

B.Tech (EEE) Syllabus for Admission Batch 2017-18 7th / 8th semester

SEVENTH SEMESTER					
Theory / Practical / Sessional					
Subject Code	Subject Name	Hours/ Week L/T	Credit Theory	University Marks	Internal Evaluation
PEL7J00 1/ PEL7J00 2/ PEL7J003	Control System Engineering II/ Advanced Power Electronics/ Digital Image Processing	3-0-0	3	100	50
PEL7J00 4/ PEL7J00 5/ PEL7J00 6/ PEL7J007	Mobile Communication/ Adaptive Signal Processing/ Mechatronics/ Switch Gear & Protective Devices	3-0-0	3	100	50
PCP7H007 / PCP7H008/ PCP7H009	Internet of Things (IOT)/ NanoScience&BioTec hnology/ IntellectualPropertyRig hts(IPR)	3-0-0	3	100	50
PCP7H010 / PCP7H011/ PCP7H012	Soft Computing/ IntroductiontoManagement& Function/ MarketingManagement	3-0-0	3	100	50
PCP7H013 / PCP7H014 / PCP7H015	Entrepreneurship Development/ E-Commerce & ERP / Business Regulatory Framework	3-0-0	3	100	50
Total Credit/Marks (Theory)			15	750	
Practical					
PEL7N201	Seminar	0-0-2	2	-	100
PEL7N202	Minor Project	0-0-2	4	-	200
PEL7N203	Comprehensive Viva	0-0-1	2	-	100
Total Credit/Marks (Practical)			08	400	
Total Semester Credit/ Marks			23	1150	

B.Tech (EEE) Syllabus for Admission Batch 2017-18 7th / 8th semester

Eighth Semester					
Sl. No.	Subject Category	Subject Name	Credit	University Marks	Internal Marks
Practical					
1	PEL8N201	Internship/ Major Project	10	-	500
Total Credit/Marks (Practical)			10	500	
Total Semester Credit/ Marks			10	500	

PEL7J001 Control System Engineering II 3-0-3

Module

I

Nonlinear Control Systems: Introduction to Nonlinear systems and their properties, Common Non-linearities, Describing functions, Phase plane method, Lyapounov's method for stability study, concept of Limit Cycle.

Optimal Control Theory: Introduction, Optimal control problems, Mathematical procedures for optimal control design: Calculus of variations, Pontryagin's optimum policy, Bang-Bang Control, Hamilton-Jacobi Principle.

Module II

z-Plane Analysis of Discrete-Time Control Systems: Introduction, Impulse sampling and data hold, Reconstructing original signal from sampled signals, concept of pulse transfer function, Realization of digital controllers.

Module III

Design of Discrete-time Control Systems: Introduction, Stability analysis of closed-loop systems in the z-plane, Transient and steady state response analysis, Design based on the rootlocus method, Design based on the frequency-response method.

Module IV

State-Space Analysis: Introduction, State-space representations of discrete-time systems, Solving discrete-time state-space equations, Pulse transfer function matrix, Discretization of continuous time state space equations, Lyapunov stability analysis, Controllability and Observability, Design via pole placement, State observer design.

Text Books / Reference Books

1. Slotine & Li, Applied Non-Linear Control, Englewood Cliffs, NJ: Prentice-Hall, (1991).
2. Bandyopadhyay, M.N., Control Engineering: Theory and Practice, Prentice-Hall of India Private Limited (2003).
3. Ogata, K., Discrete-time Control Systems, Pearson Education (2005).

PEL7J002 ADVANCED POWER ELECTRONICS 3-0-0

MODULE- I

[10 Hrs]

University Portion(80%): (8 Hrs)

1. Switched Mode Power Supply:

Isolated switched mode power supplies, Forward converter, Fly back converter, Half bridge converter, Full bridge converter, Push pull converter, Switched mode power supply with multiple outputs.

Text Book- 1- Ch- [14.2.1,14.2.2,14.2.3,14.2.4,14.2.5,14.2.6]

2. Resonant Converters:

Series Resonant Converters, Parallel Resonant Converters.

Text Book- 1- Ch- [8.2,8.4]

College/Institute Portion(20%): (2 Hrs)

Zero current switching, Zero voltage switching. [Text Book-1- Ch-[8.8,8.9]. Or related advanced topics as decided by the concerned faculty teaching the subject.

MODULE- II

[10 Hrs]

University Portion(80%): (8 Hrs)

3. Regulators:

Boost regulator, Buck-boost regulator, Multi output Boost Converter, Diode rectifier fed boost converter, State space analysis of regulators.

