

**(V Semester)**

**(HS1501) MANAGEMENT SCIENCE (2 -1 - 0)**

**Principle of Management**

Definition and concept of Management. Evolution of Management Thought. System Approach and Decision Theory Approach to Management. Process of Decision Making.

**Functions of Management**

Planning: Types of Plan, Major steps in Managerial Planning. Strategies, MBO. Organization, Nature & Purpose, Process of Organization. Basic Departmentation. Co-ordinating; Supervision, Communication & Direction. Leadership, Motivation. Controlling, Nature and purpose, Control Techniques and Information Technology. International Management; Japanese Management Vs. US Management Managerial functions in International business.

**Organization Theory**

Group Dynamics: Defining and classifying groups, Group Processes, Group Task, Group Cohesiveness:

Conflict Management: Discovery of conflicts, Processing of Grievances, conflicts resolution, conflict and inter-group Relations.

Stress Management: Nature of Stress, Potential Sources of Stress, Consequences Strategies.

**Suggested Text Books & References**

Koontz, H. and Wehrich, H, "Essential of Management".  
Mathur, S.S., "Principle of Management".  
Agarwal, R.D., " Organization of Management".  
Robbin. S.P., "Organization Behaviors".  
Hicks & Gullet, " Organization: Theory & Behavior

**(CS1501) Formal Language and Automata Theory (2 -1 - 0)**

Alphabet, languages and grammars. Production rules and derivation of languages. Chomsky hierarchy of languages. Regular grammars, regular expressions and finite automata (deterministic and nondeterministic). Closure and decision properties of regular sets. Pumping lemma of regular sets. Minimization of finite automata. Left and right linear grammars. Context free grammars and pushdown automata. Chomsky and Greibach normal forms. Parse trees, Cook, Younger, Kasami, and Early's parsing algorithms. Ambiguity and properties of context free languages. Pumping lemma, Ogden's lemma, Parikh's theorem. Deterministic pushdown automata, closure properties of  $\epsilon$  deterministic context free languages. Turing machines and variation of Turing machine model, Turing computability. Linear bounded automata and context sensitive languages. Primitive recursive functions. Cantor and Godel numbering. Ackermann's function,  $\mu$ -recursive functions, recursiveness of Ackermann, and Turing computable functions. Church Turing hypothesis. Recursive and recursively enumerable sets. Universal Turing machine and undecidable problems. Undecidability of Post correspondence problem. Valid and invalid computations of Turing machines and some undecidable properties of context free language problems.

**Suggested Text Books & Reference**

- Hopcroft and Ullman, "Introduction to Automata Theory Languages and Computation", Narosa.
- Mishra & Chandra Shekaran, "Theory of Computer Science". Prentice Hall.
- Kohan, "Theory of Computer Science".
- Korral, "Theory of Computer Science".

(CS1502) Computer Network (3 -1 - 0)

Introduction to Networks and Layered Architecture. OSI model. Data Communication Concepts. Transmission media Topology, Multiplexing. Circuit switching & packet switching Data Link Layer. Layer 2 switches and ATM, SONET/SDH. Medium Access Control. CSMA CD, TDMA. FDMA, COMA. Network Layer and address version 4 and 6. Routing Algorithms. Transmission Layer, TCP and UDP. Congestion Control Technique. ATM. Internetworking. Wireless communications. Network Management and security.

Lab : Simulation Experiments for protocol performance, Configuring, testing and measuring Network devices and parameters/policies; Network management experiments; Exercises in Network programming.

**Suggested Text Books & Reference**

- Black, "Computer Networks".
- Schwartz, "Communication Networks".
- Stevens, "UNIX Network Programming".

Dugglas, "TCP/IP and internetworking

**(CS1503) Relational Database Management System (3 -1 - 0)**

Data Models - Entity-Relationship, Network, Relational and Object Oriented Data Models, integrity Constraints, and Data Manipulation Operations. Relational Query Languages: Relational Algebra, Tuple and domain Relational Calculus, SQL and QBE; Relational Database Design, Domain and Data dependency, Normal Forms, Dependency Preservation, Lossless design. Query Processing and Optimization. Evolution of Relational Algebra Expressions, Query Equivalence, Join strategies, Query Optimization Algorithms Storage Strategies: Indices, B-trees, Hashing; Transaction Processing: Recovery and Concurrency Control, Locking Timestamp based Schedulers, Multiversion and Optimistic Concurrency Control schemes.

Laboratory: Database Schema Design, Database Creation, PL/SQL Programming and Report Generation using a commercial RDBMS like ORACLE/SYBASE /DB2 / SQL-Server /INFORMIX.

