptive delta modulation & demodulation.
7. To study different data formats.
8. To perform Frequency Shift Keying.
9. To perform Phase Shift Keying.

10. To perform Amplitude Shift Keying.

11. Simulation of Gaussian and Rayleigh distribution using MATLAB code.

12. Simulation of Error correcting code using MATLAB.

13. Simulation of Digital Modulation Techniques in MATLAB

14. Simulation of Entropy in MATLAB

15. Simulation of Source Coding Technique in MATLAB

Open Ended Problems:

1. Design Sampling circuit.
2. To study Hamming code using MATLAB simulation
3. Design different component of analog to digital converter.
4. Simulation of Central limit theorem using MATLAB
5. Simulation of various digital modulation and demodulation techniques
6. Simulation of various error detection and correction codes.

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Electronics & Communication Engineering
SYLLABUS FOR 6th Sem BTech PROGRAMME
Antenna and Wave Propogation (03107352)

Type of Course: BTech

Prerequisite: of Engineering Electromagnetic and Basic knowledge of Mathematics.

Rationale: Wireless communication plays a vital role in our lives. Development in wireless communication technology has increased its application in allied fields of electronics including computer and industrial control. Satellite and Radar communication is applied subject which stimulate interest in the exciting field of electronic communication.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		T	P	T	CE	P	
3	0	2	4	60	30	20	20	20	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Basic antenna concepts and radiation from dipole**: Definition and functions of an antenna, comparison between an antenna & transmission line, radiation patterns of antennas-field and power patterns, all antenna types. Application to antennas, Radiation from quarter wave monopole and half wave dipoles, Derivation for radiation resistance, application of reciprocity theorem to antennas, equality of directional patterns and effective lengths of transmitting and receiving antennas, directional properties of dipole antennas, antenna feeding methods.	10%	3
2	**Antenna parameters and definitions**: beam area, beam width- Half-Power Beam width (HPBW)and First Null Beam width(FNBW) ,Polarization, Radiation Intensity ,Beam Efficiency, Directivity and directive gain, radiation resistance, radiation efficiency, resolution, Antenna aperture-physical and effective apertures, effective height, transmission formula, antenna field zones, Transmission loss as a function of frequency. Antenna temperature and signal to noise ratio	13%	6
3	**Arrays of point sources**: Expression for electric fields from two, three and N element arrays-linear arrays: Broad-side array and End-Fire array- Method of pattern multiplication- Binomial array-Horizontal and Vertical Antennas above the ground plane, Effect of ground on ungrounded antenna, Schelkunoff theorems for linear arrays, Dolph-Tchebysheff distribution for linear arrays	12%	5

4	**Arrays of dipoles & apertures**: 3 element dipole Array with parasitic elements, Yagi-Uda array-function and its design, Phased arrays, frequency scanning arrays, smart antennas, long wire antennas, location methods of feeding antennas, folded dipole antennas, matching arrangements	11%	4
5	**Loop Antenna::** Small loop short magnetic dipole, comparison of far field of small loop and short dipole loop antennas, field pattern of circular loop antenna & radiation resistance of loop antenna, directivity of circular loop antennas with uniform current.	8%	4
6	**Helical antenna**: Helical geometry, transmission radiation modes, practical design considerations, wide band characteristics of helical antenna	5%	2
7	**Reflector antennas**: Parabolic reflector, paraboloidal reflector, aperture Pattern of large circular apertures with uniform illumination, off axis operation of paraboloidal reflectors, Cassegrain feed system	8%	4
8	**Lens Antenna**: Non-metallic Dielectric lens and artificial dielectric lens antennas, reflector lens antennas	5%	3
9	**Micro-strip (patch) antennas**: Rectangular and circular types-function, features analysis ,design considerations and applications	6%	3
10	**Slot patch & Horn antennas**: Slot antenna, its pattern, Babinet's principle and complementary antennas, impedance of slot antennas, and horn antenna-function and types	6%	3
11	**Broadband & Freq. Independent antennas**: Broadband antenna, Frequency independent antenna, log periodic antennas	6%	3
12	**Radio wave propagation**: Modes of propagation, Ground Wave Propagation, Structure of troposphere and ionosphere, Characteristic of Ionospheric layers, Sky wave propagation, Definitions for Virtual height, MUF and Skip distance, OWF, Fading, ionospheric absorptions, Multi-hop propagation, Space wave propagation and Super refraction	10%	5

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Antennas for all applications (TextBook)
   J.D. Krauss; (TMH); 3rd
2. Antenna & Wave Propagation (TextBook)
   K.D. Prasad; Satyaprakash Publications

3. Antenna Theory, Analysis and design
   Balanis C A; Willey

4. Antenna & Wave Propagation
   G.S.N.Raju; Pearson Education

Useful Links:

www.antenna-theory.com
www.electronics-tutorials.com
www.radio-electronics.com/info/antennas/basics/emwaves.php
www.nptel.ac.in

Course Outcome:

After Learning the course the students shall be able to:

1.Understand the basic principles and radiation mechanism of antenna
2.Able to understand important classes of antennas and their properties.
3.Provide an overview of the fundamental characteristics and parameters of antennas
4.Design and analyze wire and aperture antennas
5.Design and analyze antenna arrays
6.Identify the characteristics of radio-wave propagation
7.Able to design and simulate upcoming antenna

List of Practical:

1. Introduction of Scientech Antenna Trainer kit ST 2261

2. To study about the variation of radiated field with distance from transmitting antenna

3. To plot Radiation pattern of an Omni Directional Antenna

4. To Demonstrate the Reciprocity theorem for transmitting and receiving radiation pattern of an antenna

5. To find out the Beam Area of antenna using MATLAB

6. To find out the Directivity (normal value and dB value) of antenna using MATLAB

7. To plot radiation pattern of the omni-directional

8. To plot radiation pattern of $3\lambda/2$ dipole antenna and compare with $\lambda/2$ dipole antenna

9. To study and plot the radiation pattern of the linear arrays

10. To study and plot the radiation pattern of an End-fire array

11. To study High Frequency Structure Simulator

12. To design microstrip patch antenna using HFSS

13. To design Slot antenna using HFSS

Open Ended Problems:

1. Design and simulate any one type of antenna in HFSS
2. Design any one type of antenna in PCAAD and prepare hardware for that.