Text Book- 1- Ch-[5.8.2,5.8.3,5.10,5.11,5.13]

4. SMPS Control:

Control requirements and technique, PWM controller, Isolation in the feed back loop, Power supplies with multiple output.

Text Book- 1- Ch- [14.3,14.5]

College/Institute Portion(20%): (2 Hrs)

Buck regulator, Cuk regulator. . Text Book- 1- Ch-[5.8.1,5.8.4]. Or related advanced topics as decided by the concerned faculty teaching the subject.

MODULE- III

[10 Hrs]

University Portion(80%): (8 Hrs)

5. Inverters:

Voltage Fed Converters:

Pulse width modulation techniques, Sinusoidal PWM, Selected harmonic elimination PWM, Space vector PWM, Hysteresis band current control PWM, Sigma delta modulation. Three level inverters, Resonant inverters, Soft switched inverters

6. Current Fed Converters:

Load commuted inverters, Forced commutated inverters, Inverters with self commutated devices.

Text Book-3- Ch-[5.5, 5.6,5.7,5.8,5.9,6.3,6.4,6.7,6.7.2.2,6.8]

College/Institute Portion(20%): (2 Hrs)

Applications of these converters. Or related advanced topics as decided by the concerned faculty teaching the subject.

7thSemest
er

MODULE- IV

[10 Hrs]

University Portion(80%): (8 Hrs)

7. AC voltage controllers: AC voltage controllers with PWM Control, Matrix Converter.
8. Application: High Voltage DC Transmission, Interconnection of renewable energy sources and energy storage system to the utility grid, Active harmonic filter.

Book-1- Ch- 11.10,11.11

Book-2- Ch- 11.4, 17.2, 17.4

College/Institute Portion(20%): (2 Hrs)

Related advanced topics as decided by the concerned faculty teaching the subject.

Text Books:

- 1) Power Electronics: Circuits, Devices and Applications by M H Rashid, 3rd Edition, Pearson.
- 2) Power Electronics: Converters , Applications and Design by Mohan, Undeland and Robbin, Wiley India Edition.
- 3) Modern Power Electronics and AC Drives by Bimal K Bose, Eastern Economy Edition, PHI.

Reference Books:

- 1) Switched Mode Power Supplies: Design and Construction by H W Whittington, B.W Flynn and D E Macpherson, 2nd Edition, Universities Press)

PEL7J004

MOBILE COMMUNICATION

3-0-0

MODULE-I An Overview of Wireless Systems: Introduction, First- and Second-Generation Cellular Systems, Cellular Communications from 1G to 3G, Wireless 4G Systems, Future Wireless Networks Radio Propagation and Propagation Path-Loss Models: Introduction, Free-space Attenuation, Attenuation over Reflecting Surfaces, Radio wave Propagation, Characteristics of Wireless Channel, Signal Fading Statistics, Propagation Path-loss Models, Cost 231 Model

MODULE-II Fundamentals of Cellular Communications: Introduction, Cellular Systems, Hexagonal Cell Geometry, Co-channel Interference Ratio, Cellular System Design in Worst-Case Scenario with an Omni directional Antenna, Co-channel Interference Reduction, Directional Antennas in Seven-Cell Reuse Pattern, Cell Splitting, Adjacent Channel Interference (ACI), Segmentation,

MODULE-III

Multiple Access Techniques: Introduction, Narrowband Channelized Systems, Comparisons of FDMA, TDMA and DS-CDMA, Comparison of DS-CDMA vs. TDMA System Capacity, Multicarrier DS-CDMA (MC-DS-CDMA) Modulation schemes: Introduction, Introduction to modulation, Phase Shift Keying, Quadrature Amplitude Modulation, M-ary Frequency Shift Keying, Synchronization,

MODULE-IV

Equalization Spread Spectrum(SS) and CDMA Systems: Introduction, Concept of Spread Spectrum, System Processing Gain, Requirements of Direct-Sequence Spread Spectrum, Frequency-Hopping Spread Spectrum Systems

Text Books: 1. Essential Reading: Selected portions from V K Garg, Wireless Communication and Networking; Morgan Kaufman Publishers India; 2008

Reference Book:

1. T S Rappaport, Wireless Communications, Pearson Education, India
2. W C Y Lee, Mobile Communication Engineering – Theory and Applications; TMH
3. T L Singhal, Wireless Communications, Tata McGraw Hill 2010

PEL7J005

ADAPTIVE SIGNAL PROCESSING

3-0-0

MODULE-I (10 Hours)

Introduction: Adaptive Systems – Definition and characteristics, General properties, Open and Closed Loop Adaptations, Applications.

