

Department of Library and Information Science  
Faculty of Social Sciences  
Aligarh Muslim University

**Basics of Librarianship**

**UNIT-I**

**Library: Concept and Role**

Library: Concept, Objectives, Functions

Brief History of Libraries

Role of Libraries in Society

Attributes of a Librarian

**UNIT-II**

**Types of Library**

Academic Libraries: Objectives and Functions

Public Libraries: Objectives and Functions

Special Libraries: Objectives and Functions

National Libraries : Objectives and Functions

**UNIT-III**

**Laws and Legislations**

Five Laws of Library Science and their Implications to Libraries

Library Legislation: An Overview

Delivery of Books and Newspapers Act

**UNIT-IV**

**Library Associations and Resource Sharing**

Resource Sharing: Concept, Objectives and Need

Library Associations and their Importance

National Library Associations: ILA, IASLIC

International Library Associations: ALA, IFLA

**Information Sources and Services (Theory)**

**UNIT-I**

**Information Sources**

Information Sources: Definition, Need and Purpose

Types of Information Sources: Primary, Secondary and Tertiary

On-Line Information Sources

Criteria for Evaluation of Information Sources

**UNIT-II**

**Information Services**

Information Services: Definition and Purpose

Types of Information Services

Reference Services: Definition and Types (Ready and Long Range Reference Services)

On-Line Reference Services

### **UNIT-III**

#### **User Education and User Studies**

Types of Users

User Education: Concept and Importance

Methods of User Education

User Studies: Concept, Importance and Methods

### **UNIT-IV**

#### **Information Search Process**

Information Search: Concept

Types of Searches

Searching Process and Techniques

Compilation of Bibliography: Techniques and Steps

### **Knowledge Organization in Libraries**

#### **UNIT-I**

##### **Knowledge Organisation**

Knowledge Organization: Concept, Definition and Importance

Tools for Organizing Knowledge

Library Classification and Cataloguing: Objectives and Functions

Concept of Fundamentals Categories: PMEST

#### **UNIT-II**

##### **Library Classification**

Notation: Definition, Types, Qualities and Functions

Book Number and Collection Number: Concept and Importance

Kinds of Classification Systems: Enumerative and Faceted

Outline and Features of Modern Schemes of Classification: DDC and CC

#### **UNIT-III**

##### **Library Catalogue**

Adjuncts of Library Catalogue

Attributes of a Good Catalogue

Forms of Library Catalogue: Outer Form and Inner Form

Development of Library Catalogue Codes: An Overview

Salient Features of AACR-II

#### **UNIT-IV**

##### **Filing Rules and Access**

Brief Idea of Alphabetization

Filing Rules: Dictionary and Classified

Elementary Idea of Online Public Access Catalogue (OPAC)

## **Reference and Information Sources (Practice)**

### **UNIT-I**

#### **Bibliographical, Indexing and Abstracting Sources**

Reference and Information Sources: Concept and Criteria for Evaluation.

Concept, Need and Purpose of the following standard Sources of Information:

##### Bibliographical Sources

Indian National Bibliography

British National Bibliography

Cumulative Book Index

##### Indexing and Abstracting Sources

Library and Information Science Abstracts (LISA)

Dissertation Abstracts International

Library Literature

### **UNIT-II**

#### **Language and Current Sources**

Concept, Need and Purpose of the following standard Sources of Information:

##### Language Sources

Webster's Third New Standard Dictionary of English Language

Funk and Wagnall's New Standard Dictionary

Abdul Haq English-Urdu Dictionary

##### Current Sources

Asian Recorder

Keesing's Record of World Events

Facts on File

### **UNIT-III**

#### **Background and Educational Sources**

Concept, Need and Purpose of the following standard Sources of Information:

##### Background Sources

Encyclopaedia Britannica

Encyclopaedia Americana

Collier's Encyclopaedia

## Educational Sources

World of Learning  
Indian Universities Handbook  
Commonwealth Universities Yearbook

### **UNIT-IV**

#### **Biographical and Geographical Sources**

Concept, Need and Purpose of the following standard Sources of Information:

#### Biographical Sources

International Who's Who  
Current Biography  
India Who's Who

#### Geographical Sources

Gazetteer of India  
Columbia Lippincott World Gazetteer  
-Oxford Atlas of the World

### **Library Classification (Practice)**

#### **UNIT-I**

##### **Introduction to Library Classification**

Methods of arrangement of books on the shelves

Introduction to practical classification: Steps in finding out the Subject of a document:

- Title/Sub-Title/ Alternate title
- Table of Contents
- Notes and Comments on jackets
- Preface and Introduction

Introduction to Dewey Decimal Scheme of Classification (DDC)

#### **UNIT-II**

##### **Classification of Titles by DDC**

Practical Classification of simple documents according to Dewey Decimal Classification (19<sup>th</sup> edition):

Use of three Summaries  
Use of Standard Sub-division  
Use of Area Table  
Simple exercises involving "Add to-instructions"

#### **UNIT- III**

##### **Book Numbering Systems**

Assigning Book Numbers with the help of **Cutter's** table up to 2 digits.

Assigning Book Numbers with the help of **S. Bashiruddin** System

Simple exercises pertaining to allotment of book numbers by:

- Cutter's table
- S. Bashiruddin System

#### **UNIT- IV**

##### **Arrangement of Documents on Shelves**

Simple exercises pertaining to the Arrangement of books by

-Class Number and Book Number

Simple exercises of digit by digit Interpretation of Class Number

## **ICT in Libraries**

### **UNIT-I**

#### **Introduction to Information Technology**

Information Technology: Concept, Need and Importance to Libraries.

Components of Information Technology.

IT Tools and Technologies used in Libraries.

### **UNIT-II**

#### **Library Networking and Search Process**

Intranet, Extranet and Internet: Concept and Basic Features.

Search Engines: Concept and Applications.

Mechanism of search process in Search Engines and Databases.

### **UNIT-III**

#### **Library Networks**

Library Networks: Concept and Special Features.

DELNET, INFLIBNET and OCLC as Library Networks.

Library Automation Software: Types and Features.

### **UNIT-IV**

#### **E-Resources and Databases**

E-Resources: Types and Important Features.

Online Databases: Concept and Search Process.

Online Public Access Catalogue (OPAC): Basic and Advance Sear

## **Library Cataloguing (Practice)**

### **UNIT-I**

#### **Introduction to Cataloguing**

Study and Importance of various parts of book from the Cataloguing point of view.

Descriptive Cataloging: Concept and Various elements to be included in the Catalogue entry.

Subject Cataloguing: Concept and Purpose.

### **UNIT-II**

#### **Subject Cataloguing**

Principles of Subject Cataloguing: General and Specific.

List of Subject Headings: Overview and their need.

Sears List and Library of Congress Subject Headings: Important Features.

### **UNIT-III**

#### **Preparation of Catalogue Cards**

Simple problems of Cataloguing by AACR-II

Joint Authors  
Pseudonyms  
Title Heading

#### **UNIT-IV**

##### **Alphabetization**

Alphabetization: Concept and Importance.

Letter by Letter and Word by Word Methods of Alphabetization.

Assigning Subject Headings for Simple Title according to Sear's List of Subject Headings.

##### **Library Management**

#### **UNIT-I**

##### **Principles of Library Management**

Definition, Scope and Objectives of Library Management

Elements and Functions of Library Management

Principles of Library Management

#### **UNIT-II**

##### **Organisational Structure of Libraries**

Organisational Structure of Libraries

Library Authority: Concept and Functions

Library Committee: Concept and Functions

#### **UNIT-III**

##### **Acquisition Process**

Acquisition: Functions and Objectives

Acquisition: Policy and Procedure

Book Selection: Procedure and Tools

Accessioning: Importance and Procedure

#### **UNIT-IV**

##### **Other Library Operations**

Technical Processing : Functions and Processes

Circulation : Browne Charging System and Automated Charging System

Processing of Periodicals: Ranganathan's System

Stock Verification/Rectification: Manual and Automated System

##### **Information and Communication**

#### **UNIT-I**

##### **Information Characteristics**

Data, Information, Knowledge and Wisdom: Concept

Information: Need, Purpose and Characteristics

Information users: Types

#### **UNIT-II**

##### **Information Sources and Services**

Information Sources and Services: Functions and Types

Internet as a Source of Information

Trends in Information Sources and Services

#### **UNIT-III**

## **Information Communication**

Information Communication: Concept and Need

Channels of Information Communication

Barriers in Information Communication

## **UNIT-IV**

### **Information Transfer**

Role of ICT in Information Transfer

Information Communication Infrastructure

Trends in Information Communication

## **Information Literacy in Higher Education Institutions**

## **UNIT- I**

### **Information and Society**

Information Society: Concept

Information as an Asset

Information and Misinformation

## **UNIT-II**

### **Information Literacy**

Literacy: Concept and Types

Information Literacy: Concept, Need, Purpose and Types

Role of International Agencies in Promoting Information Literacy: IFLA and UNESCO

## **UNIT-III**

### **Information Literacy Skills**

Information Literacy skills

Information Literacy Standards (ACRL)

Trends in Information Literacy

## **UNIT-IV**

### **Information Literacy and User Education**

User Education in HEIs: Concept

ICT based Information Literacy in HEIs

Information Literacy Framework: Best practices in the context of HEIs

## **Database Search Strategies**

## **UNIT-I**

### **Database Management System**

Database: Definition and Properties

Kinds of databases: Bibliographic, Citation, Numeric and Full-text

Database Management System: Defining, Storing, Organizing, and Retrieving Data

## **UNIT-II**

### **Database Search Strategies**

Information Search Process

Search Strategies: Definition, Need and Search Options

Search Strategies: Known-item Search, Searching with Keywords, Searching for exact phrases, Truncated and Wildcard Searches and Boolean Operators

### **UNIT-III**

#### **Search Techniques-Bibliographic and Citation Databases**

Online Public Access Catalogue (OPAC), IndCat (Union Catalogue)

Web of Science, Scopus

J-Gate, Google Scholar

### **UNIT-IV**

#### **Search Techniques-Full-text Databases**

PubMed Central, Science Direct, Emerald Insight

Shodhganga, Shodhgangotri

Directory of Open Access Journals (DOAJ), OpenDOAR

## **Research and Publication Ethics**

### **UNIT-I**

#### **Ethics and Values**

Ethics: Definition, Moral Philosophy and Ethical Values

Ethics: Nature and Types

Ethical Norms in Research

### **UNIT-II**

#### **Research Ethics**

Research Ethics: Concept, Intellectual Honesty and Research Integrity

Principles and Guidelines of Research Ethics

Ethics for Collaborative Research: Conflicts of Interest, Unauthorised Collaboration

### **UNIT-III**

#### **Research Misconduct**

Research Misconducts: Falsification, Fabrication and Plagiarism (FFP)

Plagiarism: Concept and Types

Plagiarism Detecting Softwares

### **UNIT-IV**

#### **Publication Ethics**

Publication Ethics: An Introduction

Publication Misconduct: Definition, Concept, Types and Issues

Research and Publication Ethics Guidelines/Initiatives: COPE, UGC etc

## **Master of Library & Information Science**

**(M.Lib.I.Sc. I<sup>st</sup> Semester)**

**2020-2021**

**Knowledge, Information and Communication**



## **UNIT-I**

Information, Characteristics, Nature, Value and Use

Conceptual difference between data, information and knowledge

Communication of Information: Information generation

Communication Process, Channels, Models and Barriers

Trends in Scientific Communication

## **UNIT-II**

Information Industry-Generators, Providers and Intermediaries

Information as an asset and Resource

Intellectual Property Rights Acts

Concept of freedom, Censorship, Data security and fair use

National Policy on Library and Information Systems and Services

### **UNIT-III**

Knowledge Management: Definition, concept, need, basic tools

Knowledge Management Systems: Basic components

Approaches and Architecture of Knowledge Management

Trends in Knowledge Management

Role of Knowledge Managers

### **Library Classification (Theory)**

#### **UNIT-I**

General theory of Classification : Contributions of Recharadson, W.C. Berwick Sayyers, H.E. Bliss, S.R. Ranganathan and CRG

Universe of Knowledge : Mapping and Problems

Categorization of Isolates: Historical Perspective and Modern Trends

#### **UNIT-II**

Modes of formation of Subjects and Methods of Scholarship vis-à-vis revision of CC, UDC and DDC

Features of Special Classification Schemes

Classificatory Principles in the Classification of Sciences, Social Sciences and Humanities

#### **UNIT-III**

Comparison of CC & UDC with regard to common sub-divisions and Indicator Digits

Trends in Classification: Thesaurofacet, automatic Classification, Classaurus, Classification in Online Systems, Web Dewey; Dewey on CD.

Design Methodology of Classification Scheme.

### **Research Methods and Statistical Techniques**

□ Types of research: Fundamental and Applied, Inter disciplinary and Multidisciplinary

Research Design: concept and types

Elements of Research methods Identification and formulation of problem

Hypothesis

Literature Search: Print & Non-print

Research Methods: Scientific, Historical methods, Descriptive methods, Survey and Case Study Methods, Experimental and Delphi Methods

Designing of Research Proposal

#### **UNIT-II**

Sampling Techniques

Research Technique Tools:

**Questionnaire, Interview, Observation**

Scales and Check lists

**Library Records and Reports**

Research Reporting: Structure, Style, Contents, Guidelines

Methods of Research Report Evaluation

#### **UNIT-III**

Data analysis and interpretation: concept and use

Descriptive Statistics – Measures of Central Tendency, Mean, Mode, Median

Tabulation and Generalization

Measures of dispersion, Variance and Covariance

Standard Deviation

Graphical presentation of data: bar, Pie-line graphs, Histograms

Inferential Statistics: Correlation, T-test, Regression – linear and non-linear, Chi square test

Statistical packages – SPSS, (introduction)

## **Information Technology (Theory)-I**

### **UNIT-I**

Information Technology and Libraries.

Software packages: Operating systems, utility software, application software.

Criteria for selection of application software.

Library automation software packages-Proprietary and Open source softwares with examples: WINISIS, KOHA, Alice for Windows.

### **UNIT-II**

Human Computer interfaces.

Multimedia: Elements and its application to libraries

Telecommunication and networking: Concepts, Media, Mode and Components

Network Media: UTP, Optical fiber Ethernet, Network Interface Card, Hub, Router, Modem.

### **UNIT-III**

Network types-LAN, MAN, WAN and their applications in Library Networks

Network topologies-Bus, Star, Ring, Token Ring

Local Area Network – Types

CD Networks

## **Information Technology (Practice)-I**

Creation of database using WINISIS, and Alice for Windows.

Use of Library software package, Alice for Windows for in-house operations, Bar Code Generations, membership cards, machine readable catalogue cards.

CD-ROM & Online searching.

Web page design and creation for a Library/ Information Centre.

## **Information Repackaging and Retrieval**

### **UNIT-I**

Abstract & Abstracting: Concept, Types, procedure of Abstracting, Guidelines in preparing Abstracts

Repackaging and consolidation: Concept and Need

Procedure of repackaging: Content analysis, formatting, consolidation

Study of few Internationally recognized Abstracting /Indexing Services: Sci-Finder, PUB-MED, Web of Science

### **UNIT-II**

Index and Indexing: Concept and Types

Indexing models – assigned and derived

Co-ordinate Indexing system

Citation indexing

Indexing languages: types and characteristics

Vocabulary control – tools of vocabulary control  
Features and Construction of IR Thesaurus

### **UNIT-III**

Information Retrieval System – concepts and types  
Features and elements of online IR  
Trends in IR  
Evaluation of IR systems  
Search Strategies: Manual/Machine, feedback and Refining

## **Informetrics and Scientometrics**

### **UNIT-I**

Information Science: Definition, Scope and Objectives  
Information Science: Historical background, Relationship with other subjects  
Information society: Genesis, Characteristics, Implications  
Changing role of Library and Information Centres in Society

### **UNIT-II**

Bibliometrics, Scientometrics, Informetrics and Webometrics: concepts, evolution and present status  
Bibliometric Laws: Bradford, Zipf, Lotka and their utility and application  
Citation analysis, Bibliographic Coupling, Obsolescence, E-citation, Impact factor

### **UNIT-III**

Information Products: Nature, Concepts, Types  
Design and Development of Information Products.

Marketing of Information Products  
Economics of Information: Concepts and Evolution  
Information as a Commodity

## **Library Cataloguing (Theory**

### **UNIT-I**

Contributions of Cutter, Lubetzky, Ranganathan in the field of Cataloguing.  
Resource Description and Access (RDA) : Concept and Structure.  
Online Cataloguing: OPACs and Web OPAC with examples at national and international level.  
Knowledge Discovery Tools: Concept and examples.

### **UNIT-II**

Subject Cataloguing: Definition and General Principles  
Choice and Rendering of Subject Headings: LCSH, POPSI, PRECIS  
Thesaurus: Need and Guiding Principles for Compilation

### **UNIT-III**

Layout and rules for the Union Catalogues of Books, Periodicals, Indexing and Abstracting Journals and National Bibliographies.

Compilation of Local, National and International Union Catalogues, Application of IT

Development and current trends in Standardization, Description and Exchange Formats: ISBD, MARC, CCF, ISO2709

UNIMARC, MARC21, UNICODE: AACR2R

## **Information Sources and System in Natural Sciences**

### **UNIT-I**

Sciences: definition, terminology, scope.

Primary Sources: Periodicals, Standards, Patents, Dissertations.

Web based sources

Evaluation of representative sources in each category

### **UNIT-II**

Secondary Sources: Bibliographies, Dictionaries, Treatises/Monographs, Directories, Trade Catalogues.

Tertiary Sources: Guides to Literature and Bibliography of Bibliographies.

Web based sources

Evaluation of representative sources in each category

### **UNIT-III**

Information Systems and Networks in Natural Sciences: Need and Purpose

Study of Science Information Systems at National and International levels: ENVIS, INIS, AGRIS, MEDLARS, BT Net

## **Information Sources and Systems in Social Sciences**

### **UNIT-I**

History of Social Sciences

Definition, Terminology, Branches and Land marks in Social Sciences.

Primary Sources: Periodicals, Government bulletins, Standards, Dissertations, Monographs, Memoirs

Web based sources

Evaluation of representative sources in each category

### **UNIT-II**

Secondary Sources: Bibliographies, Dictionaries, Treatises, Directory.

Tertiary sources: Trade Catalogues, Guides to the literature and Bibliography of bibliographies

Web based sources

Evaluation of representative sources in each category

### **UNIT-III**

Information Systems and Networks in Social Sciences: Need and Purpose

Study of Select Social Science Information Systems at National & International levels.

## **Planning and Management of Academic Library System**

### **UNIT-I**

Role of the Library in Academic Institutions. Development of Academic Libraries in India after Independence. Planning of Academic Libraries, Study of the recommendations of various Committees and Commissions with regard to Academic Libraries in India. Role of the UGC and UNESCO in promoting academic libraries.

### **UNIT-II**

Library Governance: Authority, Committees and Role of Librarian. Organisational Pattern. Human Resource Management: Staffing, Selection & Recruitment. Performance Appraisal. Budgeting. Academic Library Buildings: Planning, basic elements in designing. Furniture and fittings. Public Relations: Need and Methods.

### **UNIT-III**

Library & Information Services: Need and types. Library Co-operation and Resource Sharing, Role of INFLIBNET. Electronic Journals and Consortia: Concept. UGC Info-Net. Online Computer Library Centre (OCLC). Study of Select University Libraries in India: Aligarh Muslim University, Delhi University, Jawaharlal Nehru University.

### **UNIT-I**

Public Library : Concept, Nature, Characteristics.

Public Library Users.

Development of Public Library Movement in India with reference to post independence period

Public Library Legislation: Maharashtra, Karnataka, Kerala, Tamil Nadu, Goa.

National Policy for Library Development in India (National Policy for Library and Information Science and National Knowledge Commission).

### **UNIT-II**

Public Library Collection: Print and Non-Print.

Library Co-operation and Resource Sharing in Public Libraries.

Public Library Finance.

Planning Library Building and Equipments.

Human Resource Development.

### **UNIT-III**

Public Library Services for Special Categories of Users: Visually Impaired and Physically Challenged, Children, Young Adults, Women.

Library Extension Services.

Organizations promoting public libraries: National, International, Government Agencies and Non-Government Agencies: UNESCO; IFLA; Raja Rammohan Roy Library Foundation, Kolkata, Digital Empowerment Foundation.

## **Planning and Management of Special Library System**

### **UNIT-I**

Definition, objectives, distinguishing features and scope of Special Libraries: Industrial, Business, Government, Research Institute, Newspapers, Differently abled, Development of Special Libraries in India.

### **UNIT-II**

Library governance: Authority, Committee and role of librarian. Organisational Pattern: centralized v/s decentralized. Library Personnel: staff pattern, selection and recruitment. Public relations. Budgeting, Modern special library buildings: Planning, basic elements in the design of building, furniture and fittings.

### **UNIT-III**

Inter-Library cooperation and Resource sharing, Electronic Journal Consortia: e Shodhsindhu FORSA. Study of some representative Special libraries of India: Indian Institute of Technology (IIT) Madras, BARC, Bombay, CFTRI, Mysore, Indira Gandhi National Centre of Arts, New Delhi, Nehru Memorial Museum and Library, New Delhi, National Institute for the Visually Handicapped, Dehradun, Khuda Bakhsh Oriental Public Library, Patna.

## **Information Technology (Theory) – II**

### **UNIT-I**

Internet and Intranet: Basic features and applications

Protocols: Concepts, functions

Network protocols: TCP/IP, SPX, Net BUI, FTP, HTTP  
Modes of Connectivity: Dial up, ISDN, Leased Lines, Blue tooth, Wifi etc.  
Web Browser: Netscape Navigator, Internet Explorer, Mozilla Firefox etc.  
Web Servers, Web tools, Search Engines  
Internet Security

## **UNIT-II**

Digital Libraries: Genesis, definition, objectives, scope  
Digital Library Initiatives : National and International  
Software for digital Libraries: OCR, Image Editing Software.  
Open source softwares : Concept and Examples.  
Hardware For Digital Libraries: Scanners, Digital & Movie Cameras.  
Data warehousing, Data Mining, Meta Data, Dublin Core Digital Object Identifier (DOI)  
RFID : Features Components and Applications

## **UNIT-III**

Artificial Intelligence and Expert Systems: Concepts, Features, Software, Application in Libraries & Information Centres.  
Online Searching of Databases: Web of Science, PubMed, SciFinder, OCLC  
Electronic publishing: Electronic bulletins, e-journals, Institutional Repositories  
Subject gateways : Concept and Examples.  
Video Conferencing : Concept and Application.

## **DEPARTMENT OF LIBRARY & INFORMATION SCIENCE ASSAM UNIVERSITY, SILCHAR - 788011 (INDIA)**

Library, Information , Communication and Society

### **Unit – 1 Library as a Social Institution**

Library - Definition, Need and Scope

Library as a Social Institution

Types of Libraries: Public, Academic, Special and National- objectives, functions, services

Five laws of Library Science - their Relevance in Present Environment

### **Unit – 2 Library Movements, Legislation and Role of Library Associations**

UNESCO Public Library Manifesto.

Library Movement in India with special reference to North East India

Contribution of Ranganathan in LIS Education

Library Legislation: Need & Purpose

Library Acts in India - Features

Library Associations in India: their Role; ILA, IASLIC & IATLIS, Assam Library Association

International Associations: ALA, CILIP & IFLA

### **Unit -3 Information, Communication and Society**

Data, Information and Knowledge: Types, Nature, Properties and Scope

Information as economic resource / Commodity

Information Communication: Channels, Process, Models and Barriers

Information Society

Knowledge Society: Definition, Need and Purpose

Information Science: Definition, Scope and objectives

#### **Unit – 4 Community Information Services**

User Communities: Characteristics, User Study, User Education

Adult Education, Post Literacy and Library Services

Library Extension Programmes

Resource sharing: concept, need, purpose & areas; Impact of IT on Resource Sharing

Consultancy & Outreach Activities

#### **Unit -5 Information Acts & Policies**

Intellectual Property Right (IPR)

Concept of Freedom, Censorship, Copy Right( Print and Electronic Resources) and Fair Use

Delivery of Books Act ; Press & Registration Act

Right to Information (RTI) Act

Information Policies : National , International

National Knowledge Commission : Recommendations and Implication in LIS

#### **Library Classification Theory**

##### **Unit – 1 Concept of Library Classification:**

Library classification: meaning, need and purpose

General theory of library classification (Bliss, Sayers and Ranganathan

Knowledge classification and document classification

Role of major organizations: DRTC, CRG and ISKO

##### **Unit – 2 Methods of Knowledge Organisation**

Concept of Call Number: class number, book number and collection number.

Notation and notational system: definition, need, types and qualities

Five fundamental categories (PMEST) and Isolates: common isolates and special isolates

Phase relation, mnemonics and devices

##### **Unit – 3 Modes of Formation of Subjects**

Development of subjects, structure, attributes and modes of formation of subjects

Normative principles: basic laws, five laws of library science and their implications

Species of library classification, standard schemes of library classification and their features (CC, DDC and UDC)

Facet analysis and Methodology of designing classification schemes

Library Catalogue: Definition, Objectives and Need

Bibliographic Tools : Bibliographies, Publisher's catalogue, Accession list and Shelf list

Physical forms of Catalogue- Sheaf, Card, Register and Book

Inner Forms of Catalogue - Dictionary Catalogue, Classified Catalogue, Alphabetic-classed Catalogue and Alphabetic Subject Catalogue

Simplified, Centralized, Cooperative Cataloguing, Union Catalogues and Cataloguing in Publication(CIP)

ISBN and ISSN

##### **Unit – 2 Cataloguing Principles**

Normative Principles

Laws of Library Cataloguing

Canons and Principles of Cataloguing

Filing and arrangement of Catalogue entries : Classified and Alphabetical

##### **Unit- 3 Catalogue Entries, Filing and Subject Cataloguing**



Catalogue Entries: Kinds of Entries and their functions  
Subject Cataloguing: Meaning , Purpose, Objectives, Approaches  
Chain Procedure and Sear's list of Subject Headings  
Salient features in AACR II, RDA and CCC

### **Information Communication Technology (ICT) Theory**

#### **Unit-1 Overview of IT**

Meaning of Information Technology: Components, scope and objectives  
Computer technology: Evolution and generation of Computers  
Basic components of Computer: CPU, Input-Output devices, computer ports  
Classification of computers: Laptop, desktop/micro, mini, mainframe and Supercomputer

#### **Unit- 2 Hardware and Software Components**

Storage Devices: Types – Primary; Secondary - Floppy Discs, Tape Cartridge, Hard discs, CDs, DVDs and Pen drives  
Peripheral devices and their functions and operations – mouse, printers, scanners  
Software: Meaning, need, functions and types, Algorithm, Flow Chart  
Systems software : Operating systems: DOS, WINDOWS, and LINUX - their basic features

#### **Unit -3 Application Software**

Application Software: Concept and Types; Concept of Computer Programming  
Packages: Definition and functions; Word Processing, Spread Sheet, Power point  
Desktop Publishing  
Library Management Software Packages.

#### **Unit- 4 Telecommunication and Networking**

Communication Technology – Fundamentals and applications  
Computer Networking: Concept and Types, Network Topologies, Network Devices, Concept of Ethernet and Subnet  
Communication Media: Twisted pair and Coaxial Cable, Optical Fiber Cable, Wireless and Satellite Communication, Microwave and VSAT,  
Data Transmission Techniques, Transmission Modes, Concepts of bandwidth and multiplexing;  
Concepts of OSI Reference and TCP/IP Model.

#### **Unit-5 Database Management System**

Concept of Data Base and Data Base Management Systems and its Types, Standard DBMS Packages.  
Data Models and Architecture: Hierarchical and Relational;  
Concepts of Data Definition Language, Data Manipulation Language;  
Concepts of Entities, Attributes and Relations; Entity Relationship Model; E – R Diagram  
Structured Query Language (SQL)

Management of Library and Information Centres –

### **Paper: LIS201 Management of Library and Information Centres –I**

#### **Unit – 1 Principles of Library Management**

**Credit: 6 Marks: 70 + 30 = 100**

Management: Concept, definition, need and scope  
Management schools of thought  
Scientific management: functions and principles; POSDCORB  
Principles of management and their applications in Library and Information Centres

## **Unit – 2 Collection Developments**

Book selection: concept, need, methods, principles and tools

Acquisition: Policies and Programmes, Good Offices Committees (GOC)

Acquisition of Books, Periodicals and Non-book materials

Recent trends in Acquisition: Web based / online acquisition of reading materials

## **Unit – 3 Library House Keeping Operations**

Technical Processing, Serial Control, Circulation Methods

Shelving, Maintenance, Stock Verification & Shelf Rectification Methods

Preservation, Conservation and Restoration of reading materials

Archiving - Concept

## **Unit – 4 Library Reports and Statistics**

Reporting: Types of reports, Annual report

Library Statistics: Concept, need and purpose

Fittings and furniture, Space Management

Library Committee: Concept, Importance, Function, Types of committees, rules and regulations

## **Unit – 5 Human Resource Management**

HRM: concept, need and purpose, Planning, Policies & Issues

Staffing: Recruitment methods, Staff training and Development, Staff formula and Manual

Supervision, Motivation and control, Leadership, Interpersonal relations

Job Analysis, Job Description, Job Evaluation & Performance appraisal

Information Literacy

**Paper: LIS203 (OPEN COURSE) Information Literacy**

**Unit-1: Basic of Library and Information Science**

**Credit: 6 Marks: 70 + 30 = 100**

Library - Definition, Need and Scope

Types of Libraries: Public, Academic, Special and National- objectives, functions, services

Traditional Library Services, Modern Library Services, Role of Librarians

Library Websites, Library Portals, Library Gateways, Digital Library Services, Institutional Repository

Virtual Reference and Information Services, Internet based document delivery, Weblogs and RSS

### **Unit-2: Sources of Information**

Information sources: definition and characteristics

Types of information sources: Documentary-primary, secondary and tertiary, Non-Documentary

Print sources of information, Digital Sources of Information: Paid and Open Access Resources

Reference sources in Social Sciences, Humanities and Science & Technology: Dictionary, Encyclopedia,

Directory, Handbooks, Manuals

Current information sources: Yearbooks, Almanacs, News summaries

### **Unit-3: Bibliography and Reference Management Techniques**

Bibliography and Reference Management: Concept and definition

Referencing Styles: APA, Chicago and MLA

End Note, Foot Note

Reference Management Tools: MS-WORD, Mendeley, EndNote

### **Unit-4: Citation analysis, Impact Factor, Online citation index and Plagiarism**

Concept of citation analysis, formulas for measuring Citation: H-index, I-index, G-index  
Impact factor concept, need, formulas for measuring impact factor  
Citation Databases: Web of Knowledge, Scopus, Google Scholar, Resarchgate  
Plagiarism: Concept and Definition, Types of Plagiarism, Plagiarism Detection Tools

### **Unit-5: Information Searching and Retrieval Techniques**

Information Searching and Retrieval Techniques: Concept and definition  
Role of Search Engines in Information Retrieval  
Information Searching Skills and Competencies  
Searching Techniques: Free Text Search, Boolean Search, Truncated Search, Wild card Search, Federated Search

### **Reference, Information Sources and Services**

#### **Paper LIS204 (OPEN COURSE) Reference, Information Sources and Services**

##### **Unit 1 Sources of Information**

**Credit: 6 Marks: 70 + 30 = 100**

Reference & information sources: definition, and characteristics  
Types of information sources: Documentary-primary, secondary and tertiary, Non-Documentary  
Reference sources in Social Sciences, Humanities and Science & Technology: Dictionary, Encyclopedia, Directory, Biographical Sources, Geographical Sources, Handbooks, Manuals and e-reference sources(Wikipedia and Google earth)  
Current information sources: Yearbooks, Almanacs, News summaries.

##### **Unit 2 Reference and Information Service**

Reference and Information Service - Definition, and characteristics  
Types of Reference Services: Long range service and ready reference service  
Current Awareness Service(CAS) and Selective Dissemination of Information(SDI)  
Bibliographic service, document delivery service, reprographic service, translation service, newspaper clipping service and  
Recent trends in information services (RS 2.0)

##### **Unit 3 Bibliographic Control and Indexing and Abstracting Services**

Bibliographic control: Meaning, needs and importance  
Indexing and Abstracting (I & A ) Services: meaning and usefulness  
User education: Meaning and types, literature search (Off-line/On-line), and Computerized information search techniques  
Guidelines for evaluation of different types of sources

##### **Unit 4 Evaluations of Reference Sources**

Definition, Scope, Types, Description of Select Items and Evaluation Criteria -Dictionary, Encyclopedia, Directories, Yearbooks and Almanacs

##### **Unit 5 Evaluations of Reference Sources**

Definition, Scope, Types, Description of Select Items and Evaluation Criteria –Biographical Sources, Geographical Sources, News summaries, Handbooks, Manuals.

#### **Information Communication Technology (ICT) Practice & Bibliographical**

**Part –I Operating System** Use of Operating System Word Processors and Presentation tools (using any one software) **Part- II DBMS (Database Management System)** Creation of Database using any DBMS Package Internet Search Searching of Internet Resource using different search engines

## Management of Library and Information Centres

### **Paper: LIS301 Management of Library and Information Centres –II**

#### **Unit-1: Financial Management**

**Credit: 6 Marks: 70 + 30= 100**

Resource mobilization

Budgeting methods – PPBS and ZBB,

Cost effectiveness and cost benefit analysis

Outsourcing

#### **Unit-2: Systems Study**

Systems Study: Concept, Components analysis, evaluation and design. Library as a System, Subsystems of a Library

Performance evaluation of Library and Information Centres

System Analysis , PERT/CPM, Work studies, Flow chart and Gantt charts, SWOT Analysis: Concept and use

Management Information System (MIS): Concept and Use

Project management: Definition, objectives, scope, Organizational planning, Stages

Management Consultancy: concept and evolution, Impact on librarianship and libraries

#### **Unit-3: Quality Management**

Quality management: Quality concept, element and application to libraries and information centres,

Total Quality Management: Definition, scope and purpose and application to Libraries and information centres

TQM Tools and Techniques

Quality Standards

#### **Unit-4: Marketing of Library and Information Services**

Marketing: Concept and Definition

Need of Marketing Library Services

Marketing Mix

Marketing Approach

#### **Unit-5: Knowledge Management**

Knowledge Management - definition, concept, need, value, process and basic tools

Knowledge mapping and information auditing, KM development roles

Tools and Techniques of KM – Data mining, Text mining, Knowledge sharing concepts.

Role of Information professionals in KM - Impact of professional information skills, powering information.

## Research Methodology

### **Paper: LIS302 Research Methodology**

#### **Unit – 1: Concept of Research**

**Credit: 6 Marks: 70 + 30 = 100**

Research: Concept, Meaning and Significance

Types of Research: Qualitative and Quantitative Research

Inter-disciplinary and Multi-disciplinary research

Problem identification; Research design: formulation of hypothesis, Literature Search

## **Unit – 2: Research