UNIVERSITY DEPARTMENTS  
ANNA UNIVERSITY CHENNAI : : CHENNAI 600 025  
REGULATIONS - 2009  
CURRICULUM I TO VI SEMESTERS (PART TIME)  
M.E SYSTEMS ENGINEERING AND OPERATIONS RESEARCH  

SEMIESTER I  

<table>
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Total no.of credits to be earned for the award of Degree = 69

## LIST OF ELECTIVES

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MA9105 PROBABILITY AND STATISTICAL METHODS

UNIT I PROBABILITY AND DISTRIBUTION

UNIT II SAMPLING DISTRIBUTIONS AND ESTIMATION

UNIT III TESTING OF HYPOTHESIS
Basic definitions of statistical hypothesis – Tests based on Normal, t, chi-square and F distributions for mean, variance and proportion.

UNIT IV DESIGN OF EXPERIMENTS
Analysis of variance – One way and two way classifications – Completely randomized design – Randomized block design – Latin square design – $2^2$ factorial design

UNIT V TIME SERIES ANALYSIS AND CASE STUDY
Characteristics and representation – Moving averages – Exponential smoothing – Auto regressive processes - Case study using statistical package.

REFERENCES:


TOATL: 45
SO9111 OBJECT ORIENTED PROGRAMMING USING C++

UNIT I INTRODUCTION TO C++
Programming Paradigms - Comparison of Programming Paradigms – Object Oriented Languages - Benefits of Object Oriented Programming - Comparison with C - Overview of C++ - Types and Declarations - Pointers, Arrays, References and Structures - Expressions and Statements – Functions — Scope and Namespaces - Source Files and Programs

UNIT II CLASSES AND OBJECTS
Dynamic Memory Allocation - Classes and Objects – Constructors and Destructors - Function Overloading – Copy Constructor - Friends - Operator Overloading.

UNIT III DERIVED CLASSES
Composition and Inheritance – Access Control - Virtual functions and Polymorphisms – Abstract Base Classes - Design of Class Hierarchies

UNIT IV ADDITIONAL FEATURES

UNIT V DESIGN USING C++
Development Process – Management - Object Identification – Components - Object Oriented Design Fundamentals – Case Studies

REFERENCES:

SO9112    SYSTEMS ENGINEERING METHODOLOGIES

UNIT I    SYSTEMS SCIENCE CONCEPTS

UNIT II    SYSTEMS ENGINEERING PROCESSES
Life cycles-Phases-Steps, Formulation of Issues: Problem Identification – Scoping – Bounding, Problem definition – Identification of needs, alterables, constraints; Value System Design: Objectives and objective measures; Generation of Alternatives/ system synthesis – Identification of activities and activity measures; Functional decomposition and analysis
Tools: Objectives hierarchies – trees, cross interaction matrix; Functional analysis approaches – SADT, DFD, CFD, FFBD, ICOM, Node tree, Context diagram, decomposition; BPR, QFD, Brain storming, Brain writing, Groupware, Delphi, Morphological box

UNIT III    ANALYSIS OF ALTERNATIVES
Uncertain/ Imperfect information; Cross-impact analysis, Hierarchical inference, logical reasoning inference; Structural modeling; System Dynamics;
Tools: Coupled uncoupled events – Baye’s model – event trees, Causal loop diagram, probability trees; Structural models – Tree structures, reachability graph and matrix, Causal loop diagrams, influence diagrams, decision trees; System Dynamic Models – population models, urban dynamics, world dynamic models; Economic models

UNIT IV    INTERPRETATION OF ALTERNATIVES AND DECISION MAKING
Types of decisions – descriptive, prescriptive, normative; Decision assessment efforts types – under certainty, probabilistic uncertainty, probabilistic imprecision, information imperfection, conflict and cooperation; Prescriptive normative decision assessments; Utility theory; Group decision making, Game Theory

UNIT V    SYSTEMS ENGINEERING MANAGEMENT
Concepts: organizational structures, SE management plan; Network based systems planning and management methods; Cognitive factors in SE.

REFERENCES:
UNIT I  LINEAR PROGRAMMING  14
Statement of Problems - Mathematical Models – Linear Programming Models – Graphical
Method – The Simplex Algorithm – Optimality and Feasibility Criteria – Product Criterion –
Multiple Optimal Solution - Two Phase Method – Degeneracy, Redundancy, Cycling,
Popping Variables and Connectivity Among Them – Transportation and Assignment
Models – Revised Simplex Method.

