Course Code: IET-114
Course Title: Introduction to ICT
Course Contents:
Basic Definitions & Concepts, Computer Systems, Components & Memory, I/O Devices, Storage Devices, Serial Parallel & USB Ports, Peripheral Devices(Printers, Scanners etc), Networks & Internetworking, Spread sheets, presentation tools etc, IT Based Communication, E-mail, World Wide Web, Messaging software's, Computer Architecture, Programming Languages, Data Bases, Data Communication, AI, IT Security and other issues, Computer Security & DOS Commands.

Course Code: IES-113
Course Title: Calculus and Analytical Geometry
Course Contents:
Limit and Continuity (Basic concept, Limit as rate of change, Average rate of change, Laws of limit, One side and two side limits, Continuity at point, Slope and tangent line). Differentiation (Concept of differentiation, Derivative as a rate of change, Derivative of trigonometric, functions, Chain Rule). Implicit Differentiation (Implicit differentiation, Related Rates and Derivatives). Applications of Derivatives (Extreme values of a function, The mean value theorem, Monotonic function and first derivative test, concavity and curve sketching). Integration (Basic Concept of integration, Definite and indefinite integral, Riemann Sum, Fundamental properties of definite integral, Integration by substitution, Integration by Parts)
Techniques of Integration (Integration by Partial fraction, Trigonometric Integrals Integration by Trigonometric Substitution) Applications of Definite Integrals (Area between the curves, Volume of solid, Volume of sphere, Length of plane curves)

Course Code: IET-124
Course Title: Linear Circuit Analysis
Course Contents:
ELECTRICAL ELEMENTS AND CIRCUITS:
Electrical elements and circuits, voltage and current sources, resistance, Ohm's law, sources in parallel and series, dependent and independent sources, Kirchhoff's laws, power dissipation is resistors, power in electric circuits, ideal-vs-real sources
DC NETWORK THEOREM:
Mesh/Loop Analysis, Nodal analysis of resistive network with DC voltage sources and DC current sources, Network Theorems- Superposition, Thevenin's, Norton, and Maximum Power Transfer Theorems with resistive Networks and DC Sources

Course Code: IEH-122
Course Title: Islamic Studies
Course Contents: Hadith (With special reference to surah Al-Mominun and Al-Furqan) The meanings of Islam (Tawheed, Prophethood The Day of Judgement) Ibadaat (Worship) (Kalma e Shahadat, Salat or Prayers, Saum (Fasting) , Zakat, Hajj (Pilgrimage) Amar Bil Maroof wa Nahi aNil Munkir (Commands and Prohibitations), Unity of Ummah, Kasb-i-Halal (Lawful Earning), Fundamental Human Rights (Right to Life, Right to Property, Right to Protect One's Honour, Right to Faith, Right to Equality, Right to Economic Security, Right to Merit Right to Justice, Rights of Women, Relation with Non-Muslims) Holy Prophet As a Model of Excellence (Teacher, Trader, Preacher, Guardian of the family, Army Commander) Character Formation (with especial reference to Surah-al-Hujurat) (The truth, Truth and Honesty, Fulfillment of Promise, Sincerity, Tolerance and Pardon Patience, Generosity, Keep your heart free from Rancor and enmity, Etiquette of Conversation) Islamic Civilization (International Influence of Islamic Civilization, Islam and Scientific Knowledge, Influence on Human Thought, Social and Humanistic Civilization, Islam and Modern Challenges

Course Code: IEH-132
Course Title: Pakistan Studies
Course Contents: Ideological Foundation, Iqbal's Ideology and History of the creation of Pakistan (Cultural differences between Hindus and Muslims and Two Nation Theory, Iqbal's Ideology for Muslims in India, Islam as an integrating Philosophy for peace, Historical Perspective and post partition problems. Quaid-e-Azam: An Architect of Pakistan (Biography of Quaid-e-Azam, Round Table Conferences (1930-1932), Pakistan resolution, Gandhi-Jinnah Talk, Independence Act -1947, Quaid-e-Azam as Governor General. Constitution, Governance & State System of Pakistan (Constitutional development, Governance structure, Procedures of Governance and their Implementation, Application of technology on governance in line with advanced countries). The Resources of Pakistan- Land, Natural and Human Resources (Location and Geo-strategic Importance, Social structure and Cultural strengths and weaknesses) Economic Outlook of Pakistan and hard/Soft power (Economic Structure, The Key Resources like water, energy, mineral resources) Economic Outlook of Pakistan and hard/Soft power (The industrial and Agricultural Potential and their share in our economy) An overview of the National and foreign Policies in regional and global perspective for: (Socio-economic uplift, Strengthening regional and global ties). The National Security of Pakistan Including Economic, Energy, Water and Food Security (National Security Structure and Functions, Economic Security, Energy Security, Water Security, Food Security) Pakistan's Geopolitical Context/External Threats and Internal Security (The Economic, Linguistic and sectarian make up of Pakistan, The potential for internal conflict and integration, The relationship between internal conflict and external relations) Perceptions and Realities of Pakistan (Pakistan's Political Conditions, Economic Conditions, Image in the World, Educational standards and its impact on the society) Perceptions and Realities of Pakistan (Counter Terrorism and Counter Extremism policies).

Course Code: IEH-112
Course Title: English Composition & Comprehension
Course Contents: Grammar: • Sentence structure • Analysis of phrase, clause and sentence structure. • Punctuation and capitalization. Vocabulary Comprehension (Reading and listening): • Answers to questions on a given text. • Answering questions about carefully selected conversations, documentaries, commentaries, interviews and movie clips. • Discussions: General topics and every-day conversation

Course Code: IEH-142
Course Title: Communication & Presentation skills
Course Contents: Communication at Work: The Importance of Communication, The Nature of Communication, The Process of Communication, Using Communication Networks, Choosing the Optimal Communication Channel, Personal Skills: Communication Verbal and Non-Verbal Messages, Types of Non-Verbal Communication, Characteristics, Differences, Functions, Listening: Importance of Listening, Approaches to Listening, Barriers to Effective Listening, Reasons for Listening, Developing the Presentation: Oral Presentations, Establishing a Purpose, Developing the Thesis, Organizing Your Ideas: The Importance of Clear Organization, Gathering Ideas and Material, Organizing the Body, Planning the Introduction, Planning the Conclusion, Adding Transition, Verbal and Visual Support in Presentation: Functions of Supporting Material, Verbal Support, Visual Aids, Delivering the Presentation: Types of Delivery, Guidelines for Delivery, Speaking with Confidence, Interpersonal Skills: Understanding Interpersonal Relationship, Characteristics, Managing Conflicts, Dealing With Criticism, Negotiating Skills, Informative Group and Special: Occasion Meeting, Informative Presentations, Group Presentations, Special Occasion Speeches, Persuasive Presentations: Types of Persuasive Presentations, Persuasive Strategies, Maximizing Speaker Credibility, Organizing Persuasive Messages, Principles of Interviewing: Planning the Interview, Conducting Successful Interviews, Types of Interviews: Information Gathering Interview, The Employment Interview, Performance Appraisal Interview, Working in Teams, Approaches to Working in Groups and Teams, Problem Solving Communication, Effective Communication in Groups and TeamsEffective Meetings: Types of Meetings, Planning Problem Solving Meetings, Conducting Meetings, Methods of Dictating Techniques: Communication and Telephone, Communicating Effectively in International Business: Non-Verbal Communication in International Business, Training Needs in International Business, Criteria for Communicating Effectively.

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Course Code: IES-123
Course Title: Linear Algebra & Differential Equations
Course Contents:
First Order Ordinary Differential Equations, Separable Differential Equations, Homogeneous Differential Equations, Non- homogeneous Differential Equations, Exact Differential Equations, Non- Exact Differential Equations, Linear Differential Equations, Non-linear Differential Equations, Applications of Linear Differential Equations, Applications of Non- linear Differential Equations Higher Order Differential Equations, Initial and Boundary Value Problems, Homogeneous and Non-Homogeneous Linear Differential Equations with Constant Coefficients, Method, Undetermined Coefficient Variation of Parameters, Non-Homogeneous Linear Equations with Variable Coefficients, Cauchy-Euler Equation, Applications of Higher Order Differential Equations Laplace Transforms and Inverse Laplace Transforms, Laplace Transforms of Derivatives, Solution of First and higher Order Initial Value Problem using Laplace Transform, Linear Algebra, Operations, Linear Systems of Equations Gauss Elimination and Gauss-Jordan Elimination

Course Code: IET-142
Course Title: Discrete Structures
Course Contents:
Mathematical reasoning, propositional and predicate logic, rules of inference, proof by induction, proof by contraposition, proof by contradiction, proof by implication, set theory, relations, equivalence relations and partitions, partial orderings, recurrence relations, functions, mappings, function composition, inverse functions, recursive functions, Number Theory, sequences, series, counting, inclusion and exclusion principle, pigeonhole principle, permutations and combinations, elements of graph theory, planar graphs, graph coloring, Euler graph, Hamiltonian path, rooted trees, traversals.

Course Code: IET-153
Course Title: Electronic Devices and Circuits
Course Contents:
Material Classification, Different Atomic Structure and Comparison, Electrons and shells, Atomic Models , N-Type and P-Type Semiconductor, PN Junction, Current in semiconductor, Energy Diagram of the PN Junction, Diode, Forward and Reverse biased operations, VI characteristics, Diode Models, Ideal and practical model, Half Wave Rectifier, PIV voltage, Transformer Coupling, Average Value, RMS value, Peak Factor, Form Factor, Ripple Factor, Efficiency, Full Wave Bridge Rectifier , Center Tapped Full Wave Rectifier, Power Supply,

Filter, Regulator, Diode Limiter/Clipper, Clamper, Voltage Multiplier, Bipolar Junction Transistors, Construction, operation and characteristics, Common Emitter, Common Collector and Common Base Configurations, Amplifiers Inverting non-inverting, Summer, Differentiator and Integrator

Course Code: IET-163

Course Title: Digital Logic Design

Course Contents:

Number Systems, Logic Gates, Boolean Algebra, Combination logic circuits and designs, Simplification Methods (K-Map, Quinn Mc-Cluskey method), Flip Flops and Latches, Asynchronous and Synchronous circuits, Counters, Shift Registers, Counters, Triggered devices & its types. Binary Arithmetic and Arithmetic Circuits, Memory Elements, State Machines. Introduction Programmable Logic Devices (CPLD, FPGA); Lab Assignments using tools such as Verilog HDL/VHDL, MultiSim

Course Code: IET-214

Course Title: Object Oriented Programming

Course Contents:

Introduction to object oriented design, history and advantages of object oriented design, introduction to object oriented programming concepts, classes, objects, data encapsulation, constructors, destructors, access modifiers, const vs non-const functions, static data members & functions, function overloading, operator overloading, identification of classes and their relationships, composition, aggregation, inheritance, multiple inheritance, polymorphism, abstract classes and interfaces, generic programming concepts, function & class templates, standard template library, object streams, data and object serialization using object streams, exception handling.

Course Code: IET-223

Course Title: Data Structures and Algorithms

Course Contents:

Abstract data types, complexity analysis, Big Oh notation, Stacks (linked lists and array implementations), Recursion and analyzing recursive algorithms, divide and conquer algorithms, Sorting algorithms (selection, insertion, merge, quick, bubble, heap, shell, radix, bucket), queue, dequeuer, priority queues (linked and array implementations of queues), linked list & its various types, sorted linked list, searching an unsorted array, binary search for sorted arrays, hashing and indexing, open addressing and chaining, trees and tree traversals, binary search trees, heaps, M-way tress, balanced trees, graphs, breadth-first and depth-first traversal, topological order,

shortest path, adjacency matrix and adjacency list implementations, memory management and garbage collection.

Course Code: IET-234

Course Title: Data Communication and Computer Networks

Course Contents:
Introduction to computer networks (Data Communication and characteristics of data communication systems, Network: Reliability and security, Types of Connections) Network Topologies (Mesh, Star, Bus, Ring topology, Ethernet CSMA / CD /CA, IBM Token Ring), LAN, MAN, WAN, Network Protocols (OSI Model, TCP/IP model), Addressing (Physical Addresses, Logical Addresses, Port Addresses, Specific Addresses), Data Communication (Transmission modes, Simplex, Half-duplex, Full-duplex, Bluetooth, WiFi, WiMax, Serial and parallel transmission, Synchronous transmission vs Asynchronous, Transmission), Transmission Media and Transmission Technologies (Metallic media, Optical fiber media, Wireless media (line-of-sight media), Wireless media (Baseband and broadband transmission), Transmission bandwidth (link capacity), Modulation and demodulation, modems and modem standards, Transmission impairments (distortion/noise limitations on system performance)), Data Encoding Techniques (Unipolar, Polar, Bipolar, PAM, PCM), Multiplexing FDM, TDM, DWDM etc.(Frequency Division Multiplexing, Synchronous Time Division Multiplexing, Digital Carrier Systems), Network structure: Routing in switched networks (LAN overview, Circuit Switching Concepts, Packet Switching Concepts, Cables, Modems, Routers, Hubs, Switches, Access Points), Internet Protocols architecture (OSI Model, TCP/IP Protocol Architecture, IP Addressing (OSI vs TCP/IP, TCP/IP vs UDP, IP V4 Classful addressing, Designing Subnets, Introduction to IPv6, Supernetting, Classless Addressing CIDR)), Data Link Control Protocols (Stop and Wait Flow Control, Sliding Window Flow Control, Stop and Wait ARQ, Go Back N ARQ, Selective Reject ARQ, HDLC)

Course Code: IEM-212

Course Title: Fundamentals of Economics and Management

Course Contents:
Basic Economic Concept: Meaning, Nature and Scope of Economics, Methodology of Economics: Deductive vs Inductive Economics, Static and Dynamics, Basic Economic Problems: Scarcity and Choice, Relation between Science, Engineering, Technology and Economics. **The Economic Environment:** Consumer and Producer Goods, Measure of Economic Worth, Price, Supply, and Demand Relationship, **The Economic Environment:** Production, Factors of Production, Laws of Return in Economics, **Cost Concepts Analysis:** Sunk and Opportunity Cost, Fixed, Variable, and Incremental Costs, Recurring and Non-

Recurring Costs, Direct, Indirect, and Overhead Costs, **Cost Concepts Analysis:** Standard Costs, Breakeven Analysis, Unit Cost of Production, Cost Benefit Analysis, Feasibility Studies, **Cost Concepts Analysis:** Value Analysis in Designing and Purchasing, Taxation Details, Inflation and Deflation, Causes of inflation and deflation, Why deflation is worse than inflation?, **Depreciation and Depletion:** Purpose of Depreciation, Types of Depreciation, Economic Life, What can be depreciated? Depreciation problems. **Depreciation and Depletion:** Depreciation problems, Difference between depreciation and obsolescence. **Comparing Alternatives:** Present Economy; Selection among machines, materials, processes, and designs, Payback Period Method, Present Worth Method, **Comparing Alternatives:** Uniform Annual Cost Method, Rate of Return Method, **Comparing Alternatives:** Alternatives having identical lives, Alternatives having different lives. Introduction to Management, History, Characteristics, Levels and Functions of Management, Introduction to Management, Project Management, Difference between Management and Project Management, Functional Manager and Project Manager, characteristics, role. **Leadership and Management:** Characteristics of Leadership & Qualities of a Good Leader, Leadership Styles, Leadership Continuum Contingency Approach to Leadership, Leadership Effectiveness, Measures for Developing Leadership Ability of Managers, Importance of Motivation, **Organizational Conflicts:** Meaning and Causes of Conflicts, Ways of Managing Conflict, Conflict Control and Organizational Strategy, Strategies to Manage Workplace Conflict.

Course Code: IES-213
Course Title: Probability and Statistics
Characteristics and Importance of Statistics, Basic Definitions, Presentation and Classification of Data, Graphical Representation of Data, Types of Averages, Arithmetic, Geometric, Harmonic Mean, Median and Mode, Measures of Dispersion, Moments and Kurtosis, Intro to Simple Regression and Correlation, Simple Linear Regression Model, Correlation and Correlation Coefficient, Intro to Probability, Different Approaches of Probability, Laws of Probability, Conditional Probability, Random, Experiments and Random Variables, Probability Distribution of Discrete and Continuous Random Variables, Discrete Probability, Distribution, Binomial Distribution, Poisson Distribution, Continuous Probability Distribution, Normal Distribution, Chi-square distribution, t-distribution, Intro to Hypothesis Testing, One Tailed Test and Two Tailed Test, Type–I and Type–II Error, Steps in Hypothesis Testing

Course Code: IET-244
Course Title: Operating Systems
Course Contents: Operating systems basics, system calls, process concept and scheduling, inter-process communication, multithreaded programming, multithreading models, threading issues, process scheduling algorithms, thread scheduling, multiple-processor scheduling, synchronization,

critical section, synchronization hardware, synchronization problems, deadlocks, detecting and recovering from deadlocks, memory management, swapping, contiguous memory allocation, segmentation & paging, virtual memory management, demand paging, thrashing, memory-mapped files, file systems, file concept, directory and disk structure, directory implementation, free space management, disk structure and scheduling, swap space management, system protection, virtual machines, operating system security.

Course Code: IET-254

Course Title: Microprocessor Based Systems and Interfacing

Course Contents:
Introduction to Microprocessor, Overview of 8085, Introduction to 8085 Assembly language programming, 8085 programming model, 8085 hardware model, 8085 Instruction set, High and Low Level Languages, Microprocessor Architecture and Microcomputer system, Data transfer, Arithmetic Operation, Logical Operation, Branching operator, Machine Control Operation, 8085 Microprocessor Architecture and Memory interfacing, Data Bus, Control Bus, Address Bus, 8085 Microprocessor Architecture, Interfacing I/O devices, Interfacing 7segment display, Memory Interfacing, Introduction to 8085 Instruction, Counters and Time Delay, Stake and Subroutines, Interrupts, Programmable Interface Devices: Keyboard/Display Interface, 8086 Microprocessor Architecture, 8086 Microprocessor Instruction Set, Interfacing 8086 Microprocessor, Structure of MC 6800 microprocessor, MC 6800 Instruction set.

Course Code: IEM-222

Course Title: IT Project Management

Course Contents:
Introduction to Management, History, Characteristics, and Functions of Management, Introduction to Management, Project Management, Difference between Management and Project Management, Functional Manager and Project Manager, Organizational Structure, Types and Levels of Organizations, Properties of Organizations, Types of Management Styles, Levels of Management. Project Management, Scope of Project Management, Importance of Project Management in organizations and Importance of Project Management in the field of IT. What is a Project, Building Blocks of a Project, Building Blocks of an IT Project, Characteristics of IT Projects, and Phases of an IT Project, IT Project Manager Skills, Introduction to Project Organization, Difference between Organization and Project Organization, Project Organizational Structure Types: Functional, Projectized and Matrix Organization, Advantages and Limitations of Project Organization, Matrix Organization and it Types, Advantages and Disadvantages of Matrix Organization, How to Overcome the Disadvantages of a Matrix Organizational Structure, Role of Functional Manager and Project Manager in Organizations and Projects. Introduction to Project Management Tools, Project Network Analysis, Work Breakdown Structure, Gantt Chart, Activity on Arrow and Activity on Node Diagram, PERT Technique, CPM Technique, Project Quality Management, Performing Quality Assurance, Performing Quality Control, Human Resource Management: Management Styles, Psychological Types, Recruitment and Training, Job Evaluation, Performance Appraisal, Motivation and Incentives. Project Risk Management, Risks management in Project planning,

Risk Assessment, Managing Project Risks and Uncertainties, Project Risk Management Tools, Risk Management in IT Projects.

Course Code: IET-263
Course Title: Numerical Analysis
Course Contents:

Mathematical preliminaries and error analysis, round-off errors and computer arithmetic, Calculate Divided Differences. Use Divided-difference Table. Find Newton's Interpolation Polynomial. Calculate Interpolation with Equally Spaced Data. Find the Difference Table. Calculate, Newton's Forward & Backward Difference Formulae. Use Gauss Formulae. Use Stirling's Interpolation Formula. Use Bessel's Interpolation Formula. Use Everett's Interpolation Formula. Solve Nonlinear Equations. Solve Equations by Bisection Method. Solve Equations by Regula Falsi Method. Solve Equations by Secant Method. Solve Equations by Newton-Raphson Method. Find Fixed Point Iteration. Solve Equations by Jacobi Iterative Methods. Solve Equations by Gauss Seidel Method Calculate Numerical Differentiation. Find Numerical Differentiation Formulae Based on Equally Spaced Data. Find Numerical Differentiation Based on Newton's Forward Differences. Find Numerical Differentiation Based on Newton's Backward Differences. Find Numerical Differentiation Based on Stirling's Formula. Find Numerical Differentiation Based on Bessel's Formula. Find Numerical Differentiation Based on Lagrange's Formula. Calculate Error Analysis of Differentiation Formulae. Solve Richardson Extrapolation. Calculate Numerical Integration. Use Trapezoidal Rule with Error Term. Use Simpson's 1/3 Rule with Error Term. Use Simpson's 3/8 Rule with Error Term. Use Composite Numerical Integration. Use Composite Trapezoidal Rule. Use Composite Simpson's Rule. Find Richardson's Extrapolation. Find Newton-Cotes Closed Quadrature Formulae.

Course Code: IET-273
Course Title: Software Engineering
Course Contents:

Nature of Software, Overview of Software Engineering, Professional software development, Software engineering practice, Software process structure, Software process models, Agile software Development, Agile process models, Agile development techniques, Requirements engineering process, Functional and non-functional requirements, Context models, Interaction models, Structural models, behavioral models, model driven engineering, Architectural design, Design and implementation, UML diagrams, Design patterns, Software testing and quality assurance, Software evolution, Project management and project planning, configuration management, Software Process improvement.

Course Code: IET-314

Course Title: Database Management System

Course Contents:

Basic database concepts, Database approach vs file based system, database architecture, three level schema architecture, data independence, relational data model, attributes, schemas, tuples, domains, relation instances, keys of relations, integrity constraints, relational algebra, selection, projection, Cartesian product, types of joins, normalization, functional dependencies, normal forms, entity relationship model, entity sets, attributes, relationship, entity-relationship diagrams, Structured Query Language (SQL), Joins and sub-queries in SQL, Grouping and aggregation in SQL, concurrency control, database backup and recovery, indexes, NoSQL systems.

Course Code: IET-323

Course Title: Artificial Intelligence and Optimization

Course Contents:

Introduction (Introduction, basic component of AI, Identifying AI systems, branches of AI, etc.); Reasoning and Knowledge Representation (Introduction to Reasoning and Knowledge Representation, Propositional Logic, First order Logic); Problem Solving by Searching (Informed searching, Uninformed searching, Local searching.); Constraint Satisfaction Problems; Adversarial Search (Min-max algorithm, Alpha beta pruning, Game-playing); Learning (Unsupervised learning, Supervised learning, Reinforcement learning) ;Uncertainty handling (Uncertainty in AI, Fuzzy logic); Recent trends in AI and applications of AI algorithms (trends, Case study of AI systems, Analysis of AI systems)

Course Code: IEM-312

Course Title: Entrepreneurship

Course Contents:

Introduction to Entrepreneurship (Nature and development, Entrepreneurial process) **Entrepreneurs, inventors, innovators** (Types of start-ups, Role of entrepreneurship in economic development, Ethics and social responsibility of entrepreneurship, How entrepreneur think?**,** Entrepreneur background and characteristics, Comparison of male and female entrepreneur.**,** Comparison of independent corporate and tradition managers, Characteristics of an entrepreneurial environment, Establish corporate entrepreneurship. in the organization), **The nature of international entrepreneurship** (International vs domestic entrepreneurship, Barriers to international trade**,** Sources of new ideas, Methods of generates ideas, Creative problem solving techniques**, Innovation and its types** (Product Planning and developing process**,** E-

commerce and business start-ups, What is business Plan**,** What is business Plan**,** How to write business Plan**,** Why business fails?**,** Industry analysis)**, Marketing research for new ventures** (The marketing mix**,** Developing the management team)**, Legal form of business** (LLC vs S corporation**,** Building the management team and a successful organization culture, The role of board of directors and advisors, Source of capital)**, Role of SBA in small business** (Comparison of SBIR and STTR program**,** Bootstrap financing**,** Managing he venture**,** Generation of new opportunity), **Entry strategies for new exploitation** (Risk reduction for new entry**,** Growth strategies**,** Accessing resources for growth**,** Joint venture**,** Mergers**,** Acquisitions**,** Leveraged Buyouts)

Course Code: IET-334

Course Title: System and Network Administration

Course Contents:

Introduction To System Administration. SA Components. Server Environment (Microsoft and Linux). Reliable Products, Server Hardware Costing, Maintenance Contracts and Spare Parts, Maintaining Data Integrity, Client Server OS Configuration, Providing Remote Console Access. Comparative Analysis of OS: Important Attributes, Key Features, Pros and Cons. Linux Installation and Verification, Configuring Local Services and Managing Basic System Issues. Administer Users and Groups. Software Management. Managing Network Services and Network Monitoring Tools. Boot Management and Process Management. IP Tables and Filtering. Securing Network Traffic. Advanced File Systems and Logs. Bash Shell Scripting. Configuring Servers (FTP, NFS, Samba, DHCP, DNS and Apache)

Course Code: IET-343

Course Title: Web Programming

Course Contents:

Introduction to Web Applications, TCP/IP Application Services. Web Servers: Basic Operation, Virtual hosting, Chunked transfers, Caching support, Extensibility. SGML, HTML5, CSS3. XML Languages and Applications: Core XML, XHTML, XHTM MP. Web Service: SOAP, REST, WML, XSL. Web Services: Operations, Processing HTTP Requests, Processing HTTP Responses, Cookie Coordination, Privacy and P3P, Complex HTTP Interactions, Dynamic Content Delivery. Server Configuration. Server Security. Web Browsers Architecture and Processes. Active Browser Pages: JavaScript, DHTML, AJAX. JSON, Approaches to Web Application Development. Programing in any Scripting language. Search Technologies. Search Engine Optimization. XML Query Language, Semantic Web, Future Web Application Framework

Course Code: IEH-312
Course Title: Technical and Business Writing
Course Contents: Understanding Technical and Business Writing (Process of Technical Writing, Stage of Writing, Patterns of organization, Essentials of effective business writing), Technical reports (Reports: types & functions, Format), Writing Proposal documents (Research, Project, For grants), Research Methodology (Introduction to research writing techniques, Abstract, Introduction, Literature review, Main body, Conclusions, recommendations), Reference writing (Standard reference/citation & bibliography formats), Technical/ educational writing (Personal Statement, Study Objectives for admission in foreign universities), Job application (Writing Resume / CV), Formal letters (Types & format), Job Application Letter (Cover letters, Email correspondence), Interview techniques (Interview skills / Employment interview), On job writing techniques (Writing memos / e-memos, Job ads , Job descriptions, Other official formats

