Punjab Technical University, Jalandhar  
Study Scheme Batch 2012  

M.TECH (INFORMATION SECURITY)

<table>
<thead>
<tr>
<th>Schedule of Teaching</th>
<th>Schedule of Examination</th>
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<tbody>
<tr>
<td>Lecture Tutorials Practical</td>
<td>Time</td>
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<tr>
<td></td>
<td>(Hrs)</td>
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<tr>
<td>All theory Subjects</td>
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<tr>
<td>All Labs</td>
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<td>Projects</td>
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<tr>
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<td>Satisfactory/Not Satisfactory</td>
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Semester 1

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<thead>
<tr>
<th>Subject Code</th>
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<th>Credit</th>
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<tbody>
<tr>
<td>SS 501</td>
<td>Advance Data Structures</td>
<td>4</td>
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<tr>
<td>IS 503</td>
<td>Secure Coding</td>
<td>4</td>
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<tr>
<td>IS 505</td>
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<tr>
<td>IS 507</td>
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<tr>
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<tr>
<td>SS 511</td>
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Semester 2

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### Semester-IV

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<td>IS 500</td>
<td>Dissertation</td>
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### Elective-I (IS) AAA

- IS 512 Secure Information Storage and Retrieval
- IS 514 IT Security Policies and Procedures
- IS 516 Mobile Application Development and Security

### Elective-II (IS) BBB

- IS 515 Virtualization and Cloud Security
- IS 517 Cyber incident Handling and Reporting
- IS 519 Database Security and Governance

### Elective-III (IS) CCC

- IS 525 Forensics and cyber laws
- IS 527 Reverse Engineering Malware
- IS 529 Intrusion Detection Analysis

### Elective-IV (IS) DDD

- IE 513 Organization Theories and Behaviour
- SS 522 Total Quality Management
- SS 524 Product Design and Management
- SS 526 Enterprise Resource Planning
- SS 528 IT Strategy and Management
Objective: This course helps students, step by step to develop algorithms and to solve real world problems. Implementing various data structures and understanding various searching & sorting techniques, to arrange data in a particular manner. These manner or set of rules is defined in the advanced data structure so that the data used in computer systems can properly used at necessary time.

Review of Elementary Data Structures: Arrays, linked lists, stacks, queues, binary trees, hashing, graphs, sorting & searching techniques.


Threaded Trees: Properties of threaded trees, insertion, deletion and traversal.

AVL Trees: Properties of AVL trees, rotations, insertion and deletion.

Red-Black Trees: Properties of red-black trees, rotations, insertion and deletion.

B-Trees: Definition of B-trees, basic operations on B-trees, deleting a key from a B-tree.

Heaps: Properties of Min-max heaps, building a heap, basic operations on heaps, application of min-max heaps.

Binomial heaps: Binomial tress and binomial heaps, operations on binomial.

Fibonacci heaps: Structure of Fibonacci heaps, merge able heap operations, decreasing a key and deleting a node, bounding a maximum degree.

Data Structures for Disjoint Sets: Disjoint set operations, linked list representation of disjoint sets, disjoint set forests.

Graph Algorithms: Topological sort, minimum Spanning tree, single-source shortest paths, all-pairs shortest paths, bi-connected components, strongly connected components, cycles, articulation points, bridges.


NP-completeness: Complexity classes P and NP, examples of reductions.

Suggested Readings/Books:


IS 503- SECURE CODING

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Objective: Students shall understand vulnerabilities in coding, identify, and remediate them.

Need & Significance: The need for secure systems, Proactive Security development process: security issues while writing SRS, Design phase security, Development Phase, Test Phase, Maintenance Phase, SD3 (Secure by design, default and deployment), Security principles, Threat modelling.


Socket Security, Securing RPC, ActiveX and DCOM, Protection against DoS attacks.

Testing: Security testing, security code review, secure software installation, writing security documentation.

References:


IS 505 -Ethical Hacking

Objective: This course will help students in getting the insight of some techniques and skills as an ethical hacker to help prospective clients understand how to stay secure. In this course, they will learn what it takes to become an ethical hacker and the methods real attackers use to penetrate networks and computer systems.


Securities & Vulnerabilities: Introduction to Computer Systems and Networks, information systems and networks (including wireless networks) and their role in industry business and society, System and Network Vulnerability and Threats to Security, various types of attack and the various types of attackers in the context of the vulnerabilities associated with computer and information systems and networks Physical Security, Steganography, Cryptography, Wireless Hacking, Firewall & Honeypots, IDS & IPS, Vulnerability, Penetration Testing, Session Hijacking, Hacking Web Servers, SQL Injection, Cross Site Scripting, Exploit Writing, Buffer Overflow, Reverse Engineering, Email Hacking, Incident Handling & Response, Bluetooth Hacking, Mobiles Phone Hacking.

Hacking Tools: An introduction to basic ethical hacking tools and usage of these tools in a professional environment in a form of project.

Legal & Ethical Issues: An introduction to the particular legal, professional and ethical issues likely to face the domain of ethical hacking, ethical responsibilities, professional integrity and making appropriate use of the tools and techniques associated with ethical hacking.

Reference Books:

1. Simpson Michael, Backman Kent, Corley James, “Hands-On Ethical Hacking and Network Defence”
5. The Basics of Hacking and Penetration Testing: Ethical Hacking and Penetration Testing Made Easy (Syngress Basics Series) [Paperback].
Objective: This course covers information theory and coding within the context of modern digital communications applications. This course will help students in quantifying the notion of information in a mathematically and intuitively sound way. This course will help in explaining how this quantitative measure of information may be used in order to build efficient solutions to multitudinous engineering problems.

Introduction: Introduction to information theory, uncertainty and information, average mutual information and entropy, source coding theorem, Shannon-fano coding, Huffman coding, Arithmetic coding, Lempel-Ziv algorithm, run-length encoding and rate distortion function. Information, channel capacity, the concept of amount of information, entropy, information rate, Conditional and joint entropies.

Discrete channels – Symmetric channels, Binary Symmetric Channel, Binary Erasure Channel, Cascaded channels, repetition of symbols, Binary un-symmetric channel, Shannon theorem. Continuous channels – Capacity of band limited Gaussian channels, Shannon-Hartley theorem, Trade-off between band width and signal to noise ratio, Capacity of a channel with infinite band width, Optimum modulation system.


Channel coding: Codes for error detection and correction – Parity check coding, Linear block codes, Error detecting and correcting capabilities, Generator and Parity check matrices, Standard array and Syndrome decoding, Hamming codes, Encoding and decoding of systematic and unsystematic codes. Cyclic codes – Generator polynomial, Generator and Parity check matrices, Encoding of cyclic codes, Syndrome computation and error detection, Decoding of cyclic codes, BCH codes, RS codes, Burst error correction, Repetition codes, Linear block codes, binary cyclic codes, BCH codes, Reed-Soleman codes, Golay codes.

Convolution Coding: Convolutional codes - tree codes and trellis codes, polynomial description of convolutional codes, distance notions for convolutional codes, generation function, matrix description of convolutional codes, viterbi decoding of convolutional codes, distance bounds for convolutional codes, turbo codes and turbo decoding.

References:

Objective: This course is intended as an introduction to Cryptography. This course examines basic cryptography principles such as encryption, hashes, message authentication codes, digital signatures, digital certificates and network defense. Students will become familiar with cryptographic techniques for secure (confidential) communication of two parties over an insecure (public) channel.

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

References:
SS 511 -ADVANCED DATA STRUCTURES LAB

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The Students are required to implement the applications based on SS-501.
The Students are required to implement the applications based on IS - 503
IS 502 - Network Security

Objective: The objectives of this course are to systematically study theories, principles and techniques of computer and network security. Students will learn basic cryptography, fundamentals of computer/network security, risks faced by computers and networks, security mechanisms, operating system security, secure systems design principles, and network security principles. This course is formulated to understand students the common threats and vulnerabilities of networked systems. It will describe network security primitives, and helps students in learning recent advances in Network security.


Attack Classifications: Software Flaws, Buffer Overflow, Linearization Attacks, ARP attacks, route table modification, ARP Spoofing, Denial of Service, DDoS


Security Consideration: Encrypted Tunnels, Authentication header, WEP, key distribution protocols, Digital signatures, and Digital certificates.


References:
Objective: Penetration testing is increasingly used by organizations to assure the security of Information systems and services, so that security weaknesses can be fixed before they are exposed. This course will help students in understanding the process of performing a penetration test to verify that new and existing applications, networks and systems are not vulnerable to a security risk that could allow unauthorized access to resources.


Initial Stages and Risk: Need of Penetration Testing and its Approaches, Initial stages of penetration testing, success criteria, Penetration Testing risk, testing by using third parties.

Planning and Scheduling: Purpose of Test plan, IEEE standards, Test plan phases. Defining the scope, staffing and developing project plan.

Pre-Penetration Checklist and Information Gathering: Introduction, obtain permission, prepare rule, security tools, Information gathering steps.


References:

IS 512 -Secure Information Storage and Retrieval (Elective I)

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Objective: The course addresses the basics of Information Storage technology and retrieval that are commonly used in industry. It will help students in attaining the ability to properly find and utilize data, which is key to success in modern business, research and education.

Complexity of Information Management: Proliferation of Data, Data Center Evolution, Managing Complexity, I/O and the five pillars of technology, Storage Infrastructure,


Introduction to Networked Storage: Storage Networking Overview, Direct Attached Storage, Storage Area Networks, Case study – Applying SAN concepts, Network Attached Storage, Case study – Applying NAS concepts, IP SAN, CAS, Hybrid Network Storage Based Solutions/ Emerging Technologies, Case study – Applying SAN, NAS, IP SAN concepts


Disaster Recovery Managing and Monitoring: Monitoring in the Data Center, Case study – Monitoring exercise, Management in the Data Center.


References:

Objective: This course will enable students to identify emerging security risks and implement security policies to support organizational goals. It will help in defining authorities, responsibilities, and accountabilities for Information Resources and Information Systems security.

Introduction: Why to implement information security policies, basic definitions, policy key elements, policy format. Corporate Policies, Organization-wide policies, Legal requirements, laws & regulations: The economic espionage act of 1996.

Managing the Process: Scope of work, time & cost management, planning for quality, managing human resources, creating a communication plan.

Planning & Preparation: Objectives of policies, standards & procedures, preparation activities, core & support teams, development responsibilities, key factors in establishing the development cost, milestones & responsibilities.

Developing Policies: Asset Classification Policy: Information Classification & categories, employee responsibilities, de-classification or re-classification of information, records management policy, information handling standards matrix, information classification methodologies, Authorization for access.

Developing Standards & Procedures: Overview of standards, important procedure requirements, key elements in procedure writing, procedure styles, procedure development review, and observations.


Case studies: Corporate Policies: Typical Tier1 policies, Typical tier 2 policies, the company information security standards manual.

References:


IS 516 - Mobile Application Development and Security (Elective I)  
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Objective: This course will introduce students to application development for mobile devices. Students will learn about the various constraints facing mobile application designers, both with respect to hardware and with respect to user expectation. Students will also learn how to address these constraints with techniques in implementation, software design, and user-interaction design. Additionally, students will also learn about concepts at the core of modern mobile computing.

Introduction to Mobile devices and administration: Mobile devices vs. desktop devices, ARM and Intel architectures, Power Management, Screen resolution, Touch interfaces, Application deployment, App Store, Google Play, Windows Store, native applications vs web applications.

Mobile communications: Basics and medium access control. Bluetooth, 802.11, GSM, GPRS, UMTS, LTE, Mobile networking: Naming and Mobile IP, Mobile ad-hoc networks and sensor networks, Client APIs for mobile Web Bluetooth, WiFi, SMS, Services.

Mobile operating system: Operating system structure, Constraints and Restrictions, Hardware configuration with mobile operating system, Features: Multitasking Scheduling, Memory Allocation, File System Interface, Keypad Interface, I/O Interface, Protection and Security, Multimedia features. Case Study: Comparing and Contrasting architectures– Android, iOS and Windows, Underlying OS (Darwin vs. Linux vs. Win 8). Kernel structure and native level programming, Runtime (Objective-C vs. Dalvik vs. WinRT), Approaches to power management, Security.

Mobile application development: Phases of mobile application development, multitasking, databases, Mobile development SDLC: Process of development, Native VS Cross platform development, and different development environments Case Study: Study of cross-platform development tools like Worklight, PhoneGap, Appcelerator, RhoMobile, Widgetpad, Xamarin.

Mobile device security: Mobile malware, Device protections, Bluetooth security, Proximity-based authentication, Case Study: iOS “Jailbreaking”, Android “rooting” and Windows “defenestration”.

References:
4. Steven Hoober and Eric Berkman, Designing Mobile Interfaces, O'Reilly, 2011
7. Yaghmour Karim, “Building Embedded Linux Systems”, O'Reilly Media
IS 515 - VIRTUALISATION AND CLOUD SECURITY (Elective II)

**Objective:** This course covers a series of current cloud computing technologies, including technologies for Virtualization, Infrastructure as a Service, Platform as a Service, Software as a Service, and Physical Systems as a Service. Cloud computing adoption and diffusion are threatened by unresolved security issues that affect both the cloud provider and the cloud user. This subject will help in showing how virtualization can increase the security of cloud computing, by protecting both the integrity of guest virtual machines and the cloud infrastructure components.


**Cloud Architecture, Services and Applications:**
Exploring the Cloud Computing Stack, Connecting to the Cloud, Infrastructure as a Service (IaaS), Platform as a Service (PaaS), SaaS Vs. Paas, Using PaaS Application Frameworks, Software as a Service, Identity as a Service, Compliance as a Service

**Abstraction and Virtualization:**
Introduction to Virtualization Technologies, Load Balancing and Virtualization, Understanding Hyper visors, Understanding Machine Imaging, Porting Applications, Virtual Machines Provisioning and Manageability Virtual Machine Migration Services, Virtual Machine Provisioning and Migration in Action, Provisioning in the Cloud Context, Cloudsim, Apache cloudstack, openNebula

**Managing & Securing the Cloud:**
Administrating the Clouds, Cloud Management Products, Emerging Cloud Management Standards, Securing the Cloud, Securing Data, Establishing Identity and Presence

**Cloud Middleware:**
Introduction to Cloud Stack, Open Stack, IBM Smart Cloud, Microsoft Azure, Google cloud services, Amazon webservice

**References:**

Objective: Computer security incident response has become an important component of information technology (IT) programs. Because performing incident response effectively is a complex undertaking, establishing a successful incident response capability requires substantial planning and resources. This course will assist students in understanding the need of establishing computer security incident response capabilities and handling incidents efficiently and effectively. This course will provides guideline for incident handling, particularly for analyzing incident-related data and determining the appropriate response to each incident


Incident Response Team structure: Introduction to Response Team, Team Models, Staffing Models, Incident Response Personnel, Incident Response Team Services, Incident Response Life cycle- Preparation, Detection and Analysis, Containment Eradication and Recovery, Post - Incident Activity


Handling Multiple Components Incidents: Preparation, Detection and Analysis, Containment Eradication and Recovery

References:

2. Lucas Julie, Moeller Brian, “ The effective incident response team”, Addison-Wesley Professional
IS 519 - DATABASE SECURITY AND GOVERNANCE (Elective II)

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Objective: With the advancement of technology and ability to handle big data bases effectively and securely, this course has become the need of the hour. The student will able to learn various techniques of securing as well as recovering data.

UNIT I
Overview of Database Security and governance Difference between logging and monitoring, Three guiding principles to improve data security and compliance Understanding holistic database security, 8 steps to successfully securing enterprise data sources, Secure Enterprise Data and Ensure Compliance, Auditing Categories and what to audit, Ten Database Activities Enterprises Need to Monitor

UNIT II

UNIT III

UNIT IV

UNIT – V

References:
5. Ben Ron, “Implementing Database Security and Auditing”
6. Ben Ron, “How to Secure and Audit Oracle 10g and 11g”
IS 508 - Network Security Lab

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The Students are required to implement the applications based on IS – 502
To use Xradar & AppScan tools.
IS 525 - FORENSICS AND CYBER LAWS (Elective-III)

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Objectives: The advancement of internet in diversifies fields not only proves its effectiveness but also brings various crimes and other ill-effects associated with it. So, this course will make students aware about these and also give an in-depth knowledge of various laws and acts available in India and globally to tackle it.


Data and Evidence Recovery- Introduction to Deleted File Recovery, Formatted Partition Recovery, Data Recovery Tools, Data Recovery Procedures and Ethics, Preserve and safely handle original media, Document a "Chain of Custody", Complete time line analysis of computer files based on file creation, file modification and file access, Recover Internet Usage Data, Recover Swap Files/Temporary Files/Cache Files, Introduction to Encase Forensic Edition, Forensic Tool Kit (FTK) etc, Use computer forensics software tools to cross validate findings in computer evidence related cases.


References:
IS 527 -Reverse Engineering Malware (Elective-III)

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Objectives: The objective of this course is to familiarize students with the practice of reverse engineering suspicious files by utilizing static and dynamic tactics, techniques, and procedures in order to gain an understanding as to what impact the suspicious file may have on a particular computer system when executed.

Introduction to Malware: Analysis and Trends, Malware taxonomy and characteristics

Understanding Malware Threats: Malware Indicators, Malware Classifications, Examining ClamAV signatures, creating custom ClamAV databases.

Fundamentals of Malware Analysis (MA): Reverse Engineering Malware (REM) Methodology, Introduction to key MA tools and techniques, Behavioural Analysis vs. Code Analysis


Utilizing Software Debuggers to Examine Malware, Analyzing Malicious Microsoft Office and Adobe PDF Documents, Analyzing Malicious Browser---based Exploits, Automating the Reverse Engineering Process

References:

IS 529 -Intrusion Detection Analysis (Elective-III)

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Objectives: Intrusion detection systems are an important component of defensive measures protecting computer systems and networks from abuse. This course will led students in analyzing the importance of it and also gives an insight of its architecture and implementation.

Introduction: IDS concepts and definitions, intrusions and their Phenomenology, detection method, analysis schemes.

Architecture: Intrusion Detection System (IDS) and Intrusion Prevention System (IPS) Architecture, IDS and IPS internals

Implementation and deployment: Internet security system’s Real Secure, Cisco secure IDS, Snort, NFR security


Security and IDS management: Data Correlation, Incident response, Policy and Procedures, Laws standards and organizations, security business issues, future of Intrusion Detection and Prevention

Advanced topics: Catching intruders in the act by recognizing the characteristics of various kinds of attacks in real time, both manually and with the use of filters and other automated systems such as snort; techniques for identifying security weaknesses and minimizing false security alarms.

References:

Objective: Understanding the meaning of Organizational behavior, fundamental concepts connected with Organizational behavior, basic approaches of Organizational behavior, framing the study of Organizational behavior, goals of organizational behavior, knowing the importance of Organizational behavior for the managers.


Role of behavioral sciences in organization: Individual behaviour, different theories of motivation. Interpersonal and group behaviour, transactional analysis and group dynamics. Importance of human relations. Controlling and directing human behaviour in organization. Leadership, theories of leadership and leadership styles, managerial grid, organizational conflicts, and organizational effectiveness. Communication significance, process and variables.

Concept of personal management and industrial relations: role and scope. Planning personnel functions – Human resource development, functions and operations of personnel department, employee’s selection, recruitment and training. Job description and analysis, career planning, transfers and promotions. Compensation planning, wages and salary administration. Concept of workers participation in management.

Reference Books:
2. Ahuja, K.K Organization Behaviour Kalyani Publisher 1990
5. Tripathi, P.C Personnel Mgt. & Behaviour Sultan Chand & Sons 1994
Objective: This course is designed to give students fundamentals of Total Quality Management with emphasis on contemporary quality planning, control and management approaches, implementations and criticisms.

Introduction: Quality – Basic concepts, dimensions, economics of quality, quality Gurus, TQM: Definition, evolution, journey from inspection to TQM, comparison at different stages, dimensions of TQM, TQM viewpoints, reasons for adopting TQM.

Introspection to TQM environment: Sphere of TQM, components of TQM, TQM – Managing Total Quality, Factors affecting TQM environment, Classification and interaction among factors, Researchers’ viewpoint, TQM as a system, steps in TQM implementation, Roadblocks in TQM implementation, Reasons for TQM Failure.

Role of soft options in TQM: Hard vs. Soft factors, Role and expectation of employer, employee, customer and supplier from organization and vice versa. Human factors in TQM, Role of top management commitment, work culture, motivation, coordination, attitude, innovation.

Quality initiatives in organizations: Role of tools and techniques in TQM, Classification of tools and techniques – Problem identification, Data analysis, Graphical, Creativity, Companywide. Brief description of Quality awards – MBNQA, Deming award, European quality award, Australian Quality award.

TQM Effectiveness: Impact of TQM, Need and difficulty in measuring TQM effect, Parameters governing effect of TQM and the attributes thereof.

Suggested Readings/Books:
Objective: At the completion of this course, the student should be able to examine the design and performance of supply networks and processes in different business contexts. Students develop capabilities in logistics, digital coordination for supply chain integration, inventory management; risk pooling, procurement, product and process design, and international supply chain management.

Introduction: Characteristics of successful product development, Design and development of products, duration and cost of product development, the challenges of product development.

Development Processes and Organizations: A generic development process, concept development: the front-end process, adopting the generic product development process, the AMF development process, product development organizations, the AMF organization.

Product Planning: The product planning process, identify opportunities. Evaluate and prioritize projects, allocate resources and plan timing, complete pre project planning, reflect all the results and the process.

Identifying Customer Needs: Gather raw data from customers, interpret raw data in terms of customer needs, organize the needs into a hierarchy, establish the relative importance of the needs and reflect on the results and the process.

Product Specifications: What are specifications, when are specifications established, establishing target specifications, setting the final specifications.

Concept Generation: The activity of concept generation clarify the problem, search externally, search internally, explore systematically, reflect on the results and the process.

Concept Selection: Overview of methodology, concept screening, and concept scoring.

Concept Testing: Define the purpose of concept test, choose a survey population, choose a survey format, communicate the concept, measure customer response, interpret the result, reflect on the results and the process.

Product Architecture: What is product architecture, implications of the architecture, establishing the architecture, variety and supply chain considerations, platform planning, related system level design issues.

Industrial Design: Assessing the need for industrial design, the impact of industrial design, industrial design process, managing the industrial design process, assessing the quality of industrial design.

Design for Manufacturing: Definition, estimation of manufacturing cost, reducing the cost of components, assembly, supporting production, impact of DFM on other factors.

Prototyping: Prototyping basics, principles of prototyping, technologies, planning for prototypes.

Product Development Economics: Elements of economic analysis, base case financial mode,. Sensitive analysis, project trade-offs, influence of qualitative factors on project success, qualitative analysis.

Managing Projects: Understanding and representing task, baseline project planning, accelerating projects, project execution, postmortem project evaluation.

Suggested Readings/ Books:
Objective: The ERP will develop and implement curricula in the students that bring ERP concepts and business disciplines hands-on exposure to how enterprise-wide information systems support the planning and management of business processes. It also provides the study about the connection between all the business disciplines in the real world and how ERP systems support the planning and management of business processes.

Introduction to ERP: An Overview, Enterprise – An Overview, Benefits of ERP, ERP and Related Technologies, Business Process Reengineering (BPR), Data Warehousing, Data Mining, OLAP, SCM.

ERP Implementation: Lifecycle, Implementation Methodology, Hidden Costs, Organizing the Implementation, Vendors, Consultants and Users, Contracts with Vendors, Consultants and Employees, Project Management and Monitoring.


ERP Market: SAP AG, Peoplesoft, Baan, JD Edwards, Oracle, QAD, SSA.

Present and Future: Turbo Charge the ERP System, EIA, ERP and e-Commerce, ERP and Internet, Future Directions.

Suggested Readings/ Books:
SS-528 IT Strategy and Management

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Objectives: This course gives an in-depth study of the information technology as a strategic resource, the need for a strategic approach for its management, and the necessity of its alignment with business strategy. It explains how to prepare an effective plan for the implementation of information strategy.


Strategic IT Planning: Definition, motivations, SITP process , Difficulties in developing & executing SITP, SITP Approaches, Resource Planning: People plans, Financial plans, Administrative plans, technology plan, Implementation consideration of SITP.


Technology & Program Management strategy: Introduction, Technology management strategy framework, motivations, constituents of technology management strategy, prevalent technology reference architecture framework & standards, Strategic view of project, program & portfolio management, program management versus project management, PMO: Benefits, Qualities, types & management of PMO.

IT Service Management Strategy: Introduction, Information Technology Infrastructure Library: overview, service support processes, service delivery, service lifecycle, stages of Implementation.

IT Sourcing Strategy & planning IT investment: Outsourcing, Need of Outsourcing, Associated Risks & their minimization, Strategic & Generic Sourcing, variant of Outsourcing, Success with outsourcing, IT Business value framework, critical factors for IT Benefits, measuring benefits from IT.

Strategy for IT Challenges & Cyber Crime Prevention: IT strategy Implementation, Barriers of change, managing change, driving the change to steering Committee, acquire & Enhance new skill set, case studies, computer ethics, e-ethics code, IPR, copyright laws in India, overviews of cyber crimes, challenges in enacting laws in cyber space, Information Technology act 2000, WIN- WIN model.

Reference Books:


3) Hanschke Inge “Strategic IT Management” Springer 2010