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Electronics & Communication Engineering
SYLLABUS FOR 6th Sem BTech PROGRAMME
VLSI Technology & Design (03107353)

Type of Course: BTech

Prerequisite: Knowledge of Basic Electronics (BJT) and Digital Electronics

Rationale: This course will provide an opportunity to the students to learn about various topics VLSI such as MOSFET fabrication, its physics, and analysis as well as design of digital circuits using MOSFET device.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		T	P	T	CE	P	
3	0	2	4	60	30	20	20	20	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Introduction**: Overview of VLSI design methodology, VLSI design flow, Design hierarchy, Concept of regularity, Modularity, and Locality, VLSI design style, Design quality, package technology, introduction to FPGA and CPLD.	10%	4
2	**Fabrication of MOSFET**: Introduction, Fabrication Process flow: Basic steps, C-MOS n-Well Process, Layout Design rules, full custom mask layout design.	8%	4
3	**MOS Transistor**: The Metal Oxide Semiconductor (MOS) structure, The MOS System under external bias, Structure and Operation of MOS transistor, MOSFET Current-Voltage characteristics, MOSFET scaling and small- geometry effects, MOSFET capacitances.	20%	9
4	**MOS Inverters: Static Characteristics**: Introduction, Resistive load Inverter, Inverter with n-type MOSFET load (Enhancement and Depletion type MOSFET load), CMOS Inverter.	20%	8
5	**MOS Inverters Switching characteristics and Interconnect Effects**: Introduction, Delay-time definitions, Calculation of Delay times, Inverter design with delay constraints, Estimation of Interconnect Parasitic, Calculation of interconnect delay, Switching Power Dissipation of CMOS Inverters.	15%	7

6	**Combinational and Sequential MOS Logic Circuit**: Introduction, MOS logic circuits with Depletion nMOS Loads, CMOS logic circuits, Complex logic circuits, CMOS Transmission Gates (TGs). Behaviour of Bistable elements, The SR latch circuit, Clocked latch and Flip-flop circuit, CMOS D-latch and Edge-triggered flip-flop.	20%	9
7	**Design example using CMOS**: Increment/decrement circuits, left/right shift serial/parallel register, comparator for two n-bit number, a two-phase non-overlapping clock generator with buffered output on both phases.	7%	4

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Introduction to VLSI Systems
   Mead C and Conway; Addison Wesley
2. CMOS Digital Integrated circuits – Analysis and Design
   Sung – Mo Kang, Yusuf Leblebici; TATA McGraw-Hill Pub. Company Ltd.
3. Principles of CMOS VLSI Design
   Neil H.E. Weste and Kamran Eshraghian; Pearson
4. Basic VLSI Design
   Pucknell and Eshraghian; PHI; 3
5. Introduction to VLSI Circuits & Systems
   John P. Uyemura

Useful Links:

http://www.vlsiencyclopedia.com
www.engineersgarage.com/articles/vlsi-design-future
vdtt.iitd.ac.in
vlsi-soc.blogspot.com

Course Outcome:

After Learning the course the students shall be able to:

1 Explain fabrication of MOSFET based circuits.
2 Describe working of MOSFET and its mathematical model
3 Analyze, design, and simulate various MOSFET based inverter circuits.
4 Realize and size given logic function using MOSFETs.
5 Analyze, design, and simulate Dynamic CMOS circuits
6 Draw and simulate various transient characteristics of MOS using Microwind software.

List of Practical:

1. Introduction of VHDL.

2. Introduction of Xilinx ISE with examples of basic gates.

3. Implementation of All Universal Gates using Xilinx ISE design suit.

4. Implementation of Half Adder and Half Subtractor using Xilinx ISE design suit.

5. Implementation of Full Adder and Full Subtractor using Xilinx ISE design suit.

6. Implementation of multiplexer using Xilinx ISE design suit.

7. Implementation of demultiplexer using Xilinx ISE design suit.

8. Implementation of D – Flipflop and T- Flipflop using Xilinx ISE design suit.

9. Introduction to Back-end Design Tools - Microwind.

10. Draw a layout of Resistive Load Inverter & CMOS Inverter using CMOS 0.12um technology and simulate its transient characteristics.

11. Draw a layout of all CMOS Basic Gates using CMOS 0.12um technology and simulate its transient characteristics.

12. Draw a layout of CMOS Half Adder using CMOS 0.12um technology and simulate its transient characteristics.

13. Draw a layout of CMOS Full Adder using CMOS 0.12um technology and simulate its transient characteristics.

14. Compare Transfer Characteristics of CMOS, Resistive Load and NMOS Load Inverter.

Open Ended Problems:

Based on Microwind-DSCH tool:

1 Design and simulate schematic, layout of 1-bit magnitude comparator.
2 Design and simulate schematic of 4-bit barrel shifter using multiplexer
3 Design and simulate schematic, layout of SR latch
4 Design and simulate schematic, layout of D-Latch and D-flip-flop.

Based on Xilinx ISE:
5. Write and verify VHDL program for practical applications of your choice like Decoder Encoder, Mux, Flip flop and latches, Counters, Memories, etc.

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Electronics & Communication Engineering
SYLLABUS FOR 6th Sem BTech PROGRAMME
Digital Signal Processing (03107354)

Type of Course: BTech

Prerequisite: Higher Engineering Mathematics, Fundamental knowledge of signals and systems along with types, Mathematical representation of signals and system modeling in time as well as frequency, domain. Transforms, especially like Laplacian, Fourier and Z. Difference between basic analysis and synthesis procedure.