Course Code: IET-353
Course Title: Digital Marketing
Course Contents: Concept of a product. What is a market? Types of a market. What is marketing? Concept of digital marketing. Digital vs Traditional market and marketing. Concept of assets. What are digital assets? 4P's of digital marketing: Product, Price, Place and Promotion. Search Engine optimization (SEO). How does SEO works, Importance of SEO in digital marketing? Types of SEO. Costumer Avatar. Importance of costumer avatar in the domain of digital marketing. Benefits of costumer avatar in digital marketing. How to target audience in the digital marketing? How to reach your costumer in digital world? How to develop digital marketing strategy? Purpose of digital marketing, Pillars of digital marketing strategy. Digital marketing channels. Role of Website and the digital marketing. Online copywriting and Web PR. Concept of Email marketing. Concept of Mobile marketing. Social media and viral marketing techniques. Internet marketing strategy.

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Course Code: IET-364

Course Title: Data Analytics and Machine Learning

Course Contents:

Introduction to Machine learning, Supervised learning, Unsupervised learning, Reinforcement learning, Classification, Types of classification, Various classification algorithms, Decision tree and their components in machine learning, Regularization, Introduction to neural networks (NN), Deep learning, Parameters and hyper parameters, Back propagation algorithms in machine learning, Convolutional neural networks (CNN), recurrent neural networks (RNN), Long short-term memory (LSTM), Genetic algorithm, Support vector machine (SVM), Artificial neural networks (ANN), CNN for image classification and urban computing.

Course Code: IET-374

Course Title: Cyber Security

Course Contents:
Origin of cyber. What does cyber means? Concept of cyber-pace, Cyber-attack, Cyber terrorism, Cyber-crime, Cyber-forensics, Cybernetic and Cyber-bullying. What is cyber security? Who is computer hacker? What is an exploit? What is a bug? Who is computer cracker? What is hacking, Types of hackers. White hat hackers, Black hat hackers, gray hat hackers, blue hat hacker. Concept of script kiddie. Concept of neophyte. Concept of hackavist. Concept of online identity. Concept of offline identity. Guide line for online activities. Online data. Where is your data? Educational data, Employment record, financial record, medical record. Internal and external threats for cyber security. What is cyber warfare? Purpose of cyber warfare. Cyber security vulnerabilities. Software vulnerabilities, Hardware vulnerabilities. Categories of security vulnerabilities. Buffer overflow, non-validated input, Race condition. Weaknesses in security practice, Access control problems. What is malware? Common types of malwares, Viruses, worms, Trojan horse, Spyware, Adware, Ransom ware, Rootkit, Man in the middle, Man in the mobile. Symptoms of Malware. Concept of social engineering. Types of Social engineering. Concept of phishing, spare phishing, bating, Malware, Pretexting, Quid Pro Quo, Tailgating, Vishing, Water-holing. Scenarios of social engineering attacks. Fear, Greed, Curiosity, Helpfulness, Urgency. How to protect your data and privacy in Cyberspace. Protecting computing devices. Use of antivirus and Antispyware for security. Use and safety of wiles networks. Use and generation of passwords for online accounts and off line use. How to back up your data for security. Deleting your data permanently. Two factor authentication system. Use of social media. Privacy and security while using social media. What is cryptography. Concept of Encryption, Decryption, Plaintext, Cipher text, Cipher, key, Cryptanalysis, Cryptology. Types of cryptanalytic attacks. Brute force attack and search. Concept of unconditional security, Concept of computational security. Symmetric chipper model. Asymmetric cipher model. Classical substitution cipher. Caesar cipher. Mono alphabetic cipher, Playfair cipher. Vigenere cipher. Transposition cipher. Rail Fence cipher. Row transposition cipher.

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Course Code: IET-383
Course Title: Cloud Computing & IoT
Course Contents: Introduction to Cloud Computing, General benefits and architecture, Background technologies, Infrastructure as a service (IaaS), Platform as a service (PaaS), Software as a service (SaaS), Cloud datacentre, High performance computing, High throughput computing, Distributed Vs Parallel computing, Clusters, Virtualization, Network virtualization, Internet of Things (IoT), Edge computing, Fog computing, Mobile computing and its architecture.