UNIT II  SENSITIVITY IN LINEAR PROGRAMMING  12
Generic Activities Versus Resources Perspective – Quantifying Sensitivity to Changes in
Interpretation of Simplex Multiplier – Dual Simplex Method – Post Optimality or Sensitivity
Analysis.

UNIT III  REDUNDANCY ANALYSIS  10
Heuristics Algorithm – A Priori Identification of Redundancies of Constraints and Variables
Using Matrix of Intercepts – Gradient Matrix of the Constraints – Union of the Matrix of
Intercepts and the Gradient Matrix of the Constraints - Application of Primal – Dual
Properties to Identify Redundancies – Model Reduction – Comparison of Computational
Efficiencies.

UNIT IV  ADVANCED LINEAR PROGRAMMING  14
Integer Linear Programming – Branch and Bound Algorithm – Cutting Plane Algorithm -
Bounded Variable Algorithms.

UNIT V  DECISION ANALYSIS AND GAMES  10
Under Uncertainty - Game Theory – Optimal Solution to Two-Person Zero – Sum Games
– Solution of Mixed Strategy Games.

Total = 60

REFERENCES
   Asia, 2002..
   Asia, 2002.
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<td>Software Development process – OMT, Unified process. Use cases, class diagrams, static and dynamic behavior, interactions, package diagrams, state and activity diagrams. UML extensibility, Model constraint, stereotype, meta model. Analysis patterns and design patterns.UML and programming.</td>
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<td>Project Initiation; Project Planning, execution and tracking; Project Wind-up; Concept of process/project database.</td>
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<td>Software development methodologies. Basic activities and values of XP. Project control variables.XP principles and practices and key features. Design strategy, XP development life cycle-customer requirements, team roles, pair programming.XP development tools-unit testing with java tools- implementing XP. Refactoring techniques. Agile modeling with XP - Scrum methodology. Dynamic system development - Case studies.</td>
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**TOTAL = 45**

**REFERENCES**

UNIT I  NETWORK ARCHITECTURE  9

UNIT II  NETWORK LAYER  9

UNIT III  TRANSPORT LAYER  9

UNIT IV  NETWORK SECURITY AND APPLICATION  9

UNIT V  STUDY OF SIMULATION TOOLS  9

TOTAL: 45

REFERENCES

1. Familiarization of features of anyone of the standard UML case tool – Capturing key functional requirements - use cases class diagrams in online ticket / hotel reservation systems – student information system – sales & marketing system – banking system and inventory tracking system.

2. Behavioural diagrams – state chart diagram, etc for application systems – Implementation using anyone of Object Oriented languages like Java, C++ for systems – component diagrams – deployment diagrams for systems – Test cases, integration test cases for systems


4. Web services – Business logic using Java - Components design using UML and implementation using Java - Persistence Frame work design using Java - Realization of Design patterns like fcae, chain of responsibility, proxy, momentos, observers, etc.
UNIT I 
INTRODUCTION
Introduction to Simulation, Simulation examples, concepts in discrete event simulation

UNIT II 
RANDOM NUMBERS AND VARIATES
Pseudo random numbers, methods of generating random numbers, testing of random numbers, methods of generating random variates

UNIT III 
ANALYSIS OF SIMULATION DATA
Problem formulation, Input modeling, Verification and validation of simulation models, Output analysis for a single model, Evaluation of alternative system designs

UNIT IV 
SIMULATION SOFTWARE
Comparison and selection of simulation languages, study of any one simulation language.

UNIT V 
CASE STUDIES
Development of simulation models using a simulation language for systems like, queuing systems, production systems, inventory systems, maintenance and replacement systems, investment analysis and networks.

TOTAL: 45 PERIODS

REFERENCES
SO9122 NETWORK SECURITY AND MANAGEMENT

UNIT I INTRODUCTION TO NETWORK SECURITY

UNIT II PRIVATE AND PUBLIC KEY ENCRYPTION

UNIT III AUTHENTICATION MECHANISMS

UNIT IV KEY DISTRIBUTION AND WEB SECURITY MECHANISMS

UNIT V SECURITY MANAGEMENT

REFERENCES
1. Formulating Linear Programming Models

2. Introduction to Modeling Languages LINGO / MPL

3. Problem Solving using LINGO

4. Development of Random Number Generators and Testing

5. Development of Statistical Distributions and Generation of Variation

6. Development of Simulation Models

7. Study and experiment with Simulation Languages

8. Simulation with Software Package (Arena)
   a. Design simulation experiments for non-terminating systems
   b. Design simulation experiments for terminating systems
   c. Apply appropriate data collection techniques
   d. Interpret the results from simulation experiments
   e. Perform result analysis for comparing similar systems
UNIT I INTRODUCTION
Classification of optimization problems, concepts of design vector, Design constraints, constrains surface, objective function surface and multi-level optimization, parametric linear programming

