



Code	Subject Title	Cr. Hrs	Semester
IT-301	Theory of Automata (IT)	3	V
Year	Discipline		
3	Information Technology		

Objectives

Formal language, Defining Language, Regular Expression, Finite Automata, Transition Graphs, Kleene's Theorem, Finite Automata with output, Regular Languages, Non regular Languages, Decidability, Demonstration Of JFLAP, Context Free Grammars, Grammatical Format, Pushdown Automata (PDA), CFG=PDA, Non-Context-Free Languages, Context-Free Languages, Decidability, Turing Machine, The Chomsky Hierarchy

Prerequisites

Discrete Mathematics

Text Book

Daniel I. A. Cohen "Introduction To Computer Theory", 2nd Edition John Wiley, ISBN 0-471-13772-3, 1996

Reference Books

- John C. Martin "Introduction to Languages and The Theory of Computation", 2nd Edition McGraw Hill, ISBN 0070408459, 1997
- John E. Hopcroft, Rajeev Motwani and Jeffrey D. Ullman "Introduction to Automata Theory, Languages, and Computation", 2nd Edition Addison-Wesley, ISBN 0201441241, 2000
- Harry R. Lewis and Christos H. Papadimitriou "Elements of Theory of Computation", 2nd Edition Prentice Hall, ISBN 0132624788, 1997



Code	Subject Title	Cr. Hrs	Semester
IT-302	Principles of Management (SS)	3	V
Year	Discipline		
3	Information Technology		

Objectives

This course provides the fundamental knowledge of Management. The following topics will be covered in the course: Managers and Management, The Evolution of Management, Managerial Environment, Decision Making, Planning, Strategic Management, Organizing, Human Resource Management, Motivation, Leading, Controlling, Quality, Productivity and Customer Satisfaction and Case Studies.

Prerequisites

None

Text Book

Robins Stephen, *Management*

Reference Books

- Griffen, *Principle of Management*

OBJECTIVES

The purpose of this course is to enhance the reasoning ability of new entrants and provide them basic information about the use of Logic in different areas of Computer Science. Studying Logic at the initial stage will equip the participants with understanding more clearly and effectively other higher level courses.

Course Content:**1. BASIC CONCEPTS**

- 1.1 Argument, Premises and Conclusions.
- 1.3 Deduction and Induction.
- 1.4 Validity, Truth Soundness, Strength Cogency.

2. CATEGORICAL PROPOSITION

- 4.1 The Components of Categorical Propositions.
- 4.2 Quality, Quantity, and Distribution.
- 4.3 Venn Diagrams and the Modern Square of Opposition.
- 4.4 Conversion, Obversion and Contraposition.
- 4.5 Traditional Square of Opposition.
- 4.6 Venn Diagrams and the Traditional Standpoint.

3. CATEGORICAL SYLLOGISMS.

- a. Standard Form, Mood, and Figure.
- b. Venn diagram.
- c. Rules and Fallacies.

4. PROPOSITIONAL LOGIC

- 6.1 Symbols and Translation.
- 6.2 Truth Function.
- 6.3 Truth Table for Propositions
- 6.4 Truth Tables for Arguments.
- 6.5 Indirect Truth Tables.

5. Logic and Circuit

Electric Circuit

Logic Gates

Or gate

And gate

Not gate

Combining Logic gates

Mechanical Reasoning

Turing Machine

Computer Reasoning

Books Recommended:

1. Hurley. A Concise Introduction to Logic. 8th Edition Wadsworth/Thomson.
2. Morton L. Schagrin. *Logic a Computer Approach*, McGraw-Hill Book Comp



Code	Subject Title	Cr. Hrs	Semester
IT-304	Database Systems (CMP)	3	V
Year	Discipline		
3	Information Technology		

Objectives

The course aims to introduce basic database concepts, different data models, data storage and retrieval techniques and database design techniques. The course primarily focuses on relational data model and DBMS concepts. The following topics will be covered in the course: Traditional File Based Systems, Roles in Database Environment, ANSI-SPARC Architecture, Data Manipulation Language (DML), Data Models, Multi-User DBMS Architectures, Relational Data Structures, Database Schemas, Relational Integrity, Introduction to SQL, Data Manipulation, Creating a Database, Tables, Index, Views, Transactions, Database Application Life Cycle, Database Planning, Database Design, Data Administration & Database Administration, Entity Types, Relationship Types, Structural Constrains, Problems with ER Models, Specialization/Generalization For EERD, Anomalies, Functional Dependency, Process of Normalization, Database Design Methodology, Database Security, Client Server Architecture, Centralized and Distributed Databases, Advance Topics.

Prerequisites

Data Structures and Algorithms

Text Book

C.J.Date, *Database Systems*, Addison Wesley Publications Co., 2004. ISBN-10: 0321197844

Reference Material

- R.Connolly and P.Begg, *Database Systems: A Practical Approach to Design, Implementation and Management*, Addison-Wesley Publications Company, 2003. ISBN-10: 0201342871
- Elmasri and Navathe, *Fundamentals of Database Systems*, 3/E, Addison-Wesley, ISBN: 0201741539

Code	Subject Title	Cr. Hrs	Semester
IT-305	Database Systems Lab (CMP)	1	V
Year	Discipline		
3	Information Technology		

Relevant to the above topics



Code	Subject Title	Cr. Hrs	Semester
IT-306	Operating Systems (CMP)	3	V
Year	Discipline		
3	Information Technology		

Objectives

The objective of this course is to give students knowledge of construction and working of Operating systems, to enable them to understand management and sharing of computer resources, communication and concurrency and develop effective and efficient applications and also to appreciate the problems and issues regarding multi-user, multitasking, and distributed systems. The following topics will be covered in the course: Introduction to Main Frames System, multi programmed System, batch system, Time sharing system, Desktop System, Multiprocessor system, distributed system, client server, Real time system, Hand held System, Computer System Structure, Caching, Coherency and consistency, Operating System Structure, Process management, System calls, Process control, Communication, micro-kernels, Virtual machines, Processes, Threads, multithreading models, CPU Scheduling, Process Synchronization, Critical section problem, Semaphores, Deadlock, Memory Management, Memory allocation, Fragmentation, Paging, Segmentation, Virtual Memory, Demand paging, Page replacement, Allocation of frames, Thrashing, File System Interface, Directory structure, File system mounting, File System Implementation, NFS, Protection.

Prerequisites

Data Structures and Algorithms

Text Book

Silberschatz A., Galvin P.C., and Gagne G., *Operating Systems Concepts*, 8th Edition, 2008

Reference Material

- Tanenmaum A.S., *Modern Operating Systems*, 2nd Edition, 2001. ISBN-10: 0130313580



Code	Subject Title	Cr. Hrs	Semester
IT-307	Object Oriented Analysis and Design (ICS)	3	V
Year	Discipline		
3	Information Technology		

Objectives

The objective of this course is to demonstrate knowledge and understanding of essential facts, concepts, principles, and theories relating to computer science and software applications. It involves the applications of object-oriented concepts and to identify and analyze criteria and specifications appropriate to specific object oriented problems, and plan strategies for their solution. The following topics will be covered in the course: Introduction to Object Oriented Concepts, Object-Oriented Analysis and Design, Linear and Iterative Process Models, Requirement Engineering utilizing Object-Oriented Techniques, Software Design and Architectures, Object-Oriented Design, UML modeling, Use-Case Modeling, Domain Modeling, Interaction Diagrams, Design Modeling, and Implementation Modeling; Design Patterns (GRASP), User Interface Design, Usage of Rational Rose, Object-Oriented Testing, Object-Oriented Metrics, Component Based Development, Reusability.

Prerequisites

Software Engineering

Text Book

Stephan Schach, Irwin, *Object-Oriented Software Engineering*, 1999. ISBN: 0072418729

Craig Larman, *Applying UML and Patterns*, 2002. ISBN-10: 0130925691

Reference Material

- Roger Pressman, *Software Engineering: A Practitioner's Approach*, McGraw-Hill, 2005. ISBN 9780073019338