SYLLABUS

PGDCA

2nd SEMESTER

To produce world-class professionals who have excellent analytical skills, communication skills, team building spirit and ability to work in cross cultural environment.

To produce international quality IT professionals, who can independently design, develop and implement computer applications.

Professionals who dedicate themselves to mankind, who are environment conscious, follow social norms and ethics.

School of Computer Science & IT,

Devi Ahilya Vishwa Vidyalaya, Indore

www.scs.dauniv.ac.in

Course Name: **PGDCA 2nd Semester**

Subject Code: **CS-2301**

Subject Name: **Management Information System**

Aim of the Subject

The aim of this course is to offer students with an understanding of how to use and manage information system in order to revive business processes, develop business decision making, and increase competitive advantage.

Learning Outcomes

The students are expected to learn following after completion of the course:

- Understand the concept of a computer-based information system including detailed
- knowledge of the system components and how they evolve and interact.
- Distinguish and relate transaction processing systems, management information systems,Distinguish and relate transaction processing systems, management information systems,
- decision support systems, expert systems, executive information systems and knowle
- Understand the use of the systems development life cycle and alternative analysis and
- design methods to solve business problems.
- Understand the role of computer security, privacy, and ethics in today's business
- organizations.

Unit 1

A systematic view of business, the significance and use of MIS, the MIS process, the development of MIS in an organization, the management process, information needs, a systematic approach to planning, organizing and controlling of MIS.

Unit 2

Phases in information system's development – Steps involved in Information system's planning, implementation and Controlling.

Unit 3

Introduction to data processing, types of data processing, data storage and retrieval in MS Excel, computer operation of manual information system, components of computer systems, flow chart, data flow diagrams, conversion of manual system to computer based systems, hardware and software, system's software, application software.

Unit 4

Decision making process, types of decisions, managerial decision making, characteristics and components of a Decision Support System.

Unit 5

Introduction to system design, system design considerations, input/output design, forms design, file organization and database, data management, file design, database creation, query formation in MS Access, program design, control and security.

Text Book(s)

1. Kenneth C. Laudon & Jane P. Laudon, Essentials of Management Information Systems, Tenth Edition, Pearson Prentice-Hall, 2012.

Reference Material(s)

1. Effy Oz & Andy Jones Management Information Systems, Cengage Learning EMEA, 2008.

2. Terry Lucey, Management Information Systems, Ninth Edition, 2005, Thompson

Course Name: **PGDCA 2nd Semester**

Subject Code: **CS-4405**

Subject Name: **Database Management System**

Aim of the Subject

The student should learn database design and information retrieval concepts and apply these concepts in complex projects involving large database.

Learning Outcomes

The students are expected to learn following after completion of the course:

- Conceptual clarity on database systems and their evaluation
- theoretical foundation of query languages through relational algebra and relational calculus
- Database design issues from ER model to normalization
- proficiency in SQL, PLSQL & NoSQL through case studies
- exposure to advance topics like transaction management, concurrency control and physical data storage

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Unit 1

Introduction and Relational Model: Advantages of DBMS approach, various views of data, data independence, schema & sub-schema, primary concept of data models, database languages, transaction management, database administrator &user, data dictionary, database structure & architectures. Relational Model: Domains, relation, kind of relation, Relational databases, Various types of keys: candidate, primary, alternate & foreign keys, relational algebra with fundamental and extended operations, modification of database.

Unit 2

ER Model and SQL: Basic concept, design issues, mapping constraint, keys, ER diagram, weak& strong entity-sets, specialization & generalization, aggregation, inheritance, design of ER schema, Reduction of ER Schema to tables. SQL: Basic structure of SQL, Set operation, Aggregate functions, Null values, Nested Sub queries, derived relations, views, Modification of database, join relation, Domain, relation & keys, DDL in SQL. Programming concepts of PL/SQL, Stored procedure, Database connectivity with ODBC/JDBC 9. The concept of NoSQL, Brief history of NoSQL, SQL verses NoSQL, CAP Theorem (Brewer's Theorem), NoSQL pros/cons, Categories of NoSQL database, Production deployment, MongoDb, Key Features, practical with MongoDb.

Unit 3

Functional Dependencies: Basic definitions, Trivial & non trivial dependencies, closure set of dependencies & of attributes, Irreducible set of dependencies, FD diagram. Normalization: Introduction to normalization, non loss decomposition, First, second and third normal forms, dependency preservation, BCNF, multivalued dependencies and fourth normal form, join dependencies and fifth normal form.

Unit 4

Transaction Management: Basic concept, ACID properties, transaction state, Implementation of atomicity & durability, Concurrent execution, Basic idea of serializability. Concurrency & Recovery: Basic idea of concurrency control, the basic idea of deadlock, Failure Classification, storage structure-types, stable storage implementation, data access, recovery & Atomicity: log based recovery, deferred database modification, immediate database modification, checkpoints.

Unit 5

Database Integrity, Storage Structure & File Organization: general idea, integrity rules, Domain rules, Attributes rules, assertion, trigger, integrity & SQL. Storage Structure: overview of physical storage media, magnetic disk: performance & optimization, RAID. File Organization: File organization, Organization of records in files, the basic concept of Indexing, ordered indices: B+ tree & B tree index files.

Text Book(s)

1. Database System concepts –Henry F. Korth , Tata McGraw Hill 6th Edition.

Reference Material(s)

1. “Fundamentals of Database Systems”, Elmasri R, Navathe S, Addison Wesley 4th Ed.

2. An introduction to database system-Bipin C. Desai

3. An introduction to Database System -C.J Date

4. SQL, PL/SQL The programming language of Oracle-Ivan Bayross

Course Name: **PGDCA 2nd Semester**

Subject Code: **CS-4305**

Subject Name: **Software Engineering**

Aim of the Subject

The course will help students to develop qualitative software product.

Learning Outcomes

The students are expected to learn following after completion of the course:

- Application of software engineering approaches in software development.
- management systems. Be able to compare their components, major uses, benefits, and
- analysis ans design software as function oriented and Object Oriented Manner
- Pruduce quality software using testing and quality assurance mechanisms and
- approaches to software maintenance

Unit 1

Introduction to Software Engineering & Software Processes: Software, Software Classifications and Characteristics, Emergency of Software Engineering, What is Software Engineering? Software Engineering Challenges, Software Processes: Process model, Elements and Characteristics of Process model, Process Classification, Phased Development Life Cycle, Software Development Processes: Waterfall model, Iterative Waterfall model, Prototyping model, Incremental model and Spiral model.

Unit 2

Project Management & Planning: Project management essentials, Project success and failures, Project Life Cycle, Project team structure and organization. Project planning activities, Metrics and Measurements, Project Size Estimation, Effort Estimation Techniques, Staffing and Personnel Planning, Project Scheduling and Miscellaneous Plans.

Unit 3

Requirement Engineering: Software Requirements, Requirement Engineering Process, Requirement Elicitation, Requirement Analysis (Structured Analysis, Object Oriented Analysis), Software Requirements Specification.

Unit 4

Software Design and Coding: Software Design Process, Characteristics of a Good Design, Design Principles, Modular Design, Software Architecture, Design Methodologies, Structured

Design Methodology (SDM), Coding principles, Coding process, Code verification and documentations.

Unit 5

Software Testing, Quality and Maintenance: Testing Fundamentals, Test Planning, Black Box Testing, White Box Testing, Levels of Testing, Debugging Approaches, Quality Concept, Quality Factors, Verification and Validation, Quality Assurance Activities, Software Maintenance.

Text Book(s)

1) Software Engineering: Concepts & Practices- Ugrasen Suman, Cengage Learning publications.

Reference Material(s)

1) Software Engineering Concepts – Richard Fairley, Tata McGraw-Hill International Edition.

2) An Integrated Approach to Software Engineering- Pankaj Jalote, Narosa Publishing House.

3) Software Engineering-A practitioner's approach- R. S. Pressman, Tat

Course Name: **PGDCA 2nd Semester**

Subject Code: **CS-5416**

Subject Name: **IT Infrastructure Management**

Aim of the Subject

The aim of this course is to provide students with an understanding at how to develop skill for infrastructure management.

Learning Outcomes

The students are expected to learn following after completion of the course:

- To describe the business value and processes of IT services in an organization and apply that knowledge and skill with the initiative to a workplace scenario;
- To describe how effective IT Infrastructure Management requires strategic planning with alignment from both the IT and business perspectives in an organization.
- To synthesize the theoretical, technical, and management issues that deliver IT services to an organization.
- To explain Cyber Ethics, Intellectual Property, Privacy and Law, Computer Forensics,
- Ethics and Internet, and Cyber Crimes

Unit 1

IT Infrastructure: Overview

Definitions, Infrastructure management activities, Evolution of Systems since 1960s (Mainframes-to-Mid-range-to-PCs-to-Client-server computing-to-New age systems) and their Management, growth of internet, current business demands and IT systems issues, complexity of today's computing environment, Total cost of complexity issues, Value of Systems management for business.

Unit 2

IT Infrastructure Management

Factors to consider in designing IT organizations and IT infrastructure, Determining customer's Requirements, Identifying System Components to manage, Exist Processes, Data, applications, Tools and their integration, Patterns for IT systems management, Introduction to the design process for information systems, Models, Information Technology Infrastructure Library (ITIL).

Unit 3

Current computing environments

Complexity of current computing, multiple technologies, multiple vendors, multiple users, e-Waste disposal, Total cost of ownership.

Unit 4

IT system Management

Common tasks in IT system management, approaches for organization Management, Models in IT system design, IT management systems context diagram, patterns for IT system Management

Establishing business value of information system

Information system costs and benefits, Capital budgeting for information system, Real Options pricing models, Limitation of financial models.

Unit 5

Service Delivery Processes-I, Service Delivery Processes–II, Service Support Management–I, Service Support Management–II, Storage Management–I, Storage Management–II, Security Management–I, Security Management-II

IT Ethics

Introduction to Cyber Ethics, Intellectual Property, Privacy and Law, Computer Forensics, Ethics and Internet, Cyber Crimes

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Text Book(s)

No a particular book, use reference materials

Reference Material(s)

1. Inside the PC, Sixth Edition, Prentice Hall Computer Publications, author Peter Norton.

2. Data Communication and Networking, 2nd Edition, Tata McGraw-Hill ,

author Behrouz A, Forouzan

3. Microsoft Windows Server 2008: The Complete Reference. TataMc

Course Name: **PGDCA 2nd Semester**

Subject Code: **IC-4915**

Subject Name: **Organization and Management Concepts**

Aim of the Subject

To make students understand the concepts of Management.

Learning Outcomes

The students are expected to learn following after completion of the course:

- Identify the key management processes and the relevance of management in organizations.
- Understand the management skills required in organizations and how these might be applied.
- Evaluate their own managerial skills.

Unit 1

INTRODUCTION TO MANAGEMENT-

Definition of Management, Management Functions, Role of Managers, Principles of Management, Management Thought- Classical School, Systems Theory School

Unit 2

PLANNING-

Nature and purpose of planning - types of planning, planning process, Decision making

Unit 3

ORGANISING AND STAFFING-

Formal and Informal Organization, Basis of Departmentation, Span of Management, Line and Staff Conflicts, Definition of Staffing, Selection Process, Performance Appraisal, Career Strategy

Unit 4

MOTIVATION AND LEADERSHIP-

Motivation, Theories- Maslow's Need Hierarchy Theory, McGregor's Theory X and Theory Y, Herzberg's two factor theory, Leadership, Managerial grid

Unit 5

CONTROLLING-

The basic control process, Control as feedback system, Real time control

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Text Book(s)

[1]. R.D Agrawal, Organization & Management.1/E PHI 1997.

[2]. Tripathy PC And Reddy PN, Principles of Management, Tata McGraw-Hill, 5th Edition, 2012.

[3]. Harold Koontz Heinz Weihrich- Essentials of Management- Tata McGraw Hill Publishing Company Ltd.

Reference Material(s)