Rationale: Students need to possess good understanding of the fundamentals and applications of discrete -time signals and systems, including sampling, convolution, filtering, and discrete Fourier transforms. They are expected to be able to design digital filters, and perform spectral analysis on real signals using the discrete Fourier transform. They will be practiced in sampling, processing and playing back audio and other signals using MATLAB software running on PCs.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		External		Internal			
				T	P	T	CE	P	
3	0	2	4	60	30	20	20	20	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Signal Processing Fundamentals**: Overview: Discrete-time and digital signals, Discrete Time Fourier transform and frequency spectra, Spectral computation, Computational complexity of the DFT and the FFT, Algorithmic development and computational advantages of the FFT, Inverse FFT, Implementation of the FFT, Correlation of discrete-time signals. Discrete-time systems, Difference equations and the Z-transform, Analysis of discrete-time LTI systems, Stability and Jury's test.	25%	11
2	**FIR Filters**: Ideal digital filters, Realizability and filter specifications, Classification of linear phase FIR filters, Design using direct truncation, window methods and frequency sampling, Least-squares optimal FIR filters, Minimax optimal FIR filters, Design of digital differentiators and Hilbert transformers, comparison of design methods.	20%	9
3	**IIR Filters**: Design of analog prototype filters, Analog frequency transformations, Impulse invariance method and digital frequency transformations, Bilinear transformation, Analog prototype to digital transformations, Difficulties in direct IIR filter design, Comparisons with FIR filters.	20%	9

4	**Filter Realization**: Structures for FIR filters, Structures for IIR filters, State-space analysis and filter structures, Fixed point and floating-point representation of numbers, Errors resulting from rounding and truncating, Quantization effects of filter coefficients, Round-off effects of digital filters.	20%	9
5	**DSP Processors:**: Computer architectures for signal processing – Harvard architecture and pipelining, General purpose digital signal processors, Selection of DSPs, Implementation of DSP algorithms on a general purpose DSP, Special purpose hardware – hardware digital filters and hardware FFT processors, Evaluation boards for real-time DSP.	15%	7

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. "Digital Signal Processing: Principles, Algorithms, & Applications",
   Proakis, J.G., & Manolakis, D.G.,; Prentice Hall of India.
2. Digital Signal Processing
   C.Ramesh Babu Durai; LaxmiPublications(P)LTD
3. "DSP First: A Multimedia Approach",
   McClellan, J.H., Schafer, R.W., & Yoder, M.A.,; Prentice Hall Upper Saddle River, NJ.
4. "Digital Signal Processing: A Computer-Based Approach",
   Mitra, S.K.,; McGraw Hill, NY.
5. Discrete Time Signal Processing
   Oppeheim, Schafer; Pearson education publication

Useful Links:

www.nptel.ac.in

Course Outcome:

After Learning the course the students shall be able to:

1. Apply digital signal processing fundamentals.
2. Understand the processes of analog-to-digital and digital-to-analog conversion.
3. Master the representation of discrete-time signals in the frequency domain, using z-transform, discrete Fourier transform (DFT), and cosine transform.
4. Understand the implementation of the DFT in terms of the FFT, as well as some of its applications (computation of convolution sums, spectral analysis).
5. Learn the basic forms of FIR and IIR filters, and how to design filters with desired frequency responses.
6. Appreciate relationships between first order low pass, and high pass filters, and between second-order Peaking and Notching filters. Design digital filters using Matlab.
7. Use appropriate windows to diminish the effect of leakage.
8. Demonstrate the effect of the time window length on the achievable spectral resolution.
9. Learn the design procedures for filter bank.
10. Do a time-frequency analysis of a signal.

List of Practical:

1. MATLAB Code and Plot DFT of a given sequence without using the inbuilt MATLAB function.
2. MATLAB Code and Plot IDFT of a sequence without using the inbuilt MATLAB function.
3. Write a MATLAB Code and Plot Circular Convolution of given sequences Using MATLAB function.
4. MATLAB Code to apply FFT on a given sequence and plot the magnitude and phase response of the same.
5. Write a MATLAB Code to apply IFFT on a given sequence and plot the magnitude and phase response of the same.

6. MATLAB Code to implement Low Pass FIR filter for given sequence.

7. Write a MATLAB Code to implement High Pass FIR filters for given sequence.

8. MATLAB Code to implement Band Pass FIR filters for given sequence.

9. To Design a Hilbert transform function using Bartlett and Hamming Windows.

10. Design a Butterworth low pass filter for given Specifications.

11. To design a Chebyshev I low pass filter for given Specifications.

12. Design a Chebyshev II low pass filter for given Specifications.

13. Introduction of Code Composer Studio.

14. Generate Sign Wave in CCS.

15. To Design and verify FIR/IIR filter in CCS.

Open Ended Problems:

Open Ended problem in Virtual Lab based on Filter realization.

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of CDC

SYLLABUS FOR 6th Sem BTech PROGRAMME

Employability Skills - 2 (03193352)

Type of Course: BTech

Prerequisite:

Rationale: Cracking aptitude is the first step towards cracking placements and competitive exams

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/		T	P	T	CE	P	
1	1	-	2	-	-	-	100	-	100

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Coding & decoding, series, analogy, odd man out and Visual reasoning**: • Understand various types of questions which they can come across in the given topic. • Tips and tricks to solve questions on the above mentioned topics.	5%	3
2	**Worksheet on LSRW**: • practice papers of the four language skills will be a revision for students	5%	2
3	**Critical Reasoning**: • By this session, the students will get the in-depth information about various aspects of Critical Reasoning, various types of questions which come in this sub-section.	5%	3
4	**Social Networking**: • This session will provide knowledge about the importance of Social Networking sites in their Professional life.	5%	1
5	**Logical Connectives, Syllogism, Venn diagrams**: By the end of this session, students will be able to: • Understand various types of questions which they can come across in the given topic. • Tips and tricks to solve questions on the above mentioned topics.	5%	3
6	**Entrepreneurship skills (SELLING THE CONCEPT)**: This topic will help students develop the skills necessary to develop into Self- Sufficient business leaders through Entrepreneurship studies.	5%	2

7	**Numbers**: By the end of this session, students will be able to: • Understand various types of questions which they can come across in the given topic. • Tips and tricks to solve questions on the above mentioned topics.	5%	3
8	**Driving sense (INDUSTRIAL SAFETY NORMS)**: This session will guide students to follow the safety norms of an Industry.	5%	1
9	**Permutation, Combination and Probability**: By the end of this session, students will be able to: • Understand various types of questions which they can come across in the given topic. • Tips and tricks to solve questions on the above mentioned topics.	5%	3
10	**ATMA (AIMS Test For Management Admission) – Introduction to AIMS and solving worksheet on AIMS questions**: By this practice session, students will come to know the pattern of MANAGEMENT ADMISSION TEST; by solving previous years papers.	5%	1
11	**Profit and loss, Partnerships and averages**: By the end of this session, students will be able to: • Understand various types of questions which they can come across in the given topic. • Tips and tricks to solve questions on the above mentioned topics.	5%	3
12	**XAT-Worksheet on Verbal questions from previous year's XAT paper**: This practice paper will students an insight into the Pattern of Competitive exam papers [verbal section]; by solving previous years papers.	5%	2
13	**Sentence Completion and Para Jumbles**: By the end of this session, students will be able to: • Understand various types of questions which they can come across in the given topic. • Tips and tricks to solve questions on the above mentioned topics.	5%	3
14	**IELTS – Covering LSWR questions from IELTS**: the practice papers of IELTS will in a way train students for language based competitive exams.	5%	2
15	**Time, speed and distance**: By the end of this session, students will be able to: • Understand various types of questions which they can come across in the given topic. • Tips and tricks to solve questions on the above mentioned topics.	5%	3