The Adaptive Linear Combiner: Performance function, Gradient and Mean Square Error, Examples.

MODULE – II(14 Hours)

Theory of Adaptation with Stationary Signals: Properties of the Quadratic Performance Surface, Significance of eigen values, eigen vectors, correlation matrix.

Searching the Performance Surface: A simple gradient search algorithm, Stability and Rate of convergence, the learning curve.

MODULE-III (16 Hours)

Gradient Estimation and its effects on Adoption: The performance penalty, Variance of the gradient estimate, Misadjustment.

Adaptive Algorithms and Structures: The LMS Algorithm, Convergence, learning Curve, Performance analysis, Filtered X LMS algorithm,

MODULE-IV

Applications: Adaptive Modelling and System Identification using adaptive filter, Inverse Adaptive Modelling, Deconvolution, and equalization using adaptive filter.

Text Books

1. Adaptive Signal Processing, Bernard Widrow and Samuel D. Stearns, Pearson Education, 2nd impression, 2009.

Reference Books

1. Adaptive Filter Theory, Simon Haykin, Pearson Education, 4th Edn.

PEL7J006 MECHATRONICS 3-0-0

MODULE-I

Sensors and Transducers:- Sensors and transducers, Performance terminology, Displacement, position and proximity, Velocity and motion, Force, Fluid pressure, Liquidflow, Liquid level, Temperature, Light sensors, Selection of sensors, Inputting data by switches. Book-1: 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.10, 2.11, 2.12.

Signal conditioning:- Signal conditioning, The operational amplifier, Protection, Filtering, Pulse modulation. Book - 1: 3.1, 3.2, 3.3, 3.4, 3.5, 3.6.

Digital Signals:- Digital signals, Analogue and digital signals, digital-to-analogue and analogue-to-digital converters, Multiplexers, Data acquisition, Digital signal processing. Book - 1: 4.1, 4.2, 4.3, 4.4, 4.5, 4.6.

MODULE-II

Pneumatic and Hydraulic Actuation Systems:- Actuation systems, Pneumatic and hydraulic systems, Directional control valves, Pressure control valves, Cylinders, Servo and proportional control valves, process control valves, Rotary actuators.

Book - 1: 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8.

Mechanical Actuation Systems:- Mechanical systems, Types of motion, Kinematic chains, Cams, Gears, Belt and chain drives, bearings, Mechanical aspects of motor selection. Book - 1: 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8, 8.9.

MODULE-III

Electrical Actuation Systems:- Electrical systems, Mechanical switches, Solid-state switches, Solenoids, D.C. motors, A.C. motors, Stepper motors.

Book - 1: 9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7.

Basic System Models:- Mathematical models, Mechanical system building blocks, Electrical system building blocks, Electrical system building blocks, Fluid system building blocks, Thermal system building blocks. Book - 1: 10.1, 10.2, 10.3, 10.4, 10.5.

System Models:- Engineering systems, Rotational-translational systems, Electromechanical systems, Electromechanical systems, Linearity, Hydraulic-mechanical systems, Summary, Problems.

Book - 1: 11.1, 11.2, 11.3, 11.4, 11.5.

MODULE-IV

Closed-loop Controllers:- Continuous and discrete control processes, Terminology, Two-step mode, Proportional mode, Derivative control, Integral control, PID controller, Digital controllers, Control system performance, Controller tuning, Velocity control, Adaptive control, Summary, Problems. .

Book-1: 15.1, 15.2, 15.3, 15.4, 15.5, 15.6, 15.7, 15.8, 15.9, 15.10, 15.11, 15.12.

Programmable Logic Controllers:- Introduction to PLCs, Basic Structure of a PLC, Principles of Operation, PLCs versus Computers, Introduction to Internal Architecture and Hardware Components, PLC Programming, Analog 110, Selecting a PLC for the Application, Application of PLCs for Control.

Book-2: 13.1, 13.2, 13.3, 13.4, 13.5, 13.6, 13.7, 13.8, 13.9.

Text Books:

1. Mechatronics Electronic Control Systems in Mechanical and Electrical Engg. Pearson Publication, 4th Edition by William Bolton, 2010.
2. Mechatronics Integrated Mechanical Electronic Systems by K. P. Ramachandran, G. K. Vijayaraghavan, M. S. Balasundaram, Wiley India Edition, Printed on 2008.