**Suggested Text Books & Reference**

- Elmarsi, ramex Shamkant B.. Navathe, "Fundamentals of data Base System".
- Jeffry D. Ulman, "Principle of Data Base System", Second Edition Galgotia Pub.
- Date, C.J. " An Introduction to Database System", Vol. I,II & IIIrd, Addison-Welsey.
- Prakash, Naveen., "Introduction to database Management", Tata McGraw Hill.

**(CS1504) Operating System I (3 -1 - 0)**

Evolution of Operating Systems. Structural overview, Concept of process and Process synchronization, Process Management and Scheduling, Hardware requirements: protection context switching, privileged mode; Threads and their Management; Tools and Constructs for Concurrency, Detection and Prevention of deadlocks, dynamic Resource Allocation, Design of I/o systems, File Management, Memory Management: paging, virtual memory management, Distributed and Multiprocessor Systems  
Lab: Familiarization with UNIX system calls for process management and inter-process communication Experiments on process scheduling and other operating system tasks through simulation /implementation under a simulated environment (like Nachos).

**Suggested Text Books & Reference**

- Milenkovic M., "Operating System: Concept of Design", McGraw Hill.
- Tanenbaum, A.S., "Operating System Design & Implementation", Prentice Hall NJ.
- Silberschatz A. and Peterson, J.L. "Operating System Concepts", Wiley.
- Stalling, William "Operating Systems", Maxwell McMillan International Editions, 1992.
- Dietel, H.N. "An introduction to Operating System", Addison Wesley.

**(CS1505) Microcomputer based System Design (3 - 1 - 0)**

Architecture of 16/32 bit microprocessor such as Intel 8086/186/286/386/486 Motorola 68600/68010

Comparative study of architecture , instruction types , addressing modes, interrupt structure

Assembly language programming on variable 16/32 bit machine

Hardware and software interrupt management.

Controller such as keyboard, Diskette and DMA

Serial communication controller

Dynamic Ram and its controller , Backup power for semi conductor memory

Multi processor configuration, Numeric processor I/O processor.

I/O standard RS 232c.

**Suggested Text Books & Reference**

- Milenkovic M., "Operating System: Concept of Design", McGraw Hill.
- Tanenbaum, A.S., "Operating System Design & Implementation", Prentice Hall NJ.
- Silbersehatz A. and Peterson, J.L. " Operating System Concepts", Wiely.
- Stalling, William "Operating Systems", Maxwell McMillan International Editions, 1992.
- Dietel, H.N. " An introduction to Operating System", Addison Wesley.

**V - SEMESTER PRACTICAL**

( 0 - 0-3)

5 <sup>th</sup> Semester		
SL. NO.	Name of Lab	List of Experiments
CS1506-P	Computer Network	<ol style="list-style-type: none"><li>1) Installation and configuration of Windows 2000 server</li><li>2) Installation and configuration of Linux.</li><li>3) Configuration of IIS server.</li><li>4) Detailed study of routers, switches and bridges.</li><li>5) Configuration of LAN</li><li>6) Study of TELNET.</li></ol>

( 0 - 0-3)

5 <sup>th</sup> Semester		
SL. NO.	Name of Lab	List of Experiments
CS1507-P	Relational Database System	<ol style="list-style-type: none"><li>1) Creation of tables</li><li>2) Creation of tables with all possible constraints</li><li>3) Creation of Sequences</li><li>4) Creation of Views</li><li>5) Creation of Indexes.</li><li>6) Writing Function in PL/SQL</li><li>7) Writing Procedure in PL/SQL</li><li>8) Creation of triggers in PL/SQL</li><li>Creation of Cursor in PL/SQL</li></ol>

( 0 - 0 - 3 )

5 <sup>th</sup> Semester		
SL. NO.	Name of Lab	List of Experiments
CS1508-P	Operating System	<ol style="list-style-type: none"><li>1) Implementation of FCFS scheduling.</li><li>2) Implementation of priority based non pre-emptive algorithm</li><li>3) Implementation of shortest job first algorithm.</li><li>4) Study of different CPU scheduling algorithm.</li><li>5) Detailed Study of paging, segmentation and paging with segmentation</li></ol>

( 0 - 0 - 3 )

5 <sup>th</sup> Semester		
SL. NO.	Name of Lab	List of Experiments
CS1509-P	Microprocessor	<ol style="list-style-type: none"><li>1. A Program to add:<ol style="list-style-type: none"><li>(i) Two 8-bit numbers</li><li>(ii) Two 16-bit numbers</li></ol></li><li>2. A Program to find the smallest number in a data array.</li><li>3. A Program to find multiplication of two 8-bit numbers.</li><li>4. A Program to find a square root of a number.</li><li>5. Program and verification of Speed control of stepper motor.</li><li>6. Program and verification of Seven-segment display.</li></ol>