16	**CAT - Worksheet on Verbal questions from previous year's CAT paper**: In this session students will come to know about the Eligibility Criteria, the rounds conducted in the exam, sections and important topics per section for the exam by solving previous years papers.	5%	1
17	**Vocabulary**: By the end of this session, students will be able to: • Understand various types of questions which they can come across in the given topic. • Tips and tricks to solve questions on the above mentioned topics.	5%	3
18	**Worksheet on questions from GMAT**: In this session students will come to know about the Eligibility Criteria, the rounds conducted in the exam, sections and important topics per section for the exam by solving previous years papers.	5%	2
19	**Voices and Forms of Speech**: By the end of this session, students will be able to: • Understand various types of questions which they can come across in the given topic. • Tips and tricks to solve questions on the above mentioned topics.	5%	3
20	**GRE – Worksheet on GRE's previous year questions**: In this session students will come to know about the Eligibility Criteria, the rounds conducted in the exam, sections and important topics per section for the exam by solving previous years papers.	5%	1

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Electronics & Communication Engineering

SYLLABUS FOR 6th Sem BTech PROGRAMME

Embedded System (03107380)

Type of Course: BTech

Prerequisite: Digital Electronics fundamentals, Microprocessors (8085), Microcontroller (8051) and Basic knowledge of high level languages like C

Rationale: Course provides the concept of Embedded System Design using AVR Microcontrollers, programming skills and various protocols. This subject covers sufficient knowledge in all aspects to design Small Scale Embedded Systems

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		T	P	T	CE	P	
3	0	2	4	60	30	20	20	20	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Introduction**: Embedded system and general purpose computers,Embedded systemcomponents, Embedded System Design Process, Classification of anembedded system, Examples of an embedded system, and Applications of anembedded system.	10%	4
2	**Overview of AVR and Related Software**: Introduction to AVR Studio 6, Introduction to BASSCOM, Introduction to AVR IDE/WINAVR, Overview of AVR family, AVR microcontroller architecture, Register, AVR status register, ROM spaceand other hardware modules, ATmega32 pin configuration & function of each pin, Addressing modes of AVR, overview of instruction set of AVR	20%	8
3	**AVR Interfacing with peripherals and programming in C**: Data types, I/O programming, logic operations, Intel HEX file, Timer programming in C,Interrupt programming in C, Serial Port programming in C, LCD and Keyboard Interfacing, ADC, DAC and sensor interfacing, Stepper Motor Interfacing, PWM programming and DC motor control, SPI protocol and Display interfacing, I2C Protocol and RTC interfacing	30%	17
4	**Inter process Communication and Synchronization of processes, Thread and Task**: Multiple process and thread in application, Task and Task state, Task control block, Task coding, Task scheduling, Semaphores, Semaphoresfor synchronization, Data sharing and deadlocks, Inter process communication, Sockets and remote procedure call	20%	7

| 5 | **RTOS**:

Operating system service, Process management, Timer and Event function, Memory management, Device, File and I/O subsystem management, Interrupt routine in RTOS environment and handling of interrupt service calls, Basic design using RTOS, RTOS task scheduling models, Interrupt latency and response of tasks as performance metrics, OS security issue | 20% | 7 |

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Embedded Systems, Architecture, Programming and Design
   Raj Kamal; TMH
2. The AVR Microcontroller and Embedded Systems Using Assembly and C,
   Muhammad Ali Mazidi, Sarmad Naimi and Sepehr Naimi,; Pearson Education
3. Introduction to Embedded Systems
   K. Shibu; TMH Edition
4. Programming and Customizing the AVR Microcontroller
   Dhananjay Gadre; McGraw Hill Education
5. AVR ATmega32 data sheet

Useful Links:

1. http://winarm.scienceprog.com/
2. http://www.nxp.com/products/microcontrollers/product_series/lpc2100_200_300_400/
3. http://www.freertos.org/

Course Outcome:

After Learning the course the students shall be able to:

1. Understand the Software Architectures for Embedded Systems
2. Program Embedded Systems using programming languages
3. Define issues related to Programming and Run-time Environment
4. Analyze the embedded systems' specification and develop software programs
5. Evaluate the requirements of programming Embedded Systems, related software architectures and tool chain for Embedded Systems
6. Understand architecture of AVR and how to program AVR chip to interface it with different peripherals.

List of Practical:

1. Familiarization with AVR simulator and trainer kit

2. Assembly Code: Transfer, Arithmetic and Logical

3. Assembly Code: Branch and Bitwise

4. Assembly and Embedded C: Chip peripherals

5. Installation of Arduino software and write program for blinking LED

6. Read Push-button switch and display its status on LED using Arduino

7. Interfacing Buzzer with AVR Board

8. Serial Communication using AVR Board

9. Interfacing of LED using AVR Board

10. Interfacing 7-Segment LED Display with AVR Board

11. Interfacing of 16x2 LCD with AVR board

12. Interface 4x4 matrix keyboard with AVR microcontroller.

13. Read analogue voltage using AVR board

14. Interfacing of Real Time Clock DS1307

15. Interface DC Motor with AVR Microcontroller.

PARUL UNIVERSITY-FACULTY OF ENGINEERING
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
SYLLABUS FOR 3rd YEAR B. TECH. PROGRAMME (EC)
Industrial Instrumentation (SUBJECT CODE: 03107381)
ACADEMIC YEAR 2015-16

Type of Course: Electronics Engineering

Prerequisite: Knowledge of measurement instruments, Sensors, Transducers.