B.Tech (EEE) Syllabus for Admission Batch 2017-18 7th / 8th semester

Reference Books:

1. Mechatronics integrated Technologies for Intelligent Machines by A. Smaili, F. Mrad, Oxford University Press, Printed on 2009..

2. Mechatronic Sources Book, Cengage Learning India Edition by Newton C

Brag

a, 2nd Edition, 2010.

PEL7J007 SWITCH GEAR AND PROTECTIVE DEVICES

3-0-0

MODULE- I [10 Hours]

University Portion (80%) [8 Hours]

Introduction:

Principle and need for protective schemes, Nature and causes of faults, Zones of protection, Primary and back-up protection, Basic principle of operation of protective system, Components of Protection System.

[Text Book 1 : CH 1.1, 1.2, 1.5, 1.6, 1.7, 1.8, 2.1, 2.2, 2.3]

Sequence Components and Fault Analysis:

Sequence components (positive, negative and zero) and their significance, Average 3-phase power in terms of symmetrical components, sequence impedance, fault calculations, Single line to ground fault, Line to ground fault with Z_f , Faults in Power systems, Concept of short circuit capacity of a Bus.[Ref. Book 1: CH 13.1, 13.2, 13.3, 13.4, 13.5, 13.6, 13.7, 13.8, 13.10, 13.13]

College/Institute Portion (20%) [2 Hours]

Fault limiting Reactors and Fuses: Use of Reactors, Construction of Reactors, Types of Reactors, Methods of locating Reactors, Fuse element material, types of fuses, High voltage H.R.C. Fuses and its application, Selection of fuses, Advantages and Disadvantages of Fuse.

[Ref. Book 2: CH 2.1, 2.2, 2.3, 2.4, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7] Or related advanced topics as decided by the concerned faculty teaching the subject.

MODULE- II [10 Hours]

University Portion (80%) [8 Hours]

Operating Principles and Relay Construction: Relay design and construction, Relay classification, Types of Electromagnetic relays, Theory of Induction relay torque, General Equations of Comparators and Electromagnetic Relays, Over Current relays, Directional relays, Distance relays, Differential relays.

Feeder Protection: Over current, Distance and Pilot Protection.

Static Relays:(Comparators and different relays)

Amplitude comparator, Phase Comparator, Coincidence type phase comparator, Basic elements of a static relay, Over Current Relays, Differential Protection, Static distance Protection.

[Text Book 1: CH 3.1, 3.2, 3.3, 3.4, 4.2, 4.3, 4.4, 4.7, 4.8, 4.9, 5.2, 5.3, 5.4, 11.1, 11.2, 11.3, CH

12.1, 12.2, 12.3, 12.4]

College/Institute Portion (20%) [2 Hours]

Power System Grounding: Ungrounded system, Grounded neutral system, Choice of the method of neutral grounding, Grounding Practice, Equipment Grounding (Earthing), Grounding at substations, Grounding of [Ref. Book 2: CH 7.2, 7.5, 7.6, 7.7, 7.8, 7.9] Or related advanced topics as decided by the concerned faculty teaching the subject.

Module- III [10 Hours]

University Portion (80%) [8 Hours]

Apparatus Protection: Transformer Protection, Generator Protection, Motor Protection, Bus bar protection schemes. [Text Book 1: CH 6.2, 6.3, 6.4, 6.5] Numerical relays: Block Diagram of Numerical Relay, Signal Sampling & Processing, Numerical Over-current protection, Numerical Transformer differential Protection, Numerical distance Protection of Transmission Line. [Text Book 2: CH

11.2, 11.3, 11.7, 11.8, 11.9]

B.Tech (EEE) Syllabus for Admission Batch 2017-18 7th / 8th semester

College/Institute Portion (20%)

[2 Hours]

Protection of Transmission Lines: (Over current and Carrier-aided Protection)

Over current Relay, Application of Definite Time OC Relay and IDMT Relay for protection of a distribution feeder, protection of a three phase feeder, Directional Over current Relay, Need for Carrier-aided Protection, Various options for a Carrier, Coupling and Trapping the carrier into the desired line section, Unit type Carrier-aided Directional comparison Relaying, Carrier-aided Distance schemes for Acceleration of Zone II, Phase comparison Relaying.[Text Book 2 : CH 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6] Or related advanced topics as decided by the concerned faculty teaching the subject.

