B. E. SYLLABUS

INFORMATION SCIENCE & ENGINEERING

VII&VIII SEMESTER

With
Scheme of Teaching
& Examination
<table>
<thead>
<tr>
<th></th>
<th>Name</th>
<th>Qualification</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dr. Balasubramani R</td>
<td>Ph.D</td>
<td>Professor &amp; HOD</td>
</tr>
<tr>
<td>2</td>
<td>Dr. Udaya Kumar K Shenoy</td>
<td>Ph.D</td>
<td>Professor</td>
</tr>
<tr>
<td>3</td>
<td>Karthik Pai B H</td>
<td>M.Tech</td>
<td>Asst. Prof Gd III</td>
</tr>
<tr>
<td>4</td>
<td>Ashwini B</td>
<td>M.Tech</td>
<td>Asst. Prof Gd II</td>
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<tr>
<td>5</td>
<td>Deepa</td>
<td>M.Tech</td>
<td>Asst. Prof Gd II</td>
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<tr>
<td>6</td>
<td>Devidas</td>
<td>M.Tech</td>
<td>Asst. Prof Gd II</td>
</tr>
<tr>
<td>7</td>
<td>Rashmi Naveen</td>
<td>M.Tech</td>
<td>Asst. Prof Gd II</td>
</tr>
<tr>
<td>8</td>
<td>Vasudev Pai</td>
<td>M.Tech</td>
<td>Asst. Prof Gd II</td>
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<tr>
<td>9</td>
<td>Pranesh</td>
<td>M.Tech</td>
<td>Asst Prof Gd-II</td>
</tr>
<tr>
<td>10</td>
<td>Rakesh Joshi U</td>
<td>M.Tech</td>
<td>Asst. Prof Gd I</td>
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<tr>
<td>11</td>
<td>Manasa</td>
<td>M.Tech</td>
<td>Asst. Prof Gd I</td>
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<tr>
<td>12</td>
<td>Savita Sthawarmath</td>
<td>M.Tech</td>
<td>Asst. Prof Gd I</td>
</tr>
<tr>
<td>13</td>
<td>Abhir Bhandary</td>
<td>M.Tech</td>
<td>Asst. Prof Gd I</td>
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<tr>
<td>14</td>
<td>Srikanth Bhat. K</td>
<td>M.Tech</td>
<td>Asst Prof Gd I</td>
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<tr>
<td>15</td>
<td>Jason Elroy Martis</td>
<td>M.Tech</td>
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<tr>
<td>16</td>
<td>Sunil Kumar Aithal</td>
<td>M.Tech</td>
<td>Asst. Prof Gd I</td>
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<tr>
<td>17</td>
<td>Shwetha Bhat M</td>
<td>B.E</td>
<td>Asst. Prof Gd I</td>
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DEPARTMENT OF INFORMATION SCIENCE &
ENGINEERING
NMAMIT, Nitte

Vision:
The vision of the Dept. of ISE is to uniquely position the Dept. as a leader in innovation and excellence in information science and engineering through education, research and scholarship in a professional framework by addressing evolving global needs. Also the Dept. aims at creating top quality successful and sustainable programs and curricula for the students to address the emerging educational challenges and market demands.

Mission:
- To provide outstanding education and research training to the students for their productive careers in industry, academia and government.
- To provide a learning environment that promotes excellence and innovation, ethical practice and responsibility towards society.
- To prepare the students to practice their professions competently to meet the ever-changing needs of society and to continue learning their discipline, allowing them to move into other related fields.
- To promote active learning, critical thinking, and engineering judgement coupled with business and entrepreneurial skills.

Program: B.E. Information Science & Engineering

Programme Educational Objectives (PEO’s)
- Graduates must gain both theoretical and practical knowledge to identify, formulate & solve challenges in Information Science & Engineering problems.
- Graduates must work productively as Information Science Engineers, including supportive and leadership roles on multidisciplinary teams.
- Graduates must communicate effectively, recognize and incorporate societal needs and constraints in their professional
endeavors, and practice their profession with high regard to legal and ethical responsibilities.

- Graduates must engage in life-long learning, such as graduate study, to remain current in their profession and be leaders in our technological society.

**Programme Outcomes (PO’s)**

BE (ISE) Engineering Program students must attain the following outcomes at the end of the course.

a. An ability to apply knowledge of mathematics, science and engineering

b. An ability to design and conduct experiments, as well as to analyze and interpret data

c. An ability to design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability

d. An ability to function on multidisciplinary teams

e. An ability to identify, formulate and solve engineering problems

f. An understanding of professional and ethical responsibility

g. An ability to communicate effectively

h. The broad education necessary to understand the impact of engineering solutions in global, economic environmental and societal context

i. A recognition of the need for and an ability to engage in lifelong learning

j. A knowledge of contemporary issues

k. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice and

l. An ability to strengthen the knowledge and understanding in the areas of computer networking and software engineering.
## DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING
### SCHEME OF TEACHING

**VII Semester (25 credits)**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Subject Code</th>
<th>Name of the Subject</th>
<th>Contact Hrs / Week</th>
<th>C.I.E.</th>
<th>S.E.E</th>
<th>Credits</th>
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<tbody>
<tr>
<td></td>
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<td>Theory / Tut / Prac</td>
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<tr>
<td>1</td>
<td>HU701</td>
<td>Engineering Management (Institution level core)</td>
<td>3+0+0</td>
<td>50</td>
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<tr>
<td>2</td>
<td>IS702</td>
<td>Software Testing</td>
<td>3+0+0</td>
<td>50</td>
<td>50</td>
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<tr>
<td>3</td>
<td>IS703</td>
<td>Compiler Design</td>
<td>4+0+2</td>
<td>50</td>
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<tr>
<td>4</td>
<td>IS704</td>
<td>Business Intelligence and its Applications</td>
<td>3+0+2</td>
<td>50</td>
<td>50</td>
<td>4</td>
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<tr>
<td>5</td>
<td>IS71X</td>
<td>Elective – IV</td>
<td>3+0+0</td>
<td>50</td>
<td>50</td>
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<tr>
<td>6</td>
<td>IS72X</td>
<td>Elective – V</td>
<td>3+0+0</td>
<td>50</td>
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<tr>
<td>7</td>
<td>IS705</td>
<td>Project Phase - I **</td>
<td>0+0+3</td>
<td>50</td>
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<td>3</td>
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<tr>
<td>8</td>
<td>IS706</td>
<td>Seminar + Technical Paper Writing</td>
<td>0+2+0</td>
<td>50</td>
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**Total**

|            |               | 28 | 400 | 300 | 25 |

<table>
<thead>
<tr>
<th>Elective – IV</th>
<th>Elective – V</th>
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</thead>
<tbody>
<tr>
<td>1. IS711- Cloud and Grid Computing</td>
<td>1. IS721- Mobile Application Development</td>
</tr>
<tr>
<td>2. IS712 – Adhoc Networks</td>
<td>2. IS722 – Advanced Computer Architecture</td>
</tr>
<tr>
<td>3. IS713 – Microcontroller &amp; its Applications</td>
<td>3. IS723 - Multicast Communications</td>
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**Note:** This will be carried out by the student in a team, which will help them further to take up a mini project in the 8th semester. The topic of the mini project may be in line with the main project that the student will take up in the 8th semester. Students need to submit a report at the end of the semester.

**Note:** In the Subjects with combined theory and lab, students must score minimum passing marks in each of the component.
### DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING

#### SCHEME OF TEACHING

**VIII Semester (24 credits)**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Sub Code</th>
<th>Name of the Subject</th>
<th>Contact Hours / Week</th>
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<th>S.E.E</th>
<th>Credits</th>
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<tr>
<td>1</td>
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<td>Information Security</td>
<td>3+0+0</td>
<td>50</td>
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<tr>
<td>2</td>
<td>IS81X</td>
<td>Elective-VI</td>
<td>3+0+0</td>
<td>50</td>
<td>50</td>
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<tr>
<td>3</td>
<td>IS82X</td>
<td>Elective-VII</td>
<td>3+0+0</td>
<td>50</td>
<td>50</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>IS8XY</td>
<td>Open Elective</td>
<td>3+0+0</td>
<td>50</td>
<td>50</td>
<td>3</td>
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<tr>
<td>5</td>
<td>IS802</td>
<td>Project Work</td>
<td>0+0+12</td>
<td>50</td>
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<td><strong>TOTAL</strong></td>
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<td><strong>250</strong></td>
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**Elective –VI**
1. IS811 - Embedded & Real Time Systems
2. IS812 - Management Information System
3. IS813 - Game Theory

**Elective –VII**
1. IS821 - Building Enterprise Applications
2. IS822 - Decision Support Systems
3. IS823 - Supply Chain Management & Enterprise Resource Planning

**Open Elective (For Infosys Selected Non-IT students)**
1. CS8X15 – Essentials of Information Technology
ENGINEERING MANAGEMENT  
(Institution Level Core Paper)

Subject Code : HU701/801  
CIE Marks: 50  
Hours/Week : 03  
Exam Hours: 03  
Total Hours : 39  
Exam Marks: 50

UNIT - I
Management: Meaning – Functions of Management
Objectives – Meaning, Characteristics/Qualities of Sound Objective, Management By Objectives (MBO).
Forecasting – Meaning, Methods of Forecasting (Qualitative methods and Quantitative methods – simple moving average method, weighted moving average method, exponential smoothing method, simple regression model)
Decision Making – Meaning, Types of Decisions, Decision Making under Certainty – linear programming graphical solution.  8 Hrs

UNIT - II
Organizing: Meaning, Legal Forms of Organization – Sole Proprietorship, Partnership, Corporation/Company, Co-operatives – Meaning and Features only)
Span of Control – Meaning, Factors Determining the Span of Control.
Authority and Power – Sources of Power,
Delegation – Reasons for Delegation, Barriers to Delegation.
Performance Appraisal – aims and formal schemes/methods of appraisal, performance appraisal, 360 degree performance appraisal.  7 Hrs

UNIT - III
Motivation and Leadership:
Motivation – Meaning, Theories of motivation (the Carrot and the Stick, Maslow’s Need Hierarchy theory, Herzberg’s Motivation-Hygiene theory, McClelland’s Trio of Needs, Self-Motivation, General Motivational Techniques).
Leadership – Meaning, Ingredients/Traits of leadership, styles of leadership.
**Controlling** – Meaning, Controlling Process, Three Perspectives on the Timing of Control, Types of Control, Characteristics of Effective Control System.  

UNIT - IV  

**Project Evaluation Techniques** – Interest Rate Calculations, Payback Time, Present Worth, Future Worth, Annual Worth Calculations.

Planning Production Activity – Quantitative Tools in Production Planning – Inventory Control – Economic Order Quantity (EOQ), Break Even Analysis, Learning Curves.  

UNIT - V  

**Project Planning Tools** – Gantt (Bar) Charts, Network Analysis – PERT and CPM – Crashing the Project completion duration using network analysis.  

**Depreciation** – Types and Causes, Methods of Computing Depreciation – solutions to problems.

**TEXT BOOKS :**

**REFERENCE BOOKS :**
SOFTWARE TESTING

Subject Code : IS702  
Credits : 03
Hrs/Week : 3  
Total Hours : 39

UNIT - I
BASICS OF SOFTWARE TESTING – 1: Human Errors and Testing; Software Quality; Requirements, Behavior and Correctness; Correctness versus Reliability; Testing and Debugging; Test Metrics.  
8 Hrs

UNIT - II
Basics of software testing – 2: Software and Hardware Testing; Testing and Verification; Defect Management; Execution History; Test generation Strategies, Static Testing. Model-Based Testing and Model Checking; Control-Flow Graph; Types of Testing; The Saturation Effect  
8 Hrs

UNIT - III
Test generation from requirements – 1: Introduction; The Test-Selection Problem; Equivalence Partitioning; Boundary Value Analysis; Category-Partition Method.  
8 Hrs

UNIT - IV
Structural testing: Overview; Statement testing; Branch testing; Condition testing, Path testing; Procedure call testing; Comparing structural testing criteria; The infeasibility problem.
Dependence and data flow models: Definition-Use pairs; Data flow analysis; Classic analyses; From execution to conservative flow analysis; Data flow analysis with arrays and pointers; Inter-procedural analysis
9 Hrs

UNIT - V
Data flow testing: Overview of data flow testing; Definition- Use associations; Data flow testing criteria; Data flow coverage with complex structures; The infeasibility problem.
Test case selection and adequacy, test execution: Overview; Test specification and cases; Adequacy criteria; Comparing criteria; Overview of test execution; From test case specification to test cases; Scaffolding; Generic versus specific scaffolding; Test oracles; Self-checks as oracles; Capture and replay.  
6 Hrs

TEXT BOOKS:
REFERENCE BOOKS:

COMPILER DESIGN

Subject code: IS703
No. of Hours/Week: 04
Total Hours: 52

| L-T-P : 4-0-2 | CIE: 50 | SEE: 50 |

UNIT - I

1. Introduction to Compiling:
6 Hrs

2. Lexical Analysis:
The Role of Lexical Analyzer, Input Buffering, Specifications of Tokens, Recognition of Tokens, A Language for Specifying Lexical Analyzer.  
6 Hrs

UNIT - II

3. Design of Lexical Analyzer Generator.-LEX programming  
2 Hrs

4. Syntax Analysis:
The Role of the Parser, Context-free Grammars, Writing a Grammar, Top-down Parsing, Bottom-up Parsing, Operator-Precedence Parsing.  
8 Hrs

UNIT - III

5. Syntax Analysis:
LR Parsers –Simple LR (SLR), Canonical LR (CLR), Look Ahead LR (LALR) Parsers, Parser Generators-YACC programming  
10 Hrs

UNIT - IV

7. Syntax-Directed Translation:
Syntax-Directed definitions, Constructions of Syntax Trees, Bottom-up Evaluation of S-attributed definitions, L-attributed definition  
6 Hrs

8. Intermediate Code Generation:
Intermediate Languages, Declarations, Assignments, Boolean Expressions, Case statements  
6 Hrs
UNIT - V

9. Code Generation:
Issues in the design of Code Generator, The Target Machine, Run-time Storage Management, Basic blocks and Flow graphs, Next-use information, A Simple Code Generator, Register Allocation and Assignment, The DAG representation of Basic Blocks. 7 Hrs

10. Code Optimization:
Introduction, The Principle of Optimization, Optimization of Basic Blocks, Loops in flow graphs. 3 Hrs

TEXT BOOKS:
2. John R Levine, Tony Mason & Doug Brown, UNIX Programming Tools-lex and yacc, O’Reilly Publication

REFERENCE BOOKS:

LABORATORY COMPONENTS

Hrs/Week : 2     Credit : 01
Total Hours : 26(13 weeks)

PART A

LEX PROGRAMS:
1. Program to count the number of vowels and consonants in a given string.
2. Program to count the number of characters, words, spaces and lines in a given input File.
3. Program to count no of:
   a) +ve and –ve integers
   b) +ve and –ve fractions
4. Program to count the no of comment line in a given C program. Also eliminate them and copy that program into separate file.
5. Program to count the no of ‘scanf’ and ‘printf’ statements in a C program. Replace them with ‘readf’ and ‘writef’ statements respectively.
6. Program to recognize a valid arithmetic expression and identify the identifiers and operators present. Print them separately.
7. Program to recognize whether a given sentence is simple or compound.
8. Program to recognize and count the number of identifiers in a given input file.

YACC PROGRAMS:
1. Program to test the validity of a simple expression involving operators +, -, *, and /.
2. Program to check the syntax of a simple expression involving operators +, -, *, and /.
3. Program to recognize a valid variable, which starts with a letter, followed by any number of letters or digits
4. Program to evaluate an arithmetic expression involving operating +, -, *, and /.
5. Program to recognize strings ‘aaab’, ‘abby’, ‘ab’ and ‘a’ using grammar (a^n b^n, n>=0).
6. Program to recognize the grammar (a^n b^n, n>=10).

PART B: (Mini Project)
1. Implement a simple Lexical Analyzer.
2. Implement a simple Syntax Analyzer.
3. Implement a Simple Code generation
4. Implement a Parsing Generator:
   a) Predictive Parser
   b) LR Parser
   c) SLR Parser
   d) CLR Parser
   e) LALR Parser
BUSINESS INTELLIGENCE AND ITS APPLICATIONS

Subject Code : IS704 Credits : 03
Hrs/Week : 3 Total Hours : 39

UNIT - I

Introduction to Business Intelligence
Types of digital data; Introduction to OLTP, OLAP and Data Mining; BI Definitions & Concepts; Business Applications of BI; BI Framework, Role of Data Warehousing in BI, BI Infrastructure Components – BI Process, BI Technology, BI Roles & Responsibilities 8 Hrs

UNIT - II
Basics of Data Integration (Extraction Transformation Loading); Concepts of data integration; Need and advantages of using data integration; Introduction to common data integration approaches; Introduction to data quality, data profiling concepts and applications, Introduction to SSIS Architecture, Introduction to ETL using SSIS; 8 Hrs

UNIT - III
Data Warehouse and OLAP Technology – Definition, A Multidimensional Data Model, Concepts of dimensions, facts, cubes, attribute, hierarchies, star and snowflake schema; Data Warehouse Architecture, Introduction to data and dimension modeling, multidimensional data model, ER Modeling vs. multi dimensional modeling; Introduction to business metrics and KPIs; Introduction to enterprise reporting; Concepts of dashboards, balanced scorecards; Applications of Data mining and Case studies of BI 8 Hrs

UNIT - IV
Data Mining—On What Kind of Data? Data Mining Functionalities—What Kinds of Patterns Can Be Mined? Mining Association rules: Basic concepts, frequent item set mining methods. Definitions of classification, prediction and clustering; 8 Hrs

UNIT - V
Classification and Prediction - Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Prediction, Cluster Analysis - Types of Data in Cluster Analysis, Hierarchical Methods, 7 Hrs
BUSINESS INTELLIGENCE LABORATORY

Hrs/Week : 2  
Credit : 01  
Total Hours : 26 (13 weeks)

- Experiments using Business Intelligence Development Studio (BIDS), MySQL/SQL Server
- Case study
- Mini Projects for creating data warehouse and designing reports - Project: Data warehouse creation and designing reports; Introduction to SSRS Architecture, Enterprise reporting using SSRS; Use of Business Intelligence Development Studio (BIDS)

TEXT BOOKS:

REFERENCE BOOKS:
1. “Business Intelligence” by David Loshin
2. “Business Intelligence for the Enterprise” by Mike Biere
3. “Business Intelligence Roadmap” by Larissa Terpeluk Moss, Shaku Atre
4. “Successful Business Intelligence: Secrets to making Killer BI Applications” by Cindi Howson
5. “Delivering Business Intelligence with Microsoft SQL server 2008” by Brain, Larson
CLOUD AND GRID COMPUTING

Subject Code: IS711
Credits: 03
Hrs / Week: 3
Total Hours: 39

UNIT - I

10 Hrs

UNIT - II

10 Hrs
Architecture-1: SOA, Web service Architecture, XML, related technologies & their relevance to web services, XML messages & Enveloping, Service Message Description Mechanism.
Architecture-2: Web service interoperability & role of WS-I organization, OGSA Architecture & goals, CDC.

UNIT - III

10 Hrs

UNIT - IV

10 Hrs
Cloud Computing Technology: Hardware and Infrastructure-client, security, network and services, Accessing the Cloud (basics to APIs)-platform, web application, web API’s and web browser, Cloud Storage-overview and cloud storage providers, standards-Application, client, infrastructure and service.
UNIT - V

Cloud Computing at Work - Software as a Service, Software plus Services, Developing Applications-Google, Microsoft, cast iron cloud, bungee connect, Local Clouds and Thin Clients- virtualization in your organization, Migrating to the Cloud—which applications do you need, sending existing data and use the wave approach, Best Practices-finding right vendor, phased-in vs flash-cut approach and be creative in your approach.

TEXT BOOKS:

REFERENCE BOOK:

ADHOC NETWORKS

Subject Code : IS712
Credits : 03
Hrs/week : 3
Total Hours : 39

UNIT - I

INTRODUCTION:
Fundaments of Wireless communications Technology: Characteristics of Wireless channels, Modulation techniques, Multiple access Techniques and Error control
Introduction to Wireless LANs and Pans
Introduction to wireless Networks, Ad hoc Networks, Sensor networks, mesh networks: Issues in Ad hoc wireless networks, Ad hoc wireless internet. 8 Hrs
UNIT - II
MAC – 2 : Contention – based MAC protocols with scheduling mechanism, MAC protocols that use directional antennas, Other MAC protocols
8 Hrs

UNIT - III
ROUTING – 1 : Routing protocols for Ad hoc wireless Networks : Introduction, Issues in designing a routing protocol for Ad hoc wireless Networks, Classification of routing protocols, Table drive routing protocol, on-demand routing protocol.
ROUTING – 2 : Hybrid routing protocol, Routing protocols with effective flooding mechanisms
8 Hrs

UNIT - IV
TRANSPORT LAYER : Transport layer protocols for Ad hoc wireless Networks : Introduction, Issues in designing a transport layer protocol for Ad hoc wireless Networks, Design goals of a transport layer protocol for Ad hoc wireless Networks, Classification of transport layer protocol, TCP over Ad hoc wireless Networks, Other transport layer protocols for Ad hoc wireless Networks.
7 Hrs

UNIT - V
QOS – Quality of Service in Ad hoc wireless Networks : Introduction, Issues and challenges in providing QoS in Ad hoc wireless Networks, Classification of QoS solution, MAC layer solution, network layer solution
8 Hrs

TEXT BOOK :

REFERENCE BOOKS :
MICROCONTROLLER AND APPLICATIONS

Subject Code: IS713
Credits: 03
Hrs/Week: 3
Total Hours: 39

UNIT - I
The 8051 Architecture: Introduction, 8051 Microcontroller Hardware, Input/Output Pins, Ports and Circuits, External Memory, Counter and Timers, Serial Data Input/Output, Interrupts. 8 Hrs

UNIT - II
Addressing Modes and Operations: Introduction, Addressing modes, External data Moves, Code Memory, Read Only Data Moves / Indexed Addressing mode, PUSH and POP Opcodes, Data exchanges, Example Programs; Byte Level Logical Operations, Bit Level  LogicalOperations, Rotate and Swap Operations, Example Programs. Arithmetic Operations: Flags, Incrementing and Decrementing, Addition, Subtraction, Multiplication and Division, Decimal Arithmetic, Example Programs. 8 Hrs

UNIT - III
Jump and Call Instructions: The JUMP and CALL Program range, Jumps, Calls and Subroutines, Interrupts and Returns, More detail on Interrupts, Example Problems. 8 Hrs

UNIT - IV
Timer / Counter Programming in 8051: Programming 8051 Timers, Counter Programming.
8051 Serial Communication: Basics of Serial Communication, 8051 connections to RS-232, 8051 Serial Communication Programming, Programming the second serial port 8 Hrs

UNIT - V
Interrupts Programming: 8051 Interrupts, Programming Timer Interrupts, Programming External Hardware Interrupts, Programming the Serial Communication Interrupts, Interrupt Priority in the 8051/52. 8051 Interfacing and Applications: Interfacing 8051 to LCD, Keyboard, parallel and serial ADC, DAC, Stepper motor interfacing, DC motor interfacing and PWM 7 Hrs
TEXT BOOKS:

REFERENCE BOOKS :
1. Pedko ; Programming and Customizing the 8051 Microcontroller – TMH
3. Ajay V. Deshmukh; Microcontrollers – Theory and Applications, TMH, 2005
4. Dr. RamaniKalpathi and Ganesh Raja; Microcontroller and its applications, Sanguine Technical publisher, Bangalore- 2005

MOBILE APPLICATION DEVELOPMENT LAB
Subject Code : IS721
Credits : 03
Hrs/Week : 3
Total Hours : 39

Group of 2 students will develop a mini project on mobile application developments in the lab by demonstrating models.

UNIT - I
Getting started with Mobility
Mobility landscape, Mobile platforms, Mobile apps development, Overview of Android platform, setting up the mobile app development environment along with an emulator, a case study on Mobile app development

6 Hrs
UNIT - II

Building blocks of mobile apps
App user interface designing – mobile UI resources (Layout, UI elements, Draw-able, Menu), Activity- states and life cycle, interaction amongst activities.
App functionality beyond user interface - Threads, Async task, Services – states and life cycle, Notifications, Broadcast receivers, Telephony and SMS APIs
Native data handling – on-device file I/O, shared preferences, mobile databases such as SQLite, and enterprise data access (via Internet/Intranet)

UNIT - III

Sprucing up mobile apps
Graphics and animation – custom views, canvas, animation APIs, multimedia – audio/video playback and record, location awareness, and native hardware access (sensors such as accelerometer and gyroscope)

UNIT - IV

Testing mobile apps
Debugging mobile apps, White box testing, Black box testing, and test automation of mobile apps, JUnit for Android, Robotium, MonkeyTalk

UNIT - V

Taking apps to Market
Versioning, signing and packaging mobile apps, distributing apps on mobile market place

TEXT BOOK:
   http://www.amazon.com/exec/obidos/ASIN/1934356174/advancedjavapr00
ADVANCED COMPUTER ARCHITECTURE

Subject Code : IS722
Credits : 03
Hrs/Week : 3
Total Hours : 39

UNIT - I
Parallel computer Model: State of computing, multiprocessor & multi- computer multi vector & SIMD, VLSI Models (Ref. 2: 1.1 - 1.4)
8 Hrs

UNIT - II
Instruction Level parallel Processing Introduction (Ref. 1: 4.1, 4.2, 4.3) Pipe lined processors (Ref. 1: 5.1, 5.2, 5.3). Linear and Non-linear pipelines for corruption – carry-save adder pipes for integer multiplication- 4 stage fixed point multiplication of 8 bit integer Non-linear pipe theory – State transition diagram- issue latencies for non-linear pipes-use of delay to improve issue latencies (Ref. 2: 6.1, 6.2, 6.4)
8 Hrs

UNIT - III
Scalar and Super scalar processing – data control and resource dependencies, register renaming – reservation stations-reorder buffers- Case studies-Power PC 620, CISC processors with RISC core-Pentium Pro Case study (Ref.1: 7.7 to 7.10 with enough background from earlier sections to appreciate these articles) branch Control (Ref.1: 8.4 with back ground from earlier sections), VLIW Architecture.
7 Hrs

UNIT - IV
Data Parallel Architecture: Introduction (Ref.1: 10)-Static and dynamic interconnection networks – omega l and baseline networks (Ref. 2: 2.4) SIMD systems – case study – MPP and CMS (Ref.1: 11.3, 11.4) Vector Processing – Case study – Cray family (Ref.1: 14.3 to 14.7) Introduction to Systolic architecture – example matrix multiplication (Ref. 1: 13.3)
8 Hrs

UNIT - V
Multiprocessors and Multicomputers cache coherence and Synchronization mechanism (Ref. 2: 7.2) Three generation of multicomputers (Ref. 2: 7.3). Data Flow Architecture: Data Flow and Hybrid Architecture – Data Flow Architecture (Ref. 2: 9.5)
8 Hrs
TEXT BOOKS

MULTICAST COMMUNICATIONS

Subject Code : IS723  
Credits : 03  
Hrs/Week : 3  
Total Hours : 39

UNIT – I
The basics of group communications: Types of communications; Multicast vs Unicast; Scalability; Applications of group communication; characteristics of groups; Special aspects of group communication  
8 Hrs

UNIT – II
Multicast Routing: Basic Routing algorithms; Group dynamics; scoping and multicast address allocation; Concepts of multicast routing; Multicast routing on the internet.  
8 Hrs

UNIT – III
Multicast in ATM networks: The switching technology ATM; ATM multicast. Transport protocols: UDP; XTP.  
8 Hrs

UNIT – IV
Transport protocols: MTP; RMP; LBRM; SRM; RMTP  
7 Hrs
UNIT – IV
Mbone- The Multicast Backbone of the Internet: Mbone architecture ; Mbone applications; Mbone Tools; Outlook; Multicast Routing and Mobile Systems 8 Hrs

TEXT BOOK:

INFORMATION SECURITY
Course Code: IS801 L-T-P: 3-0-0
Course Title: Information Security CIE: 50
Teaching Hours: 39 SEE: 50

UNIT – I
Planning for security: Introduction; Information Security Policy,Standards, and Practices; The Information Security Blue Print; Contingency plan and a model for contingency plan 5 Hrs

Security technology-1: Introduction; Physical design; Firewalls; Protecting Remote Connections 3 Hrs

UNIT – II
Security technology – 2: Intrusion Detection Systems (IDS); Honey Pots, Honey Nets, and Padded cell systems; Scanning and Analysis Tools 3 Hrs


UNIT – III
Public Key Cryptography: Principles of Public Key Cryptosystems, the RSA algorithm, Key Management, Diffie Hellman Key Exchange. 4 Hrs

Message Authentication: Authentication requirements, Authentication functions, Hash functions, Digital Signatures, Digital Signature Standard(DSS). 4 Hrs
UNIT – IV
Authentication applications: Kerberos, X.509 Directory Authentication Service.  4 Hrs
Electronic mail security: Pretty Good Privacy (PGP); S/MIME.  3 Hrs

UNIT – V
IP security: IP Security Overview; IP Security Architecture; Authentication Header (AH); Encapsulating Security Payload (ESP); Combining Security Associations; Key Management.  4 Hrs
Web security: Web security requirements; Secure Socket layer (SSL), Transport Layer Security (TLS), Secure Electronic Transaction (SET).  4 Hrs

TEXT BOOKS

REFERENCES

BUILDING ENTERPRISE APPLICATIONS
Subject Code : IS811  Credits : 03
Hrs/Week : Total Hours : 39

UNIT - I
Introduction to enterprise applications and their types, software engineering methodologies, life cycle of raising an enterprise application, introduction to skills required to build an enterprise application, key determinants of successful enterprise applications, and measuring the success of enterprise applications  8 Hrs
UNIT - II
Inception of enterprise applications, enterprise analysis, business modeling, requirements elicitation, use case modeling, prototyping, non functional requirements, requirements validation, planning and estimation.  
8 Hrs

UNIT - III
Concept of architecture, views and viewpoints, enterprise architecture, logical architecture, technical architecture - design, different technical layers, best practices, data architecture and design – relational, XML, and other structured data representations, Infrastructure architecture and design elements - Networking, Internetworking, and Communication Protocols, IT Hardware and Software, Middleware, Policies for Infrastructure Management, Deployment Strategy, Documentation of application architecture and design.  
8 Hrs

UNIT - IV
Construction readiness of enterprise applications - defining a construction plan, defining a package structure, setting up a configuration management plan, setting up a development environment, introduction to the concept of Software Construction Maps, construction of technical solutions layers, methodologies of code review, static code analysis, build and testing, dynamic code analysis – code profiling and code coverage.  
8 Hrs

UNIT - V
Types and methods of testing an enterprise application, testing levels and approaches, testing environments, integration testing, performance testing, penetration testing, usability testing, globalization testing and interface testing, user acceptance testing, rolling out an enterprise application  
7 Hrs

Courseware & reference books:
The courseware including PowerPoint is available for the Elective. In addition, following reference book can also be used:

TEXT BOOKS :
1. Raising Enterprise Applications – Published by John Wiley, authored by AnubhavPradhan, Satheesha B. Nanjappa, Senthil K. Nallasamy, VeerakumarEsakimuthu
2. Building Java Enterprise Applications – Published by O'Reilly Media, authored by Brett McLaughlin
REFERENCE BOOKS:
1. Software Requirements: Styles & Techniques – published by Addison-Wesley Professional
5. Designing Enterprise Applications with the J2EE Platform (PDF available at http://java.sun.com/blueprints/guidelines/designing_enterprise_applications_2e/)

1. Software Testing, 2/e – published by Pearson
2. SOFTWARE TESTING Principles and Practices – published by Oxford University Press

EMBEDDED AND REAL TIME SYSTEM

Subject Code : IS812  
Credits : 03
Hrs/Week : Total Hours : 39

UNIT - I
Embedded system definition, characteristics, design metrics; Processor, IC and design technologies; ASIPs, Embedded system examples

UNIT - II
Combinational and sequential building blocks, Timers, ADCs, Keypad controllers, LCD controllers, stepper motor and DC motor control

UNIT - III
Custom Single Purpose processor design examples: GCD Generator, Network Bridge, 4 bit shift multiplier

UNIT - IV
Introduction to RTOSI Devining RTOS, The Scheduler, Objects, services, key characteristics of RTOS, Tasks :- Defining Tasks, Task States & Scheduling, typical Task Operations, Typical Task Structure,synchronization, Communication & Concurrency.
UNIT - V
Semaphores: Operations, Usage, Message Queues: Typical message
QUE Operations, Usage, Other RTOS services. 7 Hrs

TEXT BOOKS:
1. Frank Vahid, Tony Givargis; Embedded System Design- a unified
   hardware/software introduction, John Wiley 2002
2. Qing Li and Carolyn Yao, Real Time Concepts for Embedded

REFERENCE BOOKS:
1. Rajkamal “Embedded Systems Architecture, Programming and
   Design”, Tata McGrawHill
   Design and Programming- The ultimate reference”, Dreamtech
   Press
3. Philip Laplante-“Real time systems design and analysis – an
   Engineer’s Handbook”, PHI publications

GAME THEORY
Subject Code: IS813  Credits: 03
Hrs/Week: 3  Total Hours: 39

UNIT - I
Introduction; Strategic Games
What is game theory? Four elements, Classification of games, The
theory of rational choice; Interacting decision makers, Strategic games;
Example: The prisoner’s dilemma; Nash equilibrium; Examples of Nash
equilibrium; Best- response functions; Dominated actions; Equilibrium
in a single population: symmetric games and symmetric equilibria,
Interpretation of Nash Equilibrium 8 Hrs

UNIT - II
Mixed Strategy Equilibrium
Introduction; Strategic games in which players may randomize; Mixed
strategy Nash equilibrium; Finding mixed strategy by graphical method;
Finding mixed strategy by analysing subset of all actions; Dominated
actions; Pure equilibria when randomization is allowed, examples; The
formation of players beliefs; Eliminating dominated actions, Median Voter theorem  

UNIT - III
Extensive Games
Extensive games with perfect information; Strategies and outcomes; Nash equilibrium; Subgame perfect equilibrium; Finding subgame perfect equilibria of finite horizon games.  

UNIT - IV
Extensions: Allowing for simultaneous moves, examples, Discussion: subgame perfect equilibrium and backward induction.  

Strictly Competitive Games and maximization: Maximization and Nash equilibrium; Strictly Competitive Games; Maximization and Nash equilibrium in strictly competitive games  

Rationalizability: Iterated elimination of strictly dominated actions; Iterated elimination of weakly dominated actions; Dominance solvability.  

UNIT - V
Applications of Game Theory
Assumptions and issues in Game theory, Mechanism design problem and examples, game theory and cryptography, game theory and wireless adhoc networks, game theory and network security, Pareto optimal, Selfish routing, Correlated equilibrium  

TEXT BOOKS:
2. An Introduction to Game Theory: Strategy, Joel Watson, W W Norton and Company  

REFERENCE BOOKS

MANAGEMENT INFORMATION SYSTEMS

Subject Code : IS821
Credits : 03
Hrs/Week : 3
Total Hours : 39

UNIT - I

UNIT - II

Business applications - i
The Internet and Electronic Commerce: The Internet and Business: Introduction, Business use of the Internet, Interactive marketing, Business value of the Internet, Customer value and the Internet. Fundamentals of Electronic Commerce: Introduction, Foundations and applications of e-commerce, Business to Consumer and Business to Business commerce, Electronic payments and security. 8 Hrs

UNIT - III

UNIT - IV

Business applications -ii

UNIT - V
Creating a virtual Company, Building the knowledge-creating company, Using the Internet Strategically.

Managing information technology
TEXTBOOK:

REFERENCE BOOKS:

DECISION SUPPORT SYSTEMS

Subject Code : IS822
Credits : 03
Hrs/Week : 3
Total Hours : 39

UNIT - I

Decision Making and Computerized Support

8 Hrs

UNIT - II

Decision Making and Computerized Support (Contd...)


8 Hrs
UNIT - III

Decision Support Systems-I.

UNIT - IV

Decision Support Systems – II

UNIT - V

Knowledge Based DSS:

TEXT BOOK:
REFERENCE BOOKS:

SUPPLY CHAIN MANAGEMENT AND ENTERPRISE RESOURCE PLANNING

Subject Code : IS823
Hrs/Week : 03 Total Hours : 39

UNIT - I
Understanding the Supply Chain: What is a supply chain?, The objective of a supply chain, Importance of supply chain decisions, Decision phases in a supply chain, process views of a supply chain, Examples of supply chains
Logistics and Competitive Strategy: competitive advantage, gaining competitive advantage through logistics, the mission of logistic management, the supply chain and competitive performance, the changing the logistic environment. 8 Hrs

UNIT - II
Transportation in a supply chain: roles of transportation in a supply chain, modes of transporation and their performance characteristics, transportation infrastructure and policies, design option for a transportation network, trade-offs in transportation design, tailored transportation, role of IT in transportation, risk management in transportation, Indian transportation system-in need of innovations to propel economic growth, making transportation decisions in practice.
Coordination in a supply chain: Lack of supply chain coordination and bullwhip effect, the effect on performance of lack of coordination, obstacles to coordination in supply chain, managerial levels to achieve coordination, building strategic partnerships and trusts within, continuous replenishment and vendor managed inventories, collaborative planning, orecasting and replenishment(CPFR), collaborative planning, forecasting and replenishment-Indian experiences, the role of IT in coordination 8 Hrs
UNIT - III
Total distribution cost analysis: total cost concept, principles of logistic costing, logistics and bottom line, logistics and shareholder value, customer profitability analysis, direct product profitability, cost drivers and activity based costing
IT enabled supply chain: introduction, changing role of IT, IT solution options, Electronic Data Interchange (EDI)  

UNIT - IV
ERP overview: Benefits, business engineering, ERP and management concerns, Business Modeling for ERP, ERP implementation, customization, post implementation options  

UNIT - V
ERP and competitive advantage: marketing of ERP, ERP domain: SAP, BAAN, SAP r/3, MGF/PRO, IFS/Avalon  

TEXT BOOKS:
1. Martin Christopher, "Logistics and supply chain management"
2. Sunil Chopra, Peter Meindl, "Supply chain management strategy, planning, and operation", Pearson Education 2003
Open Electives Offered in VIII Semester for the year 2014-15

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>MA8X 01</td>
<td>Graph Theory</td>
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<tr>
<td>MA8X 02</td>
<td>Linear Algebra</td>
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<td>HU8X 03</td>
<td>Intellectual Property Rights</td>
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<td>PH8X 04</td>
<td>Advanced Materials Technology for CV &amp; ME</td>
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<td>BT8X 05</td>
<td>Nano Technology</td>
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<td>BT8X 06</td>
<td>Instrumental methods of Analysis for CV &amp; ME</td>
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<td>CV8X 07</td>
<td>Environmental Impact Assessment</td>
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<td>ME8X 09</td>
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<td>EE8X 10</td>
<td>Non-Conventional Energy Systems</td>
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<td>EE8X 11</td>
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<td>EC8X 12</td>
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<td>CS8X 14</td>
<td>Object Oriented Prog. with C++</td>
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<td>CS8X 15</td>
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<td>EC8X 18</td>
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<td>PH8X 19</td>
<td>Optoelectronic devices for EE, EC, CSE &amp; ISE</td>
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<td>HU8X 20</td>
<td>Value Education</td>
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<td>CH8X 21</td>
<td>Natural Products Chemistry for Bio-Tech</td>
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<td>CS8X 22</td>
<td>Essentials of IT Service Industry</td>
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<td>MA8X 23</td>
<td>Statistical design and analysis of experiments</td>
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<td>HU8X 24</td>
<td>Professional &amp; Cognitive Communique</td>
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<td>MA8X 25</td>
<td>Introduction to Topology</td>
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**GRAPH THEORY**

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<td>MA8X01</td>
<td>03</td>
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**UNIT - I**
Introduction to graphs, digraphs, sub graphs-spanning and induced graphs, paths, cycles, connectivity, cut points, bridges,blocks.  
**8 Hrs.**

**UNIT – II**
Trees, Eularian graphs, characterizations, Hamiltonian graphs.  
**8 Hrs.**
UNIT – III
Planar graphs, outer planar graphs, Euler’s polyhedron formula, Colorability: chromatic number, Five colour theorem, four colour conjecture, Chromatic polynomial 8 Hrs.

UNIT – IV
Representations of graphs: The adjacency matrix and incidence matrix. Circuit matrix, cutest matrix, Shortest paths in weighted graphs, Dijkstra’s algorithm to find shortest paths. 8 Hrs

UNIT – V
Spanning trees: Algorithms to find a spanning tree A minimal spanning tree – Kruskal’s & Prims algorithm. Connectivity test: Warshall’s algorithm, algorithm to locate an Euler Circuit from Incidence matrix. Algorithm to locate an Euler Circuit from the adjacency matrix for an undirected graph. 8 Hrs.

Text Book:
1. F. Harary, Graph theory, Narosa Publishing House, 1988
2. Narsing Deo, Graph Theory with applications to Engg. and Comp. Sciences- PHI

Reference Books:
2. D.B. West, Introduction to Graph Theory, PHI

LINEAR ALGEBRA
Subject code : MA8X02 Credits : 03
Hrs/Week : 3 Total Hours : 39

UNIT - I
Linear equations: System of linear equations and its solution sets; elementar row operations and echelon forms; matrix operations; invertible matrices, LU-factorization. 7 Hrs
UNIT - II
Vector spaces: Vector spaces; subspaces; bases and dimension; coordinates; summary of row-equivalence; computations concerning subspaces. 7 Hrs

UNIT - III
Linear Transformations: Linear transformations; algebra of linear transformations; isomorphism; representation of transformations by matrices; linear functions; transpose of a linear transformation. Determinants and elementary properties. 10 Hrs

UNIT - IV
Canonical Forms: Characteristic values; similarity of matrices, Cayley Hamilton theorem, annihilating polynomials; invariant subspaces; direct sum decompositions; invariant direct sums; diagonalization of symmetric matrices, iterative estimates of characteristic values. 8 Hrs

UNIT - V
Inner Product Spaces: Inner products; inner product spaces; orthogonal sets and projections; Gram-Schmidt process; QR-factorization; least-squares problems; symmetric and unitary operators. 7 Hrs

Text Books:
INTELLECTUAL PROPERTY RIGHTS (IPR)

Subject Code : HU8X03  Credits : 03
Hrs/week : 3  Total hours : 39

UNIT - I
Introduction to Intellectual Property
Invention and Creativity - Intellectual Property (IP) – Importance, Jurisprudential definition and concept of property , rights, duties and their correlation ; History and evaluation of IPR – like Patents, Trademarks, Copyright & Related Rights, Industrial Design, Traditional Knowledge, Geographical Indications  8 Hrs

UNIT - II
Agreements and Treaties

UNIT - III
Basics of Patents and Concept of Prior Art
Introduction to Patents; Types of patent applications: Ordinary, PCT, Conventional, Divisional and Patent of Addition; Specifications: Provisional and complete; Forms and fees, Invention in context of “prior art”; Patent databases; Searching International Databases; Country-wise patent searches (USPTO, EPO, WIPO, IPO, etc.)  8 Hrs

UNIT - IV
Patent filing procedures
National & PCT filing procedure; Time frame and cost; Status of the patent applications filed; Structure of Patent document, Precautions while patenting – disclosure/non-disclosure; Financial assistance for patenting – introduction to existing schemes, Patent licensing and Agreement, Patent infringement- meaning, scope, litigation.  8 Hrs

UNIT - V
Case Studies on Patents (Basumati rice, turmeric, Neem, etc.) non-biological cases may be included– Copyright and related rights – Trade Marks – Trade secrets - Industrial design and Integrated circuits –
Geographic indications – Protection against unfair competition
Technology transfer and license agreement.  

7 Hrs

References:

5. Intellectual Property Today : Volume 8, No. 5, May 2001,
    - Rachna Singh Puri
    - Arvind Vishwanathan
    I.K. International Publishing House Pvt. Ltd.,

Important Links:
http://www.w3.org/IPR/
http://www.wipo.int/portal/index.html.en
http://www.ipr.co.uk/IP_conventions/patent_cooperation_treaty.html
http://www.patentoffice.nic.in
http://www.iprlawindia.org/ - 31k - Cached - Similar page
ADVANCED MATERIALS TECHNOLOGY

Subject Code : PH8X04  Credits : 03
Hrs/Week : 3  Total Hours : 39

The objectives of the course:
1. To provide our students adequate education in materials technology to have a basis for a complete understanding of current and future scientific and technological developments
2. To provide our students, adequate education regarding the material properties to handle the design problem involving materials, effectively.
3. To select a right material for a specified application from the thousands of available materials available.
4. To select a cost effective material to reduce the cost of finished product.

UNIT - I
Structures and Properties of Ceramics- Introduction, Ceramic structures: Crystal structures, Silicate Ceramics, Carbon, Imperfection in ceramics, ceramic phase diagram, Mechanical properties: Brittle Fracture of Ceramics, Stress-Strain Behavior, mechanisms of plastic deformation, Miscellaneous mechanical Considerations.
Types, processing and Applications of Ceramics - Glasses and Glass Ceramics, clay Products, Refractories, Abrasives, Cements, Advanced Ceramics, Fabrication and processing of Ceramics and applications, Fabrication and processing of Glasses and applications, Fabrication and processing of Clay Products, Powder Pressing, Tape casting 8 Hrs

UNIT - II
Polymerr Synthesis and Processing-Polymerization, polymer additives, Forming Techniques for Plastics, Fabrication of fibers and Films and applications 8 Hrs
UNIT - III

UNIT - IV
Shape memory alloys and Metallic glasses:
Introduction to shape memory alloys, Fundamental characteristics, shape memory effect (psuedoelasticity), Advantages and disadvantages of SMA, Methods of processing, Commercial shape memory alloys and applications. Introduction to metallic glasses, principle, properties, processing, applications - bulk metallic glass in nanotechnology, metallic glasses for air craft structure. 7 Hrs.

UNIT - V
Introduction to Nano materials: Properties of individual nanoparticles, Semiconducting nanoparticles: optical properties, photofragmentation, coulombic explosion, Carbon clusters: small carbon clusters, C_{60} crystals, alkali doped C_{60}, larger and smaller fullerenes, other bucky balls, nanostructured crystals: natural nanocrystals, photonic crystals, nanostructured ferromagnetism: Dynamics of nanomagnets, nanopore containment of magnetic particles, ferrofluids. 8 hrs

Text books

REFERENCE BOOKS:
1. Van Vlack L.H. “Elements of Material Science” Addison-Wesley Publishers

**Scheme:**
1) SEE to be conducted out of 100 marks and will be reduced to 50 marks
2) Two Questions are to be set from each unit, carrying 20 marks each.
3) Students have to answer any one full question from each Unit.

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**NANOTECHNOLOGY**

**Subject Code** : BT8X0  
**Credits** : 03  
**Hrs/Week** : 3  
**Total Hours** : 39

**OBJECTIVE**

The objectives of this course includes introduction to nanotechnology, detailed study of MEMS, applications of nanotechnology.  
Beneficiary Branches of Engineering: EC, Mechanical, Civil.

**UNIT - I**

INTRODUCTION


6 Hrs

**UNIT - II**

NANOMATERIAL AND NANO TOOLS

Buckyballs (Fullerenes), Nanotubes, nanowire, Dendrimers, Nanoshells, magnetic nanoparticle, Quantum Dot (Nanocrystals), self assembled monolayers, Scanning probe microscopy (Scanning tunneling microscopy, Atomic force microscopy).  

8 Hrs
UNIT - III
NANOTECHNOLOGY FOR DRUG DISCOVERY & DRUG DELIVERY

UNIT - IV
MICROFLUIDICS
Microflows (Laminar flow), Hagen-Pouiselle equation, micromixing, microvalves & micropumps, Need for the microfluidics, Fabrication of Soft Materials, application of microfluidics. 8 Hrs

UNIT - V
MEMS & APPLICATIONS
Introduction and Overview, Design of MEMS, Sensors, Electromagnetic Transducers, Mechanical Transducers, Chemical Transducers, Optical Transducers - Applications of optical and chemical transducers. Recent Developments in MEMS and Nanochips. DNA based MEMS, application of MEMS. 9 Hrs

Text books:
2. Transducers and instrumentation, D.V.S. Murthy, Prentice Hall of India.
5. Micro fluidics for biotechnology by Jean Berthier Pascal Silberzan
INSTRUMENTAL METHODS OF ANALYSIS

Subject Code : BT8X06  Credits : 03
Hrs / Week  : 3  Total Hours : 39

Beneficiary Branches of Engineering: Mechanical, Civil.

UNIT - I

INTRODUCTION
Types of analytical instrumental methods and their selection, role of computers in analytical methods, performance requirements of analytical instruments, and instrument calibration techniques. Principle of microscopy, light field microscopy, scanning electron microscopy, tunneling electron microscopy and applications 7 Hrs

UNIT - II

SPECTROSCOPIC TECHNIQUES
Basic principles and applications of UV-Visible spectrometry, infrared spectrometry, nuclear magnetic resonance spectrometry, molecular mass spectrometry. Surface spectroscopic techniques: electron spectroscopy and ion spectroscopy; atomic absorption spectroscopy.