UNIT II DECISION ANALYSIS
Decision Trees, Utility theory, Game theory, Multi Objective Optimization, MCDM- Goal Programming, Analytic Hierarchy process

UNIT III NON-LINEAR OPTIMIZATION
Unconstrained one variable and multi variable optimization, KKT Conditions, Constrained optimization, Quadratic programming, Convex programming, Separable programming, Geometric programming, Non-Convex programming

UNIT IV NON-TRADITIONAL OPTIMIZATION
Over view of Genetic algorithms, Simulated Annealing, neural network based optimization, Optimization of Fuzzy Systems

UNIT V NP-COMPLETE PROBLEMS
The classes P and NP, Polynomial time reductions, Introduction to NP- Hard problems

REFERENCES:
UNIT I  DATA BASE SYSTEM CONCEPT  9

UNIT II  RELATIONAL DATABASES  9

UNIT III  DATABASE SYSTEM DESIGN  9

UNIT IV  DISTRIBUTED DATABASES  9

UNIT V  CASE STUDY  9
Database – Database Tuning – Security & Auditing – Backup Recovery – Competitive Study

Total= 45

REFERENCES
UNIT I INTRODUCTION 9
Project Definition – Programme and projects- Program Management – Project management-The dynamic life Cycle- programme and project process phase gates

UNIT II ORGANIZING FOR PROGRAMME MANAGEMENT & KEY ROLES 9
Organizing for ownership-Establishing programme steering team-responsibility of Programme steering team-managing the portfolio- The key roles.

UNIT III PROJECT PROCESSES AND TECHNIQUES 9
Ideas and opportunities for projects - Defining the project - Scope of work statement - Risk Management & assessment - Risk Monitoring

UNIT IV PROJECT PLANNING & LAUNCHING 9
Identifying the key stages-Project work breakdown structure-Golden rules- Estimating durations-Identifying critical path of project-Analyzing logic diagram- PERT analysis data- Reviewing project-Establishing key stage work plans- Deriving a milestone schedule- Critical success factors-Managing project changes.

UNIT V EXECUTING PROJECT WORK 9
Project control system-Monitoring progress, Managing issues, Tracking Project - Problem solving-Progress meeting - Controlling project costs- balancing project- case studies

TOTAL = 45

REFERENCES:

UNIT I INTRODUCTION
Relation to Statistics, Databases, Machine Learning - Taxonomy of Data Mining Tasks - Steps in Data Mining Process - Overview of Data Mining Techniques.

UNIT II VISUALIZATION AND STATISTICAL PERSPECTIVES

UNIT III PREDICTIVE MODELING

UNIT IV DATA WAREHOUSING

UNIT V APPLICATIONS
Tools – Applications in Strategic Planning, Human Resource and Operational Management - Case Studies.

REFERENCES
SO9152  SYSTEMS ANALYSIS AND DESIGN

UNIT I  FUNDAMENTALS OF SYSTEM DEVELOPMENT  8

UNIT II  SYSTEM ANALYSIS  9

UNIT III  SYSTEM DESIGN  9

UNIT IV  IMPLEMENTATION AND MAINTENANCE  9

UNIT V  SABILITY AND MEASURING USER SATISFACTION  10

TOTAL = 45

REFERENCES


SO9153 DATA STRUCTURES AND ALGORITHMS

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TOTAL = 45

TEXT BOOKS


REFERENCE BOOKS


SO9154  Fuzzy Logic, Neural Networks and Applications

UNIT I  INTRODUCTION TO NEURAL NETWORKS

UNIT II  UNSUPERVISED NETWORKS

UNIT III  ASSOCIATIVE MEMORIES AND SOM
Bidirectional Associative Memory – Principle Component Analysis. Auto associative memories - Bidirectional Associative memory (BAM) - Self Organization Maps (SOM) and ART1.

UNIT IV  FUZZY LOGIC

UNIT V  FUZZY SYSTEMS AND APPLICATIONS

REFERENCES
UNIT I  INTRODUCTION

UNIT II  WIRELESS NETWORKING SYSTEM

UNIT III  WLAN STANDARDS
Wireless LAN Technology – Architecture and Standards – Bluetooth Technology – Wireless ATM - PAN.