Module- I V

[10 Hours]

University Portion (80%)

[8 Hours]

Switchgears: Auto reclosing, Theory of Circuit interruption, Circuit constants in relation to Circuit breaking, Re-striking voltage transient, characteristics of Re-striking Voltage, Interaction between breaker and circuit, Current chopping. Circuit Breakers: Types of circuit breakers (air blast, air break, oil, vacuum, SF₆ , DC circuit breaker), advantages and testing of circuit breaker.[Text Book 1: CH 7.1, 7.2, 7.3, 7.4, CH 13.1, 13.2, 13.3, 13.4, 13.5, 13.6, 14.2,14.3, 14.4, 14.5, 14.6, 14.7, 15.2, 15.3, 15.5, 16.2, 16.3, 16.4, 18.2, 18.5, 18.6, 18.7, 18.8]

College/Institute Portion (20%)

[2 Hours]

Protection against Over voltage due to lightning: Mechanism of Lightning, Lightning stroke, Over voltage due to lightning, Protection against lightning, Different types of Arrester, Arrester Ratings, Arrester locations and effect of cables, Surge Absorber.[Ref. Book 2: CH12.1, 12.2, 12.3, 12.4, 12.5, 12.6, 12.7, 12.8] Or related advanced topics as decided by the concerned faculty teaching the subject.

Text Books:

1. Power System Protection and Switchgear– B.Ravindranath&M.Chander–New Age International Publishers (Second Edition).
2. Fundamentals of Power System Protection – Y.G.Paithankar and S.R.Bhide, PHI Publication. (Second Edition)

Reference Books:

1. Electrical Power System - C.L.Wadhwa New Age International Publishers. (Sixth Edition).
2. Power System Engineering - M.L.Soni, P.V.Gupta, U.S.Bhatnagar, A.Chakrabarti, Dhanpat Rai & Co. (P) Ltd.
3. Protection and Switchgear - B.Bhalja, R.P.Maheshwari, N.G. Chothani, OXFORD University Press.
4. Power System Protection and Switchgear - Badri Ram, Vishwakarma, Tata McGraw hill.
5. Switchgear and Protection – Sunil S Rao , Khanna Publishers, New Delhi.
6. Power System relaying by Horwitz, Phadke, Research Press.

PCP7H007

IOT

3-0-0

Course description and objectives:

Students will be explored to the interconnection and integration of the physical world and the cyber space. They are also able to design & develop IOT Devices.

Course Outcomes:

- Able to understand the application areas of IOT
- Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks
- Able to understand building blocks of Internet of Things and characteristics.

Module I

Introduction & Concepts: Introduction to Internet of Things, Physical Design of IOT, Logical Design of IOT, IOT Enabling Technologies, IOT Levels.

Domain Specific IOTs: Home Automation, Cities, Environment, Energy, Retail, Logistics, Agriculture, Industry, Health & Life Style.

Module II

M2M & System Management with NETCONF-YANG: M2M, Difference between IOT and M2M, SDN and NFV for IOT, Software defined Networking, Network Function Virtualization, Need for IOT Systems Management, Simple Network Management Protocol, Limitations of SNMP, Network Operator Requirements, NETCONF, YANG, IOT Systems management with NETCONF-YANG.

Module III

Developing Internet of Things & Logical Design using Python: Introduction, IOT Design Methodology, Installing Python, Python Data Types & Data Structures, Control Flow, Functions, Modules, Packages, File Handling, Date/ Time Operations, Classes, Python Packages

Module IV

IOT Physical Devices & Endpoints: What is an IOT Device, Exemplary Device, Board, Linux on Raspberry Pi, Interfaces, and Programming & IOT Devices.

TEXT BOOKS:

1. VijayMadiseti, Arshdeep Bahga, "Internet of Things A Hands-On- Approach", 2014, ISBN:978 0996025515

REFERENCE BOOKS:

1. AdrianMcEwen, "Designing the Internet of Things", Wiley Publishers, 2013, ISBN:978-1-118-43062-0
2. Daniel Kellmerit, "The Silent Intelligence: The Internet of Things". 2013, ISBN:0989973700

PCP7H008

Nano Science & Biotechnology

3-0-0

Module -1(6 Hours)

Fundamental and process of fabrication

The world of small dimensions, Nanoscale Properties (Electrical, Optical, Chemical, Mechanical), Nanoscale visualization techniques , Electron microscopy (TEM, SEM, Cryo- SEM), Scanning probe microscopy (AFM, STM), Diffraction techniques (XRD,synchrotron),Top-down and Bottom-Up approach , nanoparticles (synthesis,properties and applications).

Module-2 (12 Hours)

Nano-Device and Components:

Structure of carbon nanotube, Classification and physical properties of CNT, Graphene: structure, synthesis and properties, Nanophotonics (Photonic crystal in one, two and three dimensions), Quantum dot, quantum wire, Nanofluidics: nanopores and Nano capillaries, Debye length, Nanomechanics (elastic, thermal and kinetic material properties).

Module-3 (10 Hours)

Quantum Electronics:

Coulomb blockade in nano capacitors and quantum dot circuits. Single Electron Transistor (SET), Quantum information and computing, Spintronics devices and its classifications, Structural and optical properties of nanomaterials, Molecular Electronics, NEMS, Optical and Magnetic computer.

Module -4 (10 Hours)

Bio-Device and application

Bio-nanostructures (nanofibers, nanotubes, nanocellulose), Biological nanomachines Ribosomes, Photosynthesis systems,Near-field Bioimaging, Nanoparticles for optical diagnosticsand Targeted Therapy,Protein nanotechnology, DNA nanotechnology, Nano robot and its application, Nanocapsule, Nanosomes, Medibots, Artificial pancreas, Artificial Muscle,Nanoclinic for Gene delivery and photodynamic therapy Nanoparticle in cancer, Bionanomotors.

ADDITIONAL MODULE (Terminal Examination-Internal) (05 hr)

Nanotechnology safety and the environment,Impact of nanotechnology on society and industry, Biosensors (fabrication, functionalization, applications), Current research on nanotechnology.

Books:

1. Rishal Singh, S.M. Gupta,Introduction to nanotechnologyOxford university press,(2016).
2. Paras N. Prasad, Nanophotonics, John Wiley & Sons, (2016).
3. C. M. Niemeyer, C. A. Mirkin, —Nanobiotechnology: Concepts, Applications and Perspectives, Wiley – VCH, (2004).
4. 4 T. Pradeep, —Nano: The Essentials, McGraw – Hill education, (2007).
4. Challa, S.S.R. Kumar, Josef Hormes, CarolaLeuschaer, Nanofabrication Towards Biomedical Applications, Techniques, Tools, Applications and Impact, Wiley – VCH, (2005).

5. Nicholas A. Kotov, —Nanoparticle Assemblies and Superstructures, CRC, (2006).
6. David S Goodsell, “Bionanotechnology, John Wiley & Sons, (2004).

PCP7H009

IPR

3-0-0

Module I:

Introduction to Intellectual property: Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

Trade Marks: Purpose and function of trade marks, acquisition of trade mark rights, protectable matter, selecting and evaluating trade mark, trade mark registration processes.

Module II:

Law of copy rights: Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer

Module III:

Trade Secrets: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secrete litigation.

Unfair competiitiion: Misappropriation right of publicity, False advertising.

Module IV:

New development of intellectual property: new developments in trade mark law; copy right law, patent law, intellectual property audits.

International overview on intellectual property, international - trade mark law, copy right law, international patent law, international development in trade secrets law.

TEXT BOOKS & REFERENCES:

1. Intellectual property right, Deborah, E. Bouchoux, cengage learning.
2. Intellectual property right - Unleashing the knowledge economy, prabuddhaganguli, Tata Mc Graw Hill Publishing Company Ltd.

PCP7H010

SOFT COMPUTING

3-0-0

MODULE – I (8 hours)

Basic tools of soft Computing: Fuzzy logic, Neural Networks and Evolutionary Computing, Approximations of Multivariate functions, Non – linear Error surface and optimization.

MODULE – II (8 hours)

Fuzzy Logic Systems: Basics of fuzzy logic theory, Crisp and fuzzy sets; Basic set operations; Fuzzy relations, Composition of Fuzzy relations, Fuzzy inference, Zadeh's compositional rule of inference; Defuzzification ; Fuzzy logic control; Mamdani and Takagi and Sugeno architectures. Applications to pattern recognition.

MODULE—III (16 hrs)

Neural networks: Single layer networks, Perceptron; Activation functions; Adalinc- its training and capabilities, weights learning, Multilayer perceptrons; error back propagation, generalized delta rule; Radial basis function networks and least square training algorithm, Kohonen self – organizing map and learning vector quantization networks; Recurrent neural networks, Simulated annealing neural networks; Adaptive neuro-fuzzy information; systems (ANFIS),

MODULE—IV (08 hrs)

Evolutionary Computing: Genetic algorithms: Basic concepts, encoding, fitness function, reproduction. Differences of GA and traditional optimization methods. Basic genetic, basic evolutionary programming concepts Applications, hybrid evolutionary algorithms.

Text Books

- 1) F. O. Karry and C. de Silva, "Soft Computing and Intelligent Systems Design – Theory, Tools and Applications". Pearson Education. (Printed in India).

Reference Books

- 1) J. S. R. Jang. C. T. SUN and E. Mizutani, "Neuro-fuzzy and soft-computing". PHI Pvt. Ltd., New Delhi.
- 2) Fredric M. Ham and Ivica Kostanic, "Principle of Neuro Computing for Science and Engineering", Tata McGraw Hill.
- 3) S. Haykins, "Neural networks: a comprehensive foundation". Pearson Education, India.
- 4) V. Keeman, "Learning and Soft computing", Pearson Education, India.
- 5) R. C. Eberhart and Y. Shi, "Computational Intelligence Concepts to Implementation". Morgan Kaufmann Publishers (Indian Reprint).

PCP7H011 INTRODUCTION TO MANAGEMENT AND FUNCTION 3-0-0

Module – I: Introduction

Introduction to Management: Concept, Definition, Functions; Levels of Management, Skills and Roles of a Manager; Management Process, School of Management thoughts: Pre-Scientific, Classical, Behavioral and Modern; Types of business organizations, merits and demerits, Public Organizations.

Module – II: Planning

Nature & Elements of Planning, Planning Types, Steps, MBO, MBE, Planning Premises. Decision making process, Decision Making under Risk and Uncertainty, Participation in Decision making, Creativity in decision making

Module – III: Organizing and Staffing

Formal and Informal, Line and Staff Relationship, Centralization Vs. Decentralization, Basic issues in Organizing, Work Specialization, Chain of Command, Delegation, Span of Management, Principles of organizing; Organization Structure for Departmentalization.

Module – IV: Directing and Controlling: Process, Standards and Bench Marking; Control techniques, Factors influencing control effectiveness, Co-ordination- Principles of Co-ordination; Inter- Dependence.

Reference Books

1. Management Theory & Practice; SubbaRao P & HimaBindu, HPH
2. Principles and Practices of Management – Kaul, Vikas
3. Management, Robbins, Coulter & Vohra, Pearson.
4. Management: Text and Cases-VSP Rao, Excel Books

PCP7H012

MARKETING MANAGEMENT

3-0-0

Objective of the Course: The course aims at introducing the basic concepts of marketing to the undergraduate students in engineering. The learning shall help the students in better designing, manufacturing and selling product/ service packages keeping competitive market, customers and cost in view.

Module – I (10 hours)

Marketing Management: Concept, Process, Functions and relevance in the current context. Marketing Environment: Elements of micro and macro environment Competition Analysis: Factors contributing to competition, porter's five forces model, Identifying and analyzing competitors. Marketing Planning : Exploring Opportunity, Product –market selection, Marketing Planning Process. Market Research and Information Systems: Research Process, The Internet and World Wide Web based Information collection and processing, Database, Data Warehouses and Data Mining, Global Market Research. Consumer Behavior: Factors influencing consumer behavior, consumer decision process. Organizational buying behavior.

Module II (10 hours)

Market Segmentation, Targeting and Positioning: Definition, Bases of segmenting consumer and Industrial markets. Target Market strategies: Market Positioning. Market Demand Forecasting: Key Terms, Forecasting Tools: Short term tools: Moving average and Exponential smoothing methods, Long-term forecasting Tools: Time series analysis, Econometrics methods, Qualitative tools : Buying Intention Survey, Sales Force Opinion and Delphi Techniques. Product Planning : Product Life Cycle, New Product Development Process, Branding Strategy, Positioning a Brand, Brand Equity, Packaging and Labeling, Product-mix and Product Line, Planned Obsolescence.

Module – III (10 hours)

Pricing Decision: Objectives and Factors influencing pricing, Pricing method and strategies. Integrated Marketing Communication(IMC)- Concept of IMC, the marketing communication process, Promotion Mix, elements of promotion mix, Direct marketing. Channels of Distributions: Types of intermediaries, functions of distribution channels, channel levels, Designing Distribution Channels, Physical Distribution, Supply Chain Management (Basic only). Trends in Marketing: Green Marketing, Customer Relationship Management, Emarketing, Rural Marketing and Service Marketing (concepts only)

Text Book:

1. Etzel , Walker ,Stanton and Pandit, Marketing, 14/e, Tata McGraw Hill.
2. Saxena, "Marketing Management" Tata McGraw Hill, 4/e.