UNIT - III

CHROMATOGRAPHIC TECHNIQUES
Introduction to chromatographic separations. Basic principles and theory. Gas chromatography and HPLC: principle, instrumentation, column, detector, mobile phase, sample preparation. Application of chromatographic techniques. 9 Hrs

UNIT - IV

THERMAL AND ELECTROCHEMICAL TECHNIQUES
Principles and applications of thermo-gravimetric analysis (TGA), differential thermal analysis (DTA), differential scanning calorimetry (DSC). Electrochemical methods for analysis, electrochemical cells, types of electrodes, electrode potentials. 8 Hrs

UNIT - V

ENVIRONMENTAL APPLICATIONS
Types and concentration of various gas pollutants, instrumental techniques and measurement range for carbon dioxide, sulfur dioxide,
nitrogen oxides, hydrocarbons and ozone. Types of water pollutants and detection techniques.  

6 Hrs

Text Book:

Reference Books:
1. R. S. Khandpur, Handbook of analytical instruments, TMH.

ENVIRONMENTAL IMPACT ASSESSMENT

Subject Code : CV 8X07  
Credits : 03
Hrs/ Week : 3  
Total Hours : 39

Objective: To equip the students with the various key elements of EIA. Pre-requisites of the course: CV 113

UNIT - I
Developmental activity and ecological factors; EIA, EIS, FONSI. Need for EIA studies, Baseline information, Procedure for conducting EIA, Limitation of EIA; EnvironmentalActs/policies.  

8 Hrs

UNIT - II
Frame work of impact assessment in developmental projects; Environmental setting, EIA- Objective, content, methodologies, techniques, Rapid and comprehensive EIA.
UNIT - III
Assessment and prediction of attributes: Air, Water, Noise, Land, Ecology, Soil, Socio-economic environment. 7 Hrs

UNIT - IV
Public participation in environment decision making, practical consideration in preparing EIA and EIS, salient features of the project activity, Environmental parameter – activityrelationshipmatrices 8 Hrs

UNIT - V
EIA for construction project, power projects, mining projects. 7 Hrs

TEXT BOOKS

REFERENCE BOOKS
1. Guidelines for EIA of developmental projects, Ministry of Environment and Forest, GOI

INDUSTRIAL POLLUTION CONTROL

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<td>ME 8X08</td>
<td>03</td>
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<td>39</td>
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UNIT - I
1. Introduction to Pollution
Man and the environment, environmental degradation due to energy generation, consequences of pollution, sustainable industrial growth, air water and soil pollution, carbon audit.Ill effects of pollutants, Photochemical Smog, permissible concentrations. 8 Hrs
UNIT - II
2. Meteorology
Meteorology, Wind rose, plume dispersion studies & Numerical problems   8 Hrs

UNIT - III
3. Separation techniques
Particulates and fly ash separation techniques. Sources of Particulates Matter, fly ash properties, theory of settling processes- (problems), Single & parallel plate ESP- (problems), Bag House, Cyclone separator, Spray Tower, Scrubbers & Venturi Scrubber, merits and demerits of each.   8 Hrs

UNIT - IV
4. Smoke and gaseous pollutants
Smoke and gaseous pollutants: formation, measurement and control techniques T.T.T.O principle-(Ringlemann Chart, Smokescope, Bosch smoke meter), Coal firing- Under feed and overfeed stocker, Domestic and Industrial Incinerators, Pollutant gaseous (So2, Co, UBHC & NOx) Their sources, measurement and control. So2-Colorimetric, scrubbing & lime stone injection method. CO-Colorimetric, IR CO analyzer & control by oxidation. UBHC- Gas chromatography, Control by after burning & floating tanks. NOx- Iso-kinetic sampling, colorimetric method, control methods in brief for Low peak combustion temperature.   7 Hrs

UNIT - V
Water, soil, noise, plastic and odor pollution, their control methods. Pollution control Acts, Legal aspects of pollution control.   8 Hrs

Reference Books:
2. "Air Pollution control", W. L. Faith, John Wiley
3. "Environmental Pollution Control Engineering, Wiley Eastern Ltd.,

Scheme Examination:
TWO questions to be set from each UNIT and Students shall answer FIVE full questions choosing at least ONE question from each UNIT.
MANAGEMENT & ENTREPRENEURSHIP

Subject Code : ME 8X09  Credits : 03
Hrs/ Week : 3  Total Hours : 39

UNIT - I

PLANNING: Nature, importance and purpose of planning process - Objectives - Types of plans (Meaning Only), Steps in planning & planning premises, Hierarchy of plans. 9 Hrs

UNIT - II

DIRECTING & CONTROLLING: Meaning and nature of directing - Leadership styles Classification and meaning only), Motivation Theories (Meaning of motivation and Classification of theories; content, process and contemporary), Communication - Meaning and importance. Coordination - meaning, importance and Techniques of Coordination. Meaning and steps in controlling - Essentials of a sound control system - Methods of establishing control (inbrief). 10 Hrs

UNIT - III
ENTREPRENEURSHIP: Concept of Entrepreneurship, Evolution of Entrepreneurship, Stages in entrepreneurial process; Role of entrepreneurs in Economic Development; Entrepreneurship in India; Entrepreneurship - its Barriers. Meaning of Entrepreneur; Functions of an Entrepreneur, Types of Entrepreneurs, Intrapreneur - an emerging Class.
Identification of business opportunities: Market Feasibility Study; Technical Feasibility Study; Financial Feasibility Study & Social Feasibility Study. 8 Hrs
UNIT - IV

SMALL SCALE INDUSTRIES: Definition; Characteristics; Need and rationale; Objectives; Scope; role of SSI in Economic Development. Advantages of SSI, Steps to start and SSI, Government policy towards SSI; Different Policies of SSI, Impact of Liberalization, Privatization, Globalization on SSI. Effect of WTO/GATT on SSI, Supporting Agencies of Government for SSI, Ancillary Industry and Tiny Industry (Definition Only)

INSTITUTIONAL SUPPORT: Different Schemes; TECKSOK; KIADB; KSSIDC; KSIMC; DIC Single Window Agency; SISI; NSIC; SIDBI; KSFC.

UNIT - V

PREPARATION OF PROJECT: Meaning of Project; Project Identification; Project Selection; Project Report; Need and Significance of Report; Contents; Formulation; Guidelines by Planning Commission for Project report; Errors of Project Report; Project Appraisal, Network Analysis (Simple numerical problems to find early and late, start and finish times, critical path and total project duration).

TEXT BOOKS:
2. Dynamics of Entrepreneurial Development & Management - Vasant Desai - Himalaya Publishing House

REFERENCE BOOKS:
1. Management Fundamentals - Concepts, Application, Skill Development - Robers Lusier - Thomson -
NON CONVENTIONAL ENERGY SYSTEMS

Subject Code : EE8X10  Credits : 03
Hrs / Week : 3  Total Hours : 39

UNIT – I
Energy Sources: Introduction, Importance of Energy Consumption as Measure of Prosperity, Per Capita Energy Consumption, Classification of Energy Resources; Conventional Energy Resources - Availability and their limitations; Non-Conventional Energy Resources – Classification, Advantages, Limitations; Comparison of Conventional and Non-Conventional Energy Resources; World Energy Scenario; Indian Energy Scenario.


Solar PV Systems – stand-alone and grid connected; Applications – Street lighting, Domestic lighting and Solar Water pumping systems.

UNIT – II

Output and Capacity Factor of WECS, Wind site selection consideration, Advantages and Disadvantages of WECS.  

**5 Hrs**


**7 Hrs**

**UNIT – III**

Energy from Ocean: Tidal Energy – Principle of Tidal Power, Components of Tidal Power Plant (TPP), Classification of Tidal Power Plants, Estimation of Energy – Single basin and Double basin type TPP (no derivations. Simple numerical problems), Advantages and Limitation of TPP. Ocean Thermal Energy Conversion (OTEC): Principle of OTEC system, Methods of OTEC power generation – Open Cycle (Claude cycle), Closed Cycle (Anderson cycle) and Hybrid cycle (block diagram description of OTEC); Site-selection criteria, Biofouling, Advantages & Limitation of OTEC.  

**5 Hrs**


**TEXT BOOKS:**


**REFERENCE BOOKS:**


**LINEAR SYSTEMS THEORY**

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<tr>
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<th>Hrs / Week</th>
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**UNIT - 1**

State variable analysis & design: Introduction, concept of state, state variables & state model, state model of linear systems, linearization of state equations.  

**3 Hrs**
State space representation using physical variables, phase variables & canonical variables.  

6 Hrs

Derivation of transfer function from state model, diagonalisation, eigen values, Eigen vectors, generalized Eigen vectors.  

6 Hrs

UNIT - 2

Solution of state equation, state transition matrix & its properties, computation using Laplace transformation, power series method, Cayley-Hamilton method,  

8 Hrs

Concept of controllability & observability, methods of determining the same.  

6 Hrs

UNIT - 3

Pole placement techniques: stability improvements by state feedback, necessary & sufficient conditions for arbitrary pole placement.  

5 Hrs

Liapunov stability criteria, Liapunov functions, direct method of Liapunov & the linear system, Hurwitz criterion & Liapunov’s direct method  

5 Hrs

Text Books:


Reference Books:

INFORMATION AND ELECTRONIC COMMUNICATION TECHNOLOGY

Subject Code : EC 8X12
Credits : 03
Hrs/ Week : 3
Total Hours : 39

Common elective from Electronics and Communication department - for the students of Other branches

UNIT - I
Introduction: measure of information, information content, symbols, entropy, communication channel, noise and channel capacity, discrete channels, error control, codes. Noise & signal processing, AM/FM/PM..., sampling, PAM, TDM, PCM., Concept of spread spectrum, multiple access, cells, mobility, inter-cell handshake. 15 Hrs

UNIT - II
Microwaves: microwave devices, microwave systems and antennas, propagations, reflections and refractions terrestrial communications, ground and space components, SNR, FDMA, TDMA Etc, satellite systems and services. Optical fiber: optical devices, transmission networks, multiplexing, WDM, OTDM, n/w management, lasers. 16 Hrs

UNIT - III
Computers communications: OSI, TCP/IP, languages, adhoc networks, security, multimedia, audio/video compression, 3G/4G N/Ws, latest trends. 8 Hrs

REFERENCE BOOKS:
R2. Kamilo Feher, "Wireless Communication & Application ", PHI.
R3. Faraouzan, "Data Communication", TMH.
R4. Gerd keiser, "Optical fiber Communication", MGH.
R5. Fred Halsall, "Multimedia Communication", Pearson Education.

ROBOTICS

Subject Code : EC 8X13
Credits : 03
Hrs/ Week : 3
Total Hours : 39

Common elective from Electronics and Communication department - for Students from other branches

UNIT - I
Introduction: Historical developments, arm kinematics and dynamics, manipulated trajectory, planning and control, sensing, robot languages, machine intelligence.
Robot arm kinematics: Direct kinematics problem and inverse kinematics solution.
Robot arm dynamics: Lagrange-Euler formulation, Newton -Euler formulation equation of motion.
Planning trajectories: General considerations, joint interpolated trajectories, planning Cartesian path trajectories. 16 Hrs

UNIT - II
Sensing: Range, proximity, touch, force and torque sensing.
Low level vision: Image acquisition, illumination, geometry pre-processing.
High level vision: Segmentation, description, 3D structure recognition, interpretation.
Robot programming languages: Characteristics of robot languages, task languages. 16 Hrs

UNIT - III
Robot intelligence: State space search, predicate logic, means-ends analysis, robot learning, task planning expert systems. 7 Hrs

TEXT BOOK:
T1. Fu K S. etal, "Robotics-control, sensing, machine and intelligence", McGraw Hill

REFERENCE BOOKS:
R2.Groover MP etal., "Industrial robotics", TMH
OBJECT ORIENTED PROGRAMMING with C++

Subject Code : CS 8X14  Credits : 03
Hrs/ Week : 03  Total Hours : 39

UNIT - I
Principles of object - oriented programming:
A look at Procedure Oriented Programming, object Oriented Programming Paradigm, Basic Concepts of OOP, Benefits of OOP, Object oriented languages, Applications of OOP.

Beginning with c++:
What is c++, Applications of C++, Structure of C++ program, Basic Data types, derived data types, user defined data types, variables in c++, dynamic initialization of variables, reference variables, operators in c++, scope resolution operator, memory management operators, type cast operators, manipulators, namespace.  

7 Hrs

UNIT - II
Functions in C++:
Function prototyping, Inline Functions, Default Arguments, Function Overloading

Classes and objects:
Introduction, C Structure Revisited, Specifying a Class, Defining Member Functions, Static Data Members, and Static Member Functions. Arrays of Objects, Objects as Functions Arguments, this pointer, Friend Functions, Returning Objects, Constant Member Functions.  

8 Hrs

UNIT - III
Constructors and Destructors
Introduction, Constructors, Parameterised Constructors, Multiple Constructors in a Class. Constructors with Default Arguments, Copy Constructors, Dynamic Constructors, Constant Objects, Destructors.

Operator Overloading and Type Conversions
Introduction, Defining Operator Overloading, Overloading the Various Operators, Overloading the Increment and the Decrement Operators (Prefix and Postfix), Overloading the Unary Minus and the Unary Plus Operator, Overloading the Arithmetic Operators. Overloading the
Relational Operators, Overloading the Assignment Operator, Overloading the Insertion and Extraction Operators, Rules for overloading operators. Type Conversions.  

**UNIT - IV**

**Inheritance**
Introduction, Defining Derived Classes, Single Inheritance, Protected Access Specifier, Multilevel Inheritance, Multiple Inheritance, Hierarchical Inheritance, Hybrid Inheritance, Virtual Base Classes, Abstract Classes, Constructors in Derived Classes, Nesting of Classes.

**Pointers, Virtual Functions and Polymorphism**
Introduction, Pointers, Pointers to Objects, Pointers to Derived Classes, Virtual Functions, Pure Virtual Functions.  

**UNIT - V**

**Templates and Exception Handling**

**Working with files**
Classes for Files Stream Operations, Opening and Closing a File, Error Handling during File Operations.

**Text Books:**
1. E.Balagurusamy: Object - Oriented Programming with C++, Third Edition, Tata McGraw Hill. (Chapters 1.3 to 1.8, 2.1, 2.2, 2.6, 3.5 to 3.7, 3.10 to 3.18, 4.3, 4.6 to 4.9, 5, 6, 7, 8, 9, 11, and 12).

**Reference:**
1. Robert Lapore: Object - Oriented Programming in Turbo C++
3. K.R. Venugopal: Mastering C++
ESSENTIALS OF INFORMATION TECHNOLOGY

Subject Code : CS 8X15  
Credits : 03
Hrs / Week : 03  
Total Hours : 39

Introduction to Computer Systems (Self-Study)
Introduction to Computer Systems - Basics of computer systems - Various hardware components - Data storage and various Memory units - Central Processing Unit - Execution cycle - Introduce to software and its classifications.

UNIT - I

Operating Systems
6 Hrs

UNIT - II

Problem Solving Techniques
Introduction to problem solving - Computational problem and it's classification - Logic and its types - Introduction to algorithms - Implementation of algorithms using flowchart - Flowcharts implementation through RAPTOR tool - Searching and sorting algorithms - Introduction and classification to Data Structures - Basic Data Structures - Advanced Data Structures.  
7 Hrs

UNIT - III

Programming & Testing
8 Hrs
UNIT - IV


UNIT - V

RDBMS
- RDBMS- data processing - the database technology - data models
- ER modeling concept -notations - Extended ER features
- Logical database design - normalization
- SQL - DDL statements - DML statements - DCL statements
- Joins - Sub queries - Views
- Database design Issues

Integrated Project:
Project based on C/C++/JAVA & RDBMS.

References:
4. Andrew Tanenbaum, Modern Operating Systems, Pearson Education
6. Charles Crowley, "Operating Systems: A Design-Oriented Approach"
7. Dromey, R.G., How to solve it by computers, Prentice Hall, 2005
14. Programming Pearls, by Jon Bentley, Pearson Education publication
16. Tharp Alan L, File Organization and Processing, John Willey and Sons.

Note:
1. Courseware for the subject (power point and the notes) is provided by the teacher. List of references is only for additional reading.
2. Project is a team work with 3 or 4 students in a team. Project need to be carried out offline (outside the lecture hours).
3. Project work includes implementation of some information system using the concepts of programming, testing and RDBMS. Following activities are involved in the project:
   □ Preparation of High level design and Detailed design document.
   □ Unit Test Plan and Integrated Test Plan.
   □ Coding and Unit Testing, Integration Testing.
Students can use the following to implement the Project:
   □ Programs using C/C++/JAVA Language
   □ Embedded SQL can be used to connect the Front-End with the backend Database systems
   □ Visual studio .NET 2005 (or Visual studio 6), RAPTOR tool and oracle 9i/10g to be used for the project.
4. CIE carries 50 Marks which includes Theory Assessment (40 Marks) and Project Work (10 marks). Theory Assessments will be conducted based on CAMP methodology. Project evaluation will be done using Rubrics methodology.
5. Number of hours listed for each unit are only for the class room teaching. Students are expected to give much more time to study each of the topics outside the class hours.
CONSUMER ELECTRONICS

Subject Code: EC 8X18  
Credits: 03  
Hrs/ Week: 03  
Total Hrs: 39

Common elective from Electronics and Communication department - for the students Of other branches

UNIT - I
FUNDAMENTALS: Electricity, Particle and Wave Motions, Conduction and Radiations, dielectrics, inductors, Vac. tubes, S.S. devices, IC's further advances, Power supply, Circuit functions.
SOUND: Transducers (Micro Phone, Loud Speakers), enclosures, Recordings - disc, Magnetic, Optical, mono-stereo, Amplifiers, Multiplexers, mixers, Synthesizers, Theatre Sound, Studios, Editing.  
15 Hrs

UNIT - II
VISION: B/W TV, CTV, Video tapes/discs, recording/ play back, Standards, Broad-casting, Video systems, Studios, editing, B/W, Displays, Filters, Cameras, Color displays.
15 Hrs

UNIT - III
UTILITIES: - Fax, Xerox, Calculators, Microwave ovens, Washing Machines, A/C & refrigeration, Dishwashers, ATMS, Set -Top boxes, Auto Electronics, Industrial Electronics, Robotics, Electronics in health / Medicine, nano-technologies.  
9 Hrs

TEXT BOOK:

REFERENCES:
R2. Kamilo Feher, "Wireless Communication & Application", PHI
OPTO ELECTRONIC DEVICES

Subject Code : PH 8X19
Credits : 03
Hrs/ Week : 03
Total Hours : 39

The objectives of the course:
* To know the basics of solid state Physics and understand the nature and characteristics of light
* To understand different methods of luminescence, display devices and laser types and applications
* To learn the principle of optical detection, mechanisms in different detection devices
* To understand different light modulation techniques and the concepts and applications of optical switching
* To study the integration process and application of optoelectronic integrated circuits in transmitters and receivers.

PART-A

UNIT – I

Display Devices
Introduction- Fluorescence, Phosphorescence, Photo Luminescence, Cathode Luminescence, Electro Luminescence, LED, plasma displays, Liquid Crystal displays, Numeric displays. 7 Hrs

UNIT – II

Lasers & Fibre Optics

PART-B

UNIT - III

Optical Detectors
Photo detector- thermal detectors, thermoelectric detectors-types, Photon Devices-types, Photoconductive detectors, Junction detectors- Photo diodes (PIN and APD), Photo Transistors, Detector Performance – characteristics, frequency response, noise aspect and sensitivity. 8 Hrs
UNIT - IV

**Optoelectronic Modulators**
Introduction, Polarization, Birefringence, Optical activity, Electro-optic effect, Kerr modulators, scanning & switching, Magneto-optic devices, Acousto-optic effect

8 Hrs

UNIT - V

**Optoelectronic Waveguides**
Hybrid and Monolithic Integration, Applications of Optoelectronic waveguide devices, Construction and working of integrated transmitters and receivers—Front end photo receiver, PIN-HBT Photo receiver & OEIC transmitters

8 Hrs

**TEXT BOOK:**

**References:**
Bhattacharya “Semiconductor Optoelectronic Devices” Prentice Hall of India Pvt., Ltd., New Delhi
Ghatak and Thyagarajan, “Introduction to Opto Electronics” New Age International Publishers

**Scheme:**

1) SEE to be conducted out of 100 marks and will be reduced to 50 marks
2) Two questions carrying 20 marks each will be set from each unit and students have to answer any one.
VALUE EDUCATION

Subject Code : HU 8X20  Credits : 03
Hrs/ Week : 3  Total Hours : 39

The Objectives of the course:
1. To make the students realize the significance of values in self-development.
2. To train the students in techniques of mind control, time management and stress management.
3. To make students use the fundamentals learnt in the course in solving
   a) The problems in their own lives like intoxication, gambling, extra marital relations, generation gap, ragging, peer pressure, addiction to social networking sites.
   b) The problems pertaining to the society in general like corruption, irresponsible media, distractions among youth, gender discrimination, westernization, child abuse & animal cruelty.
4. To make students understand value of sustainable civilization, simple living and high thinking.

UNIT - I
Three components of human personality (IQ, EQ and SQ), separating men from animals, real problems of life, how to acquire knowledge. Why sense gratification is opium of the masses, three kind of people and their symptoms, ethical degradation of the society today, how mind gets out of control, anger management, different levels of consciousness (bodily platform, sensual platform, mental and intellectual), regulative principles of freedom, difference between moderation and abstinence.

15 Hrs

UNIT - II
Intoxication, harmful effect of alcohol on liver, central nervous system, blood, gastro intestinal tract, muscles, etc. myths and facts regarding alcohol. Harmful effect of smoking on respiratory health, strokes and heart diseases, cognitive dysfunction, passive smoking myths and facts about smoking, Drug addiction, common neurological effects of drug addiction, physical effects. Negative impacts of gambling, gambling vs. substance abuse, Forms of illicit sex, forms of animals cruelty, alternatives for animal experimentation.

Knowledge, attitudes and skills needed to achieve a sustainable value based global culture.

15 Hrs
UNIT - III
Generation gap, ragging, peer pressure, addiction to social networking sites, corruption, irresponsible media, distractions among youth, gender discrimination, westernization, child abuse, euthanasia, capital punishment, female feticide, terrorism.

9 Hrs

Scheme:
1) SEE to be conducted out of 100 marks and will be reduced to 50 marks.
2) Three questions from units 1&2 each and two questions from unit 3 shall be set, carrying 20 marks each.
3) Students have to answer 5 full questions, selecting at least two questions from units 1&2 each and one from unit 3.
4) Break Up of CIE (50 marks) :
   - First Mid Semester Exam - 10 marks
   - Second Mid Semester Exam - 10 marks
   - Class Quiz - 05 marks
   - Students’ solution of problems discussed in the form of video skits - 25 marks

NATURAL PRODUCTS CHEMISTRY

Subject Code : CH8X21  
Credits : 03
Hrs/Week : 3  
Total Hours : 39

UNIT - I
Terpenoids: Introduction and classification, isoprene rules, general methods of determination of structure of terpenoids. Structure elucidation, synthesis and biosynthesis of the following terpenoids; Monoterprenoids-Geraniol, α-pinine, and camphene. Sesquiterpenoids-Farnesol, and α-santonine, Diterpenoids- gibberillic acid. Triterpenoids- Squaline, Cyclisation of squaline into α-lanosterol and friedelene.

8 Hrs

UNIT - II
Sex hormones: Chemistry of estrogen, progesterone, androsterone and testosterone. Structure and synthesis of cortisone and aldosterone.

8 Hrs
UNIT - III

**Prostaglandins:** Introduction, nomenclature, classification and biological role of prostaglandins. Structure elucidation and stereochemistry of PGE1, PGE2 and PGE3. Total synthesis of PGE1 (Corey’s method). \(7\) Hrs

UNIT - IV

**Carotenoids:** Introduction and geometrical isomerism of carotenes. Structure and synthesis of β-carotene and chlorophyll. **Chemistry of Porphyrins:** Introduction to porphyrins, structure and degradation products of haemoglobin and chlorophyll \(8\) Hrs.

UNIT - V

**Alkaloids:** Definition, Classification and isolation of alkaloids. General methods of structural determination of alkaloids. Detailed study of structure elucidation, rearrangement, synthesis and biogenesis of the following alkaloids- papaverine, cinchonine, and morphine. \(8\) Hrs

References:

ESSENTIALS OF IT SERVICE INDUSTRY
(SPAN TECHNOLOGIES)

Subject Code : CS8X22
Credits : 03
Hrs/week : 3
Total Hours : 39

UNIT - I
Fundamentals of Software Industry 3 Hrs
Introduction to SDLC Process; Life cycle models; Requirement
Gathering Techniques; Functional, Non Functional, Statutory and
Regulatory Requirements; Configuration Mgmt; Workshop on
Requirement Analysis.

UNIT - II
Relational Database 6 Hrs
Fundamentals of Relational Databases; Primary key, Unique Key,
Foreign keys and Indexes; Logical & Physical Databases; Simple
Queries.

UNIT - III
Basics of DOTNET & coding techniques 9 Hrs
Introduction to .NET framework 3.5 with additional features of .NET
4.0; Language construct C#; Visual Studio Developer environment IDE;
Coding Standards and General Coding guidelines.

UNIT - IV
ASP.NET 12 Hrs
Page life cycle; Web.config; types of apps, control structure; HTML
controls; Server controls; Custom controls; User controls; Form
validation; Master Pages, Themes, Skins, CSS, Passing data between
forms, Session object, view state, Request / Response; ADO.Net.

UNIT - V
Code Enabler 9 Hrs
Error/Exception handling; XML – Overview; Creating XML; XML
validation; XPATH; XML schema, attributes, XML in SQL; Usage of
Code Analysis Tools – Face, Style Cop; Jquery;IIS.

Note:
1. Courseware for the subject (Power Point Presentation) will be
   provided by the teacher. List of references is only for additional
   reading.
2. Assignment will be provided for each theory sessions. These assignments need to be carried out by each student (outside the lecture hours) independently and must be submitted within the timeframe specified by the instructor.

3. Tests will be conducted on each topics separately and test assignment score will be used for final evaluation.

4. Test score will carry a weightage of 20%, assignment 30% and rest 50% weightage would be given to the final examination.

STATISTICAL DESIGN AND ANALYSIS OF EXPERIMENTS

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**UNIT – I**

Curve fitting and Regression: Least square principle, curve fitting of linear, quadratic and exponential. Correlation and properties, correlation coefficients, regression analysis. **8 Hrs**

**UNIT – II**

Probability Theory: Review od pdf’s, expectation, variance, moment generating function and properties, Moment generating functions and their properties, random samples, sampling distributions, central limit theorem and applications. **10 Hrs**

**UNIT - III**

Estimation and Testing of hypothesis: Consistency and unbiased statistics, point and interval estimation, mean and variance, tests of hypothesis concerning mean and variances. **8 Hrs**

**UNIT - IV**

Functions of random variables, t, F and chi-square distributions **7 Hrs**

**UNIT - V**

Analysis of variance of one-way, two-way classified data, experimental designs: CRD, RBD, LSD, factorial experiments. **6 Hrs**
Text Books:
1. Irwin Miller, John E. Frund, “Probability and Statistics for Engineers” 3rd edition

Reference books:

PROFESSIONAL & COGNITIVE COMMUNIQUÉ

Subject Code : HU8X24  CIE Marks : 50
Hrs/Week : 3  Total Hours : 39

UNIT - I
Common sense: Understand the term ‘common sense’ & commonsensical consensus, unsettling commonsensical consensus. (Role of language in the growth of an individual)
Emotional Intelligence: Nature, function and types of intelligence; emotion, intelligence and creativity; Growth and development of emotional intelligence.  8 Hrs

UNIT - II
Manners and Etiquettes - work place etiquettes, Significance of Cross Cultural understanding; Cultural Sensitivity, Impact of social Media Self-Presentation Skills.
Workplace: Physical and Psychological working conditions; Workplace Readiness Skills.  8 Hrs
UNIT - III
Writing: Creative Writing, Formal writings/Informal writing, Plagiarism.
Reading and Interpretation: Styles of reading, scanning, skimming, detailed reading. 8 Hrs

UNIT - IV
Presentation Skills: Event planners coordinate and manage conferences meetings and parties. 8 Hrs

UNIT - V
Diaspora: exile, migration, old and new diasporas, the heterogeneity of diasporas, groups, especially by gender, class, sexuality, caste, religion, the role of language and other cultural practices in migratory experiences; Films and Indian Diaspora. 7 Hrs

References:
Ray French : Cross Culture Management, Universities Press
Urmila Rai : Business Communication, Himalaya Publishing House
Neil Fiore; The Now Habit at Work: Perform Optimally, Maintain Focus, and Ignite Motivation in Yourself and Others ,Publisher: Wiley ISBN: 9780470593462
V. Geetha; Gender
http://writingexercises.co.uk/index.php
http://www.studyskills.soton.ac.uk/studytips/reading_skills.htm
http://pages.minot.k12.nd.us/votech/File/workplace.htm
INTRODUCTION TO TOPOLOGY

Subject code : MA8X25
Credits : 03
Hrs/Week : 03
Total Hours : 39

UNIT – I
Basics of set theory and logic: Functions, relations, arbitrary cartesian products, principle of recursive definition, countable and uncountable sets, infinite sets and axiom of choice, well ordered set and maximum principle. 8 Hrs.

UNIT - II
Topological spaces, basis for a topology, order topology, product topology on $X \times Y$, The subspace topology, closed sets and limit points, continuous functions. 8 Hrs.

UNIT - III
Product topology, Metric topology, Examples. 8 Hrs.

UNIT - IV
Connectedness and compactness: Connected spaces, connected sets in the real line, compact spaces, compact sets in the real line. 8 Hrs.

UNIT - V
Countability and separation axioms. $T_1, T_2, T_3, T_4$ Spaces. 7 Hrs

Reference books: