INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE

M. Tech. (IT) 5 ½ Years

IV SEMESTER

JANUARY – MAY 2013

Sub. Code	Subject Name	Credit
IT-401	Accounting & Financial Management - I	4
IT-402	Linear Algebra	4
IT-403	Database Programming	4
IT-404	Digital Computer Organization	4
IT-405	UNIX	4
IT-406	Comprehensive Viva	4
IT-407	Computer Lab	2

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years IV SEMESTER
IT-401: Accounting & Financial Management – I

Aim of Course: To understand the concepts and application of beginning accounting principles.

Objectives:

The course is designed to make students:

- Learn fundamental accounting concepts, elements of financial statements, and basic accounting vocabulary.
- Learn the concepts of journal, ledger, final accounts, various depreciation techniques, cash flow and fund flow.

Course Contents:

UNIT I

Introduction and purpose of accounting and uses of accounting information & basic accounting concepts.

UNIT II

Accounting Structure: Process of accounting, Journal, Ledger & Trial balance, based on double entry book keeping.

UNIT III

Practical system of accounting: Cash book, sales & purchase of goods. Bill of exchange bank reconciliation statements.

UNIT IV

Preparation of Financial Statements : Income statements , (Profit and Loss A/C),Statement of financial Position (Balance Sheet) and Adjustments. Valuation of Assests and Depriciation methods. Cash and fund flow. Analysis of financial statements- Financial Ratio.

UNIT V

Introduction to cost accounting : Elements of cost , Cost determination , Direct and Indirect cost , Cost centers & cost units , the behavior of cost.

Reference Books:

1. T.S. Grewal, Introduction to accountancy, S. Chand & co. Ltd.,
2. Rovect Anthony, Accounting Principles, Rich & Irvin.

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IT-402: Linear Algebra

Aim of Course: To introduce different algebraic Structures with special reference to linear space and its applications in geometry.

Objectives:

The course is designed to make students:

- Understand concepts and methods of linear algebra.
- Develop the ability to solve problems using linear algebra.
- To connect linear algebra to other fields both within and without mathematics.
- Develop abstract and critical reasoning by studying logical proofs and the axiomatic method as applied to linear algebra

Course Contents:

UNIT I

Composition Table, Revision of Group Structure, Extension of Group Structure. Ring, Integral Domain and Field structure, Detailed study of field structure Various examples of field.

UNIT II

Introduction of the algebraic structure for Linear space, Internal and External Compositions, Linear space. Properties of Linear Space. Sub Spaces, Criteria for sub spaces, examples of Sub-Spaces, Formation of Quotient Set, Binary Composition defines in Quotient Sets, Quotient Spaces–Examples of Quotient Space.

UNIT III

Linear combination of vectors over R and C, Linearly independent and dependent set of vectors over F, Concepts of Basis and Dimensions of Linear Space, Determination of Bases and Dimensions of VCF), coordinate representation of vectors over VCF).

UNIT IV

Linear Transformation, Isomorphism of linear spaces, properties, kernel of Linear transformation, Null space and range space, fundamental theorem of linear space,

Homomorphism, Application of Linear transformation to theory of ordinary linear Differential equations. Matrix representation of linear transformation, Rank and Nullity of Linear transformation Eigen values and vectors of linear maps and matrices. Diagonalization of Matrices, Jordan Blocks and Applications, Inner Products – Inner product space. Norm of a vector in inner product space, Unit vectors. Schwartiz's Inequality, Triangle inequality, angle between vectors in inner product space, orthogonal vectors Distance in an inner product space.

UNIT V

Orthogonalization of bases, Orthogonal basis Ortho-normal set, Orthonormalization of basis, Gram-Schmidt's process of orthonormalization of base. Quadratic forms, Reduction of quadratic form to Canonical forms. Application, Normal form concept of rank, Index and signature of normal form. Conversion of quadratic form to normal form and determination of rank, Index and signature. Classifications of curves and sin face in 2 and 3 dim. Reduction and identification.

Reference Books:

1. Dr. H. K. Pathak , Text Book of Linear Algebra .
2. Krishnamurthy, Linear Algebra
3. Hottman & Kunze, Linear Algebra
4. Dr. K. P. Gupta, Linear Algebra

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IT-403: Database Programming

Aim of Course: To handle large database system and to be able to manipulate it efficiently and carry out analysis to design the database.

Objectives:

The course is designed to make students:

- To present necessary concepts for database designing.
- Design conceptual, logical database model and physical model.
- Evaluate set of query using SQL and algebra.
- Concepts of RDBMS, and learn Object oriented modeling

Course Contents:

UNIT I

Introduction, Purpose of Database System, View of data, Three Level -Architecture of DBMS, Data models - Physical Model, Logical Model, Conceptual Model, Hierarchical Model, Network Model, Object Oriented Model, Database Languages, Transaction Management, Storage Management, Database Administrator, Database Users, Overall System Structure.