Rationale:

Sound knowledge about various techniques used for the measurement of industrial parameters is essential for the student of engineering. This subject provides the knowledge of measurement of velocity, displacement, viscosity, temperature using various types of sensors and related circuits. **Teaching and Examination Scheme:**

Teaching Scheme (Hrs/Week)			Credit	Examination Scheme					Total
				External		Internal			
L	T	P		Theory	Practical	Theory	*C.E.	Practical	
3	0	2	4	60	30	20	20	20	150

L- Lectures; **T**- Tutorial; **P-** Practical;**C.E**. -Continuous Evaluation

Sr. No.	Topic	Weightage	Teaching Hrs.
1.	**Transducers:** Introduction to instrumentation system, static and dynamic characteristics of an instrumentation system, Principles and classification of transducers, Electrical transducers, basic requirements of transducers		
2.	**Strain Gauge and Strain Measurement:** Factors affecting strain measurements, Types of strain gauges, theory of operation of resistive strain gauge, gauge factor, types of electrical strain gauges, strain gauge materials, gauging techniques and other factors, strain gauge circuits and temperature compensation, applications of strain gauges.		
3.	**Displacement Measurement:** Resistive potentiometer (Linear, circular and helical), L.V.D.T., R.V.D.T. and their characteristics, variable inductance and capacitance transducers, Piezo electrical transducers-output equations and equivalent circuit, Hall effect devices and Proximity sensors, Large displacement measurement using synchros and resolvers, Shaft encoders.		
4.	**Forces and Torque Measurement:** Load cells and their applications, various methods for torque 05 10 measurement. Use of torque wrenches		
5.	**Pressure Measurement:** Mechanical devices like Diaphragm, Bellows, and Bourdon tube for pressure measurement, Variable inductance and capacitance transducers, Piezo electric transducers, L.V.D.T. for measurement of pressure, Low pressure and vacuum pressure measurement using Pirani gauge, McLeod gauge, Ionization gauge, Pressure gauge calibration.		
6.	**Flow Measurement:** Differential pressure meter like Orifice plate, Venturi tube, flow nozzle, Pitot tube, Rotameter, Turbine flow meter, Electro magnetic flow meter, hot wire anemometer, Ultrasonic flow meter.		
7.	**Level Measurement:** Resistive, inductive and capacitive techniques for level measurement, Ultrasonic and radiation methods, Air purge system (Bubbler method)		
8.	**Temperature Measurement:** Resistance type temperature sensors – RTD & Thermister, Thermocouples & Thermopiles, Laws of thermocouple – Fabrication of industrial thermocouples – Signal conditioning of thermocouples output - Radiation methods of		

Sr. No.	Topic	Weightage	Teaching Hrs.
	temperature measurement – Radiation fundamentals – Total radiation & selective radiation pyrometers – Optical pyrometer – Two colour radiation pyrometers		
9.	**Digital Data Acquisition systems & control:** Use of signal conditioners, scanners, signal converters, recorders, display devices, A/D & D/A circuits in digital data acquisition. Instrumentation systems. Types of Instrumentation systems. Components of an analog Instrumentation Data – Acquisition system. Multiplexing systems. Uses of Data Acquisition systems. Use of Recorders in Digital systems. Digital Recording systems. Modern Digital Data Acquisition system. Analog Multiplexed operation, operation of sample Hold circuits.		

*Continuous Evaluation:

It consists of assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:
1. Industrial Instrumentation & Control by S. K. Singh.TMH Publication
2. Electrical and Electronics Measurement and Instrumentation, By A. K. Shawney, Dhanpatrai & sons publications.
3. Measurement Systems – Application and Design By E.O. Doebelin, TMH Publication
4. Principles of Industrial Instrumentation, D Patranabis, 3rd edition, Mc Graw hill
5. Mechanical & Industrial Measurements by R. K. Jain, Khanna pub

Course Outcome:

After learning the course the students should be able to:
CO1: Understand about various types of transducers, and its applications.
CO2: Understand about various types measurement parameters and its effects.
CO3: Appreciate use of sensors in measurements of signals.
CO4: Acquire various signals from different sources and understand the process on the single system.

List of Practical:
1. To study the measurement of weight using Strain gauge.
2. To study the measurement of linear displacement using Linear Variable Differential Transformer (LVDT).
3. To Study the measurement and control of temperature using Resistance Temperature Detector (RTD).
4. To Study the measurement and control of temperature using Thermocouple.
5. To Study the measurement and control of temperature using Thermistor
6. To study the measurement of flow using Ultrasonic Flow meter.
7. To study the measurement of speed using Decoder.
8. To study the measurement of torque
9. To study the measurement of force using Piezoelectric transducer.
10. To study Measurement of flow using Electromagnetic flow-meter.

Project:

Students shall carry out projects based on practical, either individually or in groups. Following are definitions of some of sample projects.

1. Design of active noise removal / cancellation circuit.
2. To design various transducer circuits systems for measuring different non-electrical quantities.
3. Design of anti aliasing filter.
4. To test various active and passive components using CRO.
5. To obtain Lissajous pattern and eye diagram using CRO.
6. To measure high voltage using CRO.
7. To design a sine wave, square wave and pulse generator as per given specification. .(May use tools also like Labview/Pspice/MultiSim etc. for practical design and testing)
8. To design a required waveform using arbitrary waveform generator and measure various parameters using DSO.
9. To design function generator and frequency counter as per given specification..(May use tools also

like Labview/Pspice/MultiSim etc. for practical design and testing)

10 Design of sample and hold circuit for required measurement as per given specification and requirement.

Major and Minor Equipments:

1. Function generator
2. Digital multimeter
3. D.C. power supply
4. Cathode Ray Oscilloscope
5. Digital Storage Oscilloscope
6. LCR-Q meter
7. Field strength meter(dB meter)
8. Experimental trainer kits, Bread board, Computers

List of Open Source Software/learning website:
i. Electronic Workbench/MultiSIM/Circuit Maker /Pspice
ii. www.ocw.mit.edu
iii. www.home.agilent.com
iv. Labview

ACTIVE LEARNING ASSIGNMENTS: Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to Parul University.

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Electronics & Communication Engineering

SYLLABUS FOR 6th Sem BTech PROGRAMME

Satellite Commnunication and Radar (03107382)

Type of Course: BTech

Prerequisite: Knowledge of Communication Engineering and Basic knowledge of Mathematics.

Rationale: Communication plays a vital role in our lives. Development in communication technology has increased its application in allied fields of electronics including computer and industrial control. Knowledge of communication is essential to understand today's multidisciplinary application. Satellite and Radar communication is applied subject which stimulate interest in the exciting field of electronic communication.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		T	P	T	CE	P	
3	0	2	4	60	30	20	20	20	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Introduction::** Overview of Satellite Communication	5%	2
2	**Orbital Mechanics and launchers:** Orbital Mechanics, Look Angle Determination, Orbital perturbations, orbit Control system, Telemetry, tracking, Command and monitoring, power systems, Communication subsystems, Transponders, Satellite Antennas	14%	5
3	**Satellite Link Design:** Basic transmission Theory, system noise temperature and G/T ratio, Design of downlinks, Satellite systems using small earth stations Uplink design, Design for C/N:Combining C/N and C/I values in satellite links, System design examples	15%	5
4	**Multiple access techniques for satellite links:** Multiple access, Frequency division Multiple Access, Time, division Multiple Access, On board processing, Demand access Multiple Access, Random access. Code division Multiple Access.	9%	3
5	**Error Control for Digital Satellite Links:** Error Detection and Correction , Channel Capacity , Error Control Coding, Linear and Cyclic Block Codes, Golay Codes,Performance of Block Error Correction Codes, Convolutional Codes , Implementation of Error Detection on Satellite Links .	14%	5

6	**Principles of Radar**: Introduction, The simple form of Radar Equation, Radar Block diagram and Operation, Radar Frequencies, millimeter and submilimeter waves, Applications of Radar.	12%	4
7	**Radar Equation**: Prediction of Range Performance, Minimum Detectable Signal, Receiver Noise, Signal to Noise Ratio, Matched filter impulse response, Integration of radar Pulses, Radar Cross Section of Targets, Cross section Fluctuations, Radar Clutter-surface clutter, sea clutter and Land clutter ,weather clutter, Transmitter Power, Pulse Repetition Frequency and Range ambiguities, system losses, propagation effects, other considerations.	14%	5
8	**Radar Displays & CW and FM Radar**: Radar Scope-A-SCOPE,B-SCOPE,C-SCOPE,D-SCOPE,E-SCOPE,PPI,RHI, The Doppler effect, CW radar, FMCW radar, Airborne Doppler Navigation, Multiple Frequency CW radar	17%	7

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Satellite Communications
   Timothy Pratt and C.W Bostian,Jeremy E. Allnutt; John Wiley & Sons; 1St Edition
2. Satellite Communication
   Dennis Roddy; TataMcGraw Hill
3. Satellite communication
   Wilbur L. Pritchard & Josheph a.Sciulli; PHI
4. Introduction to Radar Systems
   Skolnik M.; Tata McGraw-Hill; 3rd
5. Radar Principles
   Peyton Z. Peebles John Wiley

Course Outcome:

After Learning the course the students shall be able to:

1. Understand fundamentals of satellite communication.
2. Calculate link budget and Design Satellite link
3. Understand concept of Radar communication.
4. Design antenna for RADR application
5. Understand operation of CW and MTI Radar system

List of Practical:

1. To study satcom-3 Falcon made satellite communication system
2. To set up active & passive satellite communication link and study their difference
3. To measure signal to noise (S/N) ratio
4. To study INTELSAT Satellite
5. To study of different earth station antennas
6. To study Multiple Access Techniques
7. Introduction to DBS system for TV & RADIO
8. To study Basics of Radar and navigational AIDS
9. To Determine the velocity of the object moving in the Radar range

10. To understand the principle of Doppler Radar of time and frequency measurement with the help of moving pendulum

11. To implement and analyze RADAR range equation using MATLAB

12. Analysis of RADAR signal to noise ratio again target detection range for different values of radar cross section using MATLAB

13. Analysis of RADAR signal to noise ratio again target detection range for different values of radar peak power using MATLAB.

14. Study of the object counting with the help of Radar

PARUL UNIVERSITY - FACULTY OF ARCHITECTURE

Department of Architechture

SYLLABUS FOR 6th Sem BTech PROGRAMME

Landscape Planning and Design (01100391)

Type of Course: BTech

Prerequisite: Building & Town Planning

Rationale:

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
Lect Hrs/ Week	Field Work Hrs/ Week	S Hrs/ Week		External		Internal			
				T/D	V/P	I	Sub	J	
2	0	0	2	-	-	30	20	-	50

Lect - Lectures, **Field Work** - Field Work, **S** - Studio, **I** - Internal, **J** - Jury, **Sub** - Submission, **T/D** - Theory, **V/P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**LANDSCAPE PLANNING AND DESIGN**: Ecology, Environment, Components, Ecosystem at various levels, conservation of natural resources, rainwater harvesting Elements of Landscape: Landforms, plant materials, water, rocks, lighting etc. Types of soils, plant materials, trees, shrubs, ground covers, creepers (flowering and non-flowering), rocks, stones and water bodies. Surfacing Materials, landforms, manmade elements. Historical and contemporary attitudes to landscape in Indian and other contexts. Principles of landscape design: surfacing, enclosure vistas, visual corridor, composition of plant and other material, etc. Preparing landscape design presentation drawing (using symbols etc.)	100%	32

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. • With people in mind: design and management of everyday nature, Kaplan, R., Kaplan, S., Ryan, R, Island Press Washington DC

2. Landscape architecture
   J.O. Simonds; Landscape architecture
3. The landscape we see
   Garrett Eckbo, Mcgrewhill

Course Outcome:

After Learning the course the students shall be able to:

To learn principles of landscape design, its techniques and application; understanding ecology, ecosystem and environmental conservation.

PARUL UNIVERSITY - FACULTY OF ARCHITECTURE

Department of Architechture

SYLLABUS FOR 6th Sem BTech PROGRAMME

Urban Planning and Design (01100392)

Type of Course: BTech

Prerequisite: Building & Town Planning

Rationale:

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme						Total
Lect Hrs/ Week	Field Work Hrs/ Week	S Hrs/ Week		External		Internal				
				T/D	V/P	I	Sub	J		
2	0	0	2	-	-	30	20	-		50

Lect - Lectures, **Field Work** - Field Work, **S** - Studio, **I** - Internal, **J** - Jury, **Sub** - Submission, **T/D** - Theory, **V/P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**URBAN PLANNING AND DESIGN**: Concept of Urbanization and its related terms, aspects, issues and concerns. Concept of Urban Planning, its objectives and potential areas of intervention such as Infrastructure provision, Heritage Management, Natural Resource Management, Housing, Traffic and Transportation Planning and Management, Resilience Planning, Development Management, Urban Poverty, Urban Management, Urban governance, Gender inequality, etc. Technological tools for Planning: Introduction to GIS Mapping and its application in Urban Planning. Planning techniques adopted in India: TP Scheme mechanism (Land pooling technique), Development Plan, City Development Plan, Detailed Project Report, etc. Urban Reforms in India: 73rd & 74th Constitutional Amendment Act, JnNURM, etc. Planning Legislations in India: GTPUD Act, SEZ Policy Act, Land Acquisition Act, etc. Sustainable Development & Planning: Inclusive, Gender neutral, Climate responsive and Resilient. Sustainable Development Goals. Understanding the term Urban: Definitions and Approaches, looking at how various theorists have defined / understood the [urban][or the [city][as an object of investigation. Urbanism & New Urbanism Understanding the term Urban Design and inter-relation of Architecture and Urban Design. 'Urban Design' as a focus on physical improvement of the public environment. Public Realm, definition and understanding the design of Public realm City Scape / Town Scape, understanding and analysis Understanding of Terminologies such as Tissue, Block, Grains, Porosity, Typology, District, Landmarks, etc.	100%	32

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1.   Architecture of Town & Cities, Paul Spreiregen

2.   Image of the City, Kevin Lynch

3.   Good City Form,, Kevin Lynch

4.   Town & Squares, Paul Zucker

Course Outcome:

After Learning the course the students shall be able to:

After Learning the course the students shall be able to:
To inculcate the understanding of Urban Planning, its significance, objectives, aspects, issues, concerns, techniques, tools, approaches and potential interventions.

PARUL UNIVERSITY - FACULTY OF ARCHITECTURE

Department of Architechture
SYLLABUS FOR 6th Sem BTech PROGRAMME
Site Planning and Design (01100393)

Type of Course: BTech

Prerequisite: Building & Town Planning

Rationale:

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme						Total
				External		Internal				
Lect Hrs/ Week	Field Work Hrs/ Week	S Hrs/ Week		T/D	V/P	I	Sub	J		
2	0	0	2	-	-	30	20	-		50

Lect - Lectures, **Field Work** - Field Work, **S** - Studio, **I** - Internal, **J** - Jury, **Sub** - Submission, **T/D** - Theory, **V/P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**SITE PLANNING AND DESIGN**: Climate: Elements of climate, Climatic zones in India, Regional variations in climate of India, Micro and Macro climate. Introduction to site planning, Importance of site planning, Various factors affecting to Site planning process Site analysis - understanding various factors influencing site selection and resource analysis. Importance of site Planning for starting a new site and Site Set up in Site Planning Basic requirements for starting a new site How to influence of site data like contouring, rain intensity, catchment area, geological conditions, local tradition, material + Labor + Machinery availability in same region, water resources, sanitation disposal facility etc. in site planning Site planning in urban area and Rural Area [Particularly Mass Housing - Site planning in natural area] Site planning standards, sources of information for site data and site information Importance of Contour Survey map in site Planning and interpretation Importance of Water supply and Sanitation/Drainage system in site planning Land use and circulation, zoning, service systems in site planning Various Factors affecting for Site Planning for Different Project Like Mass Housingproject, Residential projects, Industrial Project, Institutional project, Public Project,Resort / Tourist Project Site Planning: Selection of site for various projects, consideration of physical characteristics of site, locational factors, orientation, climate, topography Landscaping Mass Housing design Traditional housing, cluster housing apartments and high-rise housing [vertical development of housing] integration all types of services, parking, incorporation of green sustainable practices prefabrication in housing	100%	32

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1.   Site planning, Lynch, Kevin

2.   A Guide to Site and Environmental Planning, Rubinstein, Harvey M

3.   Grade Easy, Untermann, Richard K

4.   Site Planning for Cluster Housing, Untermann, Richard K.

5.   Design with Nature, Mc Harg, Ian

6.   Urbanization Primer, Caminos, Horatio, and Reinhard Goethert

Course Outcome:

After Learning the course the students shall be able to:

After Learning the course the students shall be able to:
To develop sensitivity to factors influencing site design/planning in a Rural or an Urban area,
To develop understanding of principles and techniques of site planning and apply them to actual situations/conditions.

PARUL UNIVERSITY - Faculty of Management Studies

Department of MANAGEMENT

SYLLABUS FOR 4th Sem BTech PROGRAMME

Fundamentals of Management (06100391)

Type of Course: BTech

Prerequisite: Zeal to learn the subject

Rationale: Objective of the course is to give a basic perspective of management theories and practices. This forms foundation for the study of other functional areas of management.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		T	P	T	CE	P	
2	0	0	2	-	-	30	20	-	50

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Module -1**: Concept of Management: Organization and need for Management, Management process, Management as Science or Arts, Skills of Manager, Mintzberg Managerial roles, Functions of Management, Administration vs. Management (T-1, Ch-1), Evolution of Management Thoughts: FW Taylor Scientific Management Theory, Henry Fayol Theory, and Elton Mayo's Hawthorne experiment (T- 1, Ch- 2)	30%	10
2	**Module -2**: Planning & Strategic Management: Importance of planning, the strategic management process, Levels of strategy (T 1 Ch 10) Management by Objective(T 1 Ch 11)	30%	10
3	**Module - 3**: Organizational design and organizational structure: Types of Organizational Structure Product/Market organization ,Matrix Organization, Formal and informal organization(T 1 Ch 12)	20%	5

	Module - 4: Leadership :The trait approach to leadership, behavioral approach to leadership(T 1 Ch 17) Motivational theories: Need theory and equity theory(T 1 Ch 16) Making effective teams(T 1 Ch 18)		
4		20%	5

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Course Outcome:

After Learning the course the students shall be able to:

After Learning the course the students shall be able to:
(1) This course will lead to thorough understanding of behavioral issues in an organization.
(2) This course will make the students better leaders, will help them form effective teams and to motivate the employees.
(3) At the end of the course the students will be well versed in forming effective strategies for the organization.

PARUL UNIVERSITY - Faculty of Management Studies

Department of MANAGEMENT

SYLLABUS FOR 4th Sem BTech PROGRAMME

Market Mechanism in Power Systems with Distributed Energy Sources (06100392)

Type of Course: BTech

Prerequisite:

Rationale:

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		External		Internal			
				T	P	T	CE	P	
2	0	0	2	0	0	30	20	0	50

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Energy Market & The Main Driving Growth of Energy Demand growth**: Population growth, Economic growth, Global reserves of energy commodities & their classification, Global production, International trade and consumption of primary energy, Development of global electricity Industry, Energy intensity of global economy and Energy Prices	14%	4
2	**Energy Sector in Poland**: Sector overview in Poland, Production of electricity, Electricity Transmission and Distribution, Export and Import of Energy, Renewable energy sources	6%	2
3	**Cost of Capital**: Definition of Cost of Capital, Concept and Regulatory Objectives,) Weighted Average Cost of Capital (WACC),Cost of Debt, Cost of Equity, Capital Structure (gearing), Treatment of Taxes, Quantification of Cost of Capital, Capital Asset Pricing Model (CAPM), Fama-French 3-factor Model, Arbitrage Pricing Theory (APT), Dividend Growth Model (DGM), Comparable Earnings Model (CEM)	14%	4
4	**Efficiency Assessments**: Methods for efficiency assessments, Performance indicators, Data Envelopment Analysis, Parametric Approaches, Virtual network models, Application of efficiency results, TOTEX versus OPEX benchmarking, Efficiency convergence speed, Supporting schemes	14%	4

5	**Electricity Pricing**: Pricing principles, General pricing models, Average cost pricing, Marginal cost pricing, Cost allocation issue, International Examples	12%	4
6	**Price Regulation**: Introduction, Major price control models, Overview, Rate of return, Cap regulation, Sliding scale regulation, Yardstick competition, Regulatory formulas, Principle design criteria, Efficiency incentives, Practicability – information requirements, Impact on investment, Regulatory risk, Application of regimes in practice	14%	4
7	**Quality of supply Regulation**: Quality definition, Quality measurement, Reliability, Technical quality, Commercial quality, Relevance of quality regulation, Regulatory quality control, Design of incentive schemes for quality, Outage cost, International examples	14%	4
8	**Regulation-General Principles**: Objectives of Regulation, Areas of Regulation, Scope of Regulation, Methods of Regulation, Institutional Questions, Consultation and Communication, Regulatory Performance	6%	2
9	**Revenue Requirements and Regulatory Asset Base (RAB)**: Introduction, Revenue Components, Regulatory Asset Base (RAB), Asset Valuation	6%	2

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

PARUL UNIVERSITY - Faculty of Social Work

Department of Social Work

SYLLABUS FOR 6th Sem BTech PROGRAMME

Corporate Social Responsibility (10100391)

Type of Course: BTech

Prerequisite:

Rationale:

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		External		Internal			
				T	**P**	**T**	**CE**	**P**	
2	0	0	2	0	0	30	20	0	50

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Introduction to CSR**: CSR concepts, Issues and Practices, Vision and Engagement, Evolution, Need, Evolving Role of Stakeholders	20%	6
2	**CSR applicability in India**: CSR in India, CSR Policies and Governance , CSR Practices, Section 135	20%	6
3	**CSR Models**: Models of CSR, Public-Private-People Partnership Model Authority and Accountability	20%	6
4	**CSR Philosophy**: Ethics in Business, Social and Societal Responsibilities, Code of Ethics, Moral and Economic Arguments for CSR	20%	6
5	**CSR Standards and guidelines**: Guidelines on CSR- ISO 26000, CSR Implementation and Sustainability, Reporting and Communication	20%	6

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Corporate Social Responsibility
   David Crowther & Gular Aras; Ventus Publishing
2. Corporate Social Responsibility and Ethical Approach
   Mark S Schwartz; Broadview Press

3. Corporate Social Responsibility : Concept and Cases (The Indian Experience)
    Edited by C V Baxi & Ajit Prasad; Excel Books

Course Outcome:

After Learning the course the students shall be able to:

• To understand the Corporate Social Responsibility approach of organisations
• To study the various issues and practices in CSR
• To study the interdependence of industries and society

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Law
SYLLABUS FOR 6th Sem BTech PROGRAMME
Constitution of India (17100391)

Type of Course: BTech

Prerequisite:

Rationale:

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		External		Internal			
				T	P	T	CE	P	
2	0	0	2	0	0	30	20	-	50

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Introduction to Indian Constitution**: • Nature of Indian constitution ; Framing of the Indian constitution; Role of the Constituent Assembly – Salient features of the Constitution of India • Preamble of Indian Constitution • The Union & its territory & Citizenship	25%	7
2	**Fundamental Rights**: • Meaning of State • Right of Equality • Freedom of speech • Protection in respect of conviction for offences • Protection of Life & Personal Liberty & Safeguards against arbitrary arrest and detention • Right Against Exploitation • Right to Freedom of Religion • Cultural and Educational Right • Right to Constitutional Remedies	25%	10
3	**Directive Principles of State Policy& Fundamental duty**: • Directive Principles of State Policy • Social economic charter • Social security charter • Community welfare charter • Relation between directive principles and fundamental rights • Fundamental Duties & needs of fundamental duties	25%	8

4	**Constitutional Executive & Legislative Bodies, Judiciary & Residuary Topics –**: • The President and The Vice President, The Prime Minister and the Council of Ministers. • The Union Parliament – LokSabha & RajyaSabha. • State Executive – The Governors, The Chief Ministers and The Council of Ministers. • State Legislature – Legislative Assembly and Legislative Council. • The Union & State Judiciary	25%	5

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. An Introduction to the Constitution of India
   M. V. Pylee; Vikas New Delhi
2. Comparative Constitutional Law
   M. P. Singh; Eastern Book Company
3. An introduction to the Constitution of India
   D. D. Basu