Reference

1. Grewal, Levy, 'Marketing' Tata McGraw Hill, special Indian edition.
2. Karunakaran "Marketing Management", Himalaya Publishing House, 2010/e.
3. Kotler, Keller, Koshiy and Jha, "Marketing Management", 13/e, Pearson Education.

PCP7H013 ENTREPRENEURSHIP DEVELOPMENT

Module-I

Entrepreneurship: Concept of entrepreneurship and intrapreneurship, Types of Entrepreneur, Nature and Importance, Entrepreneurial Traits and Skills, Entrepreneurial Motivation and Achievement, Entrepreneurial Personality

Module II

Entrepreneurial Environment, Identification of Opportunities, Converting Business Opportunities into reality. Start-ups and business incubation, Setting up a Small Enterprise. Issues relating to location, Environmental Problems and Environmental pollution Act, Industrial Policies and Regulations,

Module III

Need to know about Accounting, Working capital Management, Marketing Management, Human Resources Management, and Labour Laws. Organizational support services - Central and State Government, Incentives and Subsidies.

Module IV

Sickness of Small-Scale Industries, Causes and symptoms of sickness, cures of sickness, Role of Banks and Governments in reviving industries.

Reference Book:

1. Entrepreneurship Development and Management, Vasant Desai, HPH
2. Entrepreneurship Management, Bholanath Dutta, Excel Books
- 3 Entrepreneurial Development, Sangeeta Sharma, PHI
4. Entrepreneurship, Rajeev Roy, Oxford University Press

PCP7H014 E-Commerce & ERP

Module I

Overview of Electronic Commerce, Driving the Electronic Commerce Revolution, The Internet, Portals. Open Systems Inter Connection (OSI) Model, XML, Data Warehousing, Building own Website, Internet Security

Module II

E-Commerce and Internet, Electronic Market, Business to Business E-Commerce, Four C's (Convergence, Collaborative Computing, Content Management and Call Center) , Wireless Application Protocol (WAP), Intranet and Extranets. Data Interchange (EDI), Electronic Payment Systems, E-Security

Module-III

Overview of enterprise systems – Evolution - Risks and benefits - Fundamental technology - Issues to consider in planning designing and implementation of cross functional integrated ERP systems. Small, medium and large enterprise vendor solutions, BPR, and best business practices - Business process Management, Functional modules.

Module IV

ERP IMPLEMENTATION: Planning Evaluation and selection of ERP systems, Implementation life cycle - ERP implementation, Methodology, Data Migration, Success and Failure factors of ERP Implementation. Extended ERP systems and ERP add-ons -CRM, SCM, Manufacturing prospective, Business analytics .

Reference Book:

1. E- Commerce and Enterprise Resource Planning ; CSV Murthy, HPH
2. Enterprise Resource Planning- Concepts and Practices ; V K Garg and N K Venkatkrishna, PHI
3. Enterprise Resource Planning; Alexix Leon ; TMH

PCP7H015 Business Regulatory Framework

Module – I

Overview of legal world, Law of Contract : Contract Act: Indian Contract Act, 1872, Agreement, Contract, Essentials of Contract (Offer & Acceptance, Consideration, Capacity of Parties, Free Consent, and Legality of Object), Performance and Discharge of Contract, Remedies for breach of contract, Quasi-Contract and Contingent Contract.

Module – II

Special Contracts: Contract of Agency: Mode of creating & revocation of Agency, Rights and Duties of Agents and Principals. Contract of Bailment (Rights and duties of Bailer and Bailee). Sales of Goods Act: Sale and agreement to sell, Condition and Warranty, Transfer of properties, Finder of Goods, Performance of Contract of sale, Unpaid seller and his rights.

Module- III

Consumer Protection Law: Consumers, Rights of Consumers, Redressal Machinery under the Act, Procedure of Complaint, Relief available to the consumers, Procedure of filing appeal, Powers of Redressal agencies, Unfair Trade Practices. Overview of Competition Act,

Module – IV

Company Law: Indian Companies Act 2013, Salient features and Classes of Company. Lifting of corporate veil, Procedure of Incorporation and Certificate of commencement of business, Memorandum and Articles of Association, Doctrine of ultra vires and Indoor Management, Management of Company: Qualification, Appointment of Directors, Company Meetings, Resolutions, Winding-up of Companies and their modes.

Reference:

1. Business Regulatory Framework–Mohapatra and Patra,HPH
2. Business Law – N D Kapoor, SChand
3. Business Law – Pathak, Tata Mc GrawHill
4. Legal frame work,Oxford.