UNIT II

Entity-Relationship Model:- Basic Concepts, Design Issues, Mapping Constraint, Keys, Entity-Relationship Diagram, Weak-Entity Sets, Design of an E-R Database Scheme, Reduction of an E-R Schema to Tables.

UNIT III

Structured Query Language:- Basic Structure, Set Operations, Aggregation Functions, Null Values, Nested Sub Queries, Joined Relation, Data Definition Language, Data Control Language, Data Transaction Language

Integrity Constraint:- Domain Constraint, Refrential Integrity, Assertion, Triggers, Functional Dependencies

UNIT IV

Relational Database Design:- Codd's 12 Rules, Pitfalls in Relational-Database Design, Decomposition, Normalization Using Functional Dependencies, Normalization Using Multivalued Dependencies, Normalization Using Join Dependencies

UNIT V

Query Processing:- Overview, Measure of Query Cost, Processing select, project and join operations, Database Programming with VB

Reference Books:

1. A Silberschatz, H.F Korth, Sudersan "Database System Concepts" , MGH Publication.
2. Modern Database Management (5th Edition) (Hardcover) by Fred R. McFadden, Jeffrey A. Hoffer, Mary B. Prescott
3. Elmasri & Navathe "Fundamentals of Database systems" – III ed.
4. B.C. Desai. "An introduction to Database systems" BPB.

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IT-404: Digital Computer Organization

Aim of Course: To make students understand the organization of the computer, and the way the hardware components are connected together to form a computer system, and the development of the hardware for the computer taking into consideration a given set of specifications.

Objectives:

The course is designed to make students:

- Understand the various functional units of CPU.
- Study various units of ALU.
- Understand instruction formats and addressing modes.
- Understand interconnection and interfacing of various units of computer system.

Course Contents:

UNIT I

Introduction to computer organization, simple model of a computer. Memory organization: Memory hierarchy, main memory, auxiliary memory and virtual memory

UNIT II

Input output organization: Peripheral devices, i/o interface, Asynchronous data transfer, Models of transfer, DMA, I/O processor**.**

UNIT III

Buses and interface: Interconnecting system components, interfacing buses and their operations, interfacing of simple I/O devices such as keyboard and printer.

UNIT IV

Control Unit: Instruction word format, fetch and execution cycle, sequence of operation of control registers, control of arithmetic operations, microprogramming concepts.

UNIT V

CPU Organization: General register organization, stack organization and accumulator type organization. Instruction formats – three address instruction, two address, one address and zero address instructions, Instruction set selection. Addressing modes:- Immediate, direct, indirect, register, indexed etc.

Reference Books:

1. J.P.Hayes , Computer Architecture and Organization, 2nd edition , Tata McGraw-Hill
2. A.S.Tanenbaum , Structured Computer Organization, 3rd edition, Prentice Hall of India
3. M. Morris Mano , Computer System Architecture, 3rd edition, Prentice Hall of India

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IT-405: UNIX

Aim of Course: To develop an understanding of basic concepts of operating system with special reference to UNIX operating system.

Objectives:

The course is designed to make students:

- Understand UNIX as operating system.
- Learn to use UNIX shell.
- Learn to use UNIX commands.
- Send and receive electronic mail and learn its real-world limitations
- Learn File handling and shell programming.

Course Contents:

UNIT I

Introduction and familiarization: History of UNIX operating system, Architecture of Unix login and log out

UNIT II

UNIX file system: File system hierarchy: file name, attributes, access rights and their change, copying moving and removal of files.

File permission mask,/etc/passwd file, su, newgrp , chown , chgrp commands . Contents of file and file commands. Hard and Soft links, search in file system find command.

UNIT III

Filters , standard input and standard output , pipes , pipelines , simple text manipulation utilities , utilities for comparing text files. Regular expression grep , egrep, fgrep , programmable filters sed, awk. Back up of files and directories , tar , cpio, dd.

UNIT IV

UNIX shell : Basic UNIX user skill , shell as command language , interpreter , command line, shell file metacharacter, script writing, examples of script. Process, ps, shell as process, job control, signals. VI editor

UNIT V

Shell programming concept. Shell script control statements, loops, branching, return codes, test statements, shell parameters. (If time permits) UNIX administration.

Reference Books:

1. Sumitabha Das, UNIX: Concepts and application.
2. Maurice J. Bach, The design of the UNIX operating system.
3. Y. Kanetkar, UNIX shell programming
4. Kamran Hussain , Linux Unleashed, Tim Parker.
5. Christopher Vickery, UNIX shell programmer's Interactive Workbook.
6. Mark F. Komarinsk, Cary Colette , Linux system administration handbook.
7. Dent and Gaddis, Guide to using Linux