UNIT IV  NETWORK ISSUES

UNIT V  APPLICATION ISSUES

TOTAL = 45

REFERENCES:

SO9156      DESIGN PATTERNS                      L T P C
                                      3 0 0 3

UNIT I      INTRODUCTION                     9
History and Origin Of Patterns – Applying Design Patterns – Prototyping – Testing.

UNIT II     DESIGN PATTERNS                 9
Kinds of Pattern – Quality and Elements – Patterns and Rules – Creativity and Patterns–
Creational Patterns – Structural Patterns – Behavioral Patterns, Factory Patterns.

UNIT III    FRAMEWORKS                      9
State and Strategy of Patterns. Singleton, Composite, Functions and The Command
Patterns, Adaptor, Proxy Pattern, Decorator Pattern – Pattern Frameworks and
Algorithms.

UNIT IV     CATALOGS                        9
Pattern Catalogs and Writing Patterns, Patterns and Case Study.

UNIT V      ADVANCED PATTERNS               9
Anti-Patterns - Case Studies In UML and CORBA, Pattern Community.

TOTAL = 45

REFERENCES:

1. Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides,"Design patterns:
   Elements of Reusable object-oriented software",Addison-Wesley, 1995.
3. Craig Larman,"Applying UML and Patterns: An Introduction to object-oriented
4. Thomas Mowbray and Raphel Malveaux, " CORBA and Design Patterns ", John
5. William J Brown et al., "Anti-Patterns: Refactoring Software, Architectures and
UNIT I  OVERVIEW OF CRYPTOGRAPHY  
Information security and cryptography - Background on functions - Basic terminology and concepts - Symmetric-key encryption - Stream ciphers - Feedback shift registers - Stream ciphers based on LFSRs - Block ciphers - DES, FEAL, IDEA, SAFER, RC5.

UNIT II  AUTHENTICATION  

UNIT III  FORMAL APPROACHES TO SECURITY ESTABLISHMENT  

UNIT IV  CRYPTOGRAPHIC PROTOCOLS  

UNIT V  IMPLEMENTATION  
SEAL, RC5, IDEA, FEAL, SAFER - using API's.

REFERENCES:

SO9158 TOTAL QUALITY MANAGEMENT

UNIT I CONCEPT OF TQM
Philosophy of TQM, Customer Focus, Organization, Top Management Commitment, Teamwork, Quality philosophies of Deming, Crossby and Muller.

UNIT II TQM PROCESS
QC Tools, Problem solving methodologies, New Management Tools, work habits, Quality Circles, Bench Marking, Strategic Quality Planning.

UNIT III TQM SYSTEMS
Quality policy deployment, quality function deployment, standardization, designing for quality, manufacturing for quality.

UNIT IV QUALITY SYSTEM
Need for ISO 9000 system, advantages, clauses of ISO 9000, Implementation of ISO 9000, Quality Costs, Quality auditing, Case Studies.

UNIT V IMPLEMENTATION OF TQM
Steps, KAIZEN, 5S, JIT, POKAYOKE, Taguchi Methods, Case Studies.

TOTAL = 45

REFERENCES:
SO9159  REAL TIME SYSTEMS

UNIT I  INTRODUCTION

UNIT II  REAL TIME OPERATING SYSTEM

UNIT III  REAL TIME SCHEDULING
Commonly used approaches to Hard Real Time Scheduling - Clock driver scheduling - Priority driver scheduling of periodic tasks - Scheduling Aperiodic & Sporadic jobs in priority driver system - Resources & Resource Access Control (RAC) - Multiprocessor Scheduling & RAC - Scheduling flexible computation & tasks with temporal distance constraints.

UNIT IV  REAL TIME COMMUNICATIONS

UNIT V  REAL TIME SYSTEM DESIGN
Requirements analysis-Decomposition of a system- Test of a decomposition-Detailed design and implementation-Real time architecture projects.

TOTAL=45

REFERENCES
UNIT I PROCESS MANAGEMENT

UNIT II MEMORY MANAGEMENT
Memory management - Paging - Segmentation-Virtual memory - Demand paging – Page replacement algorithms.

UNIT III FILE AND DISK MANAGEMENT

UNIT IV DISTRIBUTED OPERATING SYSTEM

UNIT V CASE STUDY (LINUX / WINDOWS)
Case study (Linux / Windows) – Design and implementation of OS - process model and structure in OS - memory management - file system - I/O management and device drivers.

TOTAL: 45

REFERENCES
NON-LINEAR MATHEMATICAL PROGRAMMING

UNIT I
INTRODUCTION

UNIT II
UNCONSTRAINED AND CONSTRAINED OPTIMIZATION

UNIT III
DYNAMIC PROGRAMMING

UNIT IV
NON LINEAR PROGRAMMING

UNIT V
EVOLUTIONARY PROGRAMMING

REFERENCES:
SO9162 SUPPLY CHAIN NETWORKS MANAGEMENT

UNIT I

UNIT II

UNIT III

UNIT IV
Transportation in a supply chain – Network design in a supply chain – Information Technology in a supply chain.

UNIT V

REFERENCES:

SO9163   PROBABILISTIC OPERATIONS RESEARCH

Objective
To impart knowledge on some probabilistic optimization techniques

UNIT I
Queuing theory -Single server, multi server, Limited queue capacity – applications, Queuing Networks types and applications

UNIT II
Decision making under certainty, risk and uncertainty, Utility Theory, Decision tree analysis, MCDM – AHP

UNIT III
Markov Chains, DTMC and CTMC, Markov Decision processes and their applications

UNIT IV
Game theory - Two person zero sum games, pure and mixed strategies – graphical solution, solving by LP

UNIT V
Introduction to Petri nets, ETPN and GSPN models and their applications

REFERENCES:
UNIT I  INTRODUCTION
Pervasive Computing Application - Pervasive Computing devices and Interfaces - Device technology trends, Connecting issues and protocols

UNIT II  XML & WAP

UNIT III  PDA
PDA in Pervasive Computing – Introduction - PDA software Components, Standards, emerging trends - PDA Device characteristics - PDA Based Access Architecture

UNIT IV  TRUST IN PERVERSIVE COMPUTING
Trust computing definition-Trusted Computing-Measurement-storage-Reporting-Delegation and Certified Migration-Enforcing trust in pervasive computing

UNIT V  APPLICATIONS
Server side Programming in Java-Pervasive web application architecture-example application-Access from PCs, Access Via WAP, Access from PDA -implementation of simple applications using WAP toolkits.

REFERENCES:

TOTAL = 45
SO9165   ADHOC AND SENSOR NETWORKS

UNIT I  INTRODUCTION TO AD HOC NETWORKS  9

UNIT II  ROUTING PROTOCOLS FOR AD HOC NETWORKS  9

UNIT III  TRANSPORT LAYER, QOS AND SECURITY PROTOCOLS  10

UNIT IV  SENSOR NETWORKS  10

UNIT V  CASE STUDY AND APPLICATIONS IN SENSOR NETWORKS  8
Target Detection Tracking, Habitat Monitoring, Environmental Disaster Monitoring, Practical Implementation Issues, IEEE 802.15.4 Low Rate WPAN, Sensor Network Platforms and Tools – Sensor Node Hardware, Node Level Software Platforms, Node – Level Simulators

REFERENCES

UNIT I
Modern data analytic tools, Statistical concepts: Sampling distributions, resampling, statistical inference, prediction error

UNIT II
Regression modeling, Multivariate analysis, Bayesian modeling, inference and Bayesian networks, Support vector and kernel methods, Analysis of time series: linear systems analysis, nonlinear dynamics

UNIT III
Rule induction: rule learning as search, learning first order rules, evaluating quality of rules, ILP systems at work

UNIT IV
Neural networks: learning and generalization, competitive learning, principal component analysis and neural networks; Fuzzy logic: extracting fuzzy models from data, fuzzy decision trees, Stochastic search methods

UNIT V
Visualization: Visual data analysis techniques, interaction techniques; Systems and applications: Diversity of IDA applications

REFERENCES:

Glenn J. Myatt, Making Sense of Data, John Wiley & S
UNIT I INVESTMENT SCIENCE AND FINANCIAL ENGINEERING PRINCIPLES

Review of markets, players, and conventions; Pricing tools, tools for volatility Engineering, Engineering of equity instruments, Deterministic and random cash flows, derivative securities

UNIT II PRINCIPLES OF MANAGERIAL FINANCE

Financial analysis and planning, short term financial management, long term investment decisions, Mergers, Divestitures and failures

UNIT III QUANTITATIVE FINANCE

Portfolio management, risk types, risk metrics, credit cash metrics, Mechanics of future markets and option markets

UNIT IV MATHEMATICS OF FINANCIAL DERIVATIVES

Financial derivatives, Pricing derivatives, Martingales, Dynamics of derivative prices, Pricing methodologies, Interest rate derivatives, Non-arbitrage pricing model, derivative securities

UNIT V FINANCIAL RISK MANAGEMENT

Overview of Risk management process, Financial products and financial markets, Evolution of Risk management products, selecting and implementing enterprise risk management technologies

REFERENCES:

UNIT I  INTRODUCTION  

UNIT II  INTERNET ROUTING PROTOCOLS  
Interior protocol : Routing Information Protocol (RIP), Open Shortest Path First (OSPF), Bellman Ford Distance Vector Routing. Exterior Routing Protocols: Exterior Gateway Protocol (EGP) and Border Gateway Protocol (BGP). Multicast Routing: Pros and cons of Multicast and Multiple Unicast Routing, Distance Vector Multicast Routing Protocol (DVMRP), Multicast Open Shortest Path First (MOSPF), MBONE, Core Based Tree Routing.

UNIT III  ROUTING IN OPTICAL WDM NETWORKS  
Classification of RWA algorithms, RWA algorithms, Fairness and Admission Control, Distributed Control Protocols, Permanent Routing and Wavelength Requirements, Wavelength Rerouting- Benefits and Issues, Lightpath Migration, Rerouting Schemes, Algorithms- AG, MWPG.

UNIT IV  MOBILE - IP NETWORKS  

UNIT V  MOBILE AD-HOC NETWORKS  
Internet-based mobile ad-hoc networking communication strategies, Routing algorithms – Proactive routing: destination sequenced Distance Vector Routing (DSDV), Reactive routing: Dynamic Source Routing (DSR), Ad hoc On-Demand Distance Vector Routing (AODV), Hybrid Routing: Zone Based Routing (ZRP).

TOTAL: 45 PERIODS

REFERENCES:
SO9169 KNOWLEDGE MANAGEMENT

UNIT I INTRODUCTION

UNIT II KNOWLEDGE MODELS

UNIT III TECHNIQUES OF KNOWLEDGE MANAGEMENT
Knowledge Elicitation techniques – Modeling communication aspects – Knowledge Management and Organizational learning.

UNIT IV KNOWLEDGE SYSTEM IMPLEMENTATION

UNIT V ADVANCED KNOWLEDGE MANAGEMENT

TOTAL = 45

REFERENCES:

SO9170 CONTEXT MODELLING L T P C

UNIT I INTRODUCTION 9
Ubiquitous computing – Define context – Types of context - Enumeration based – Role Based Context aware computing and applications – Core capabilities for context awareness – Types of context aware applications – Developing context aware applications – Middleware support Contextual services- Actuator service- Example – Context toolkit – Providing location context.

UNIT II ONTOLOGY 9

UNIT III CONTEXT MODEL APPROACHES 9
Requirements for context model – Key Value Models - Markup Scheme Models - Graphical Models - Object Oriented Models - Logic Based Models.

UNIT IV CONTEXT MODEL ARCHITECTURES 9
Context Broker Architecture CoBrA - Service-Oriented Context-Aware Middleware SOCAM Standard Ontology for ubiquitous and pervasive applications SOUPA – Ontology based Generic context management model GCoM.

UNIT V APPLICATIONS 9
Office and Meeting Tools - The Active Badge System - The Parc Tab System – Applications from Georgia Institute of Technology - (Tourist) Guides - Cyberguide – GUIDE - Smart Sight Tourist Assistant - Frameworks supporting Context-Aware Applications - Stick-e Notes framework.

Total: 45

REFERENCES:
5. http://www.it.kth.se/edu/Ph.D/LocationAware/aware.vt98.html
## SO9171  GRID COMPUTING

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<td>Grid Computing Analogy – Grid Computing road map-Grid Computing anatomy – Next generation of Grid computing initiatives–Merging the Grid services architecture with Web services architecture</td>
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<td>OGSA – Sample use cases that drive the OGSA platform components – OGSI and WSRF– OGSA Basic Services – Security standards for grid computing.</td>
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## REFERENCES:


UNIT I  INTRODUCTION TO NETWORK SECURITY

UNIT II  ATTACK TAXONOMY

UNIT III  TRUST AND REPUTATION SYSTEMS

UNIT IV  COOPERATION ENFORCEMENT AND DETECTION MECHANISMS

UNIT V  SIMULATION STUDY

TOTAL: 45

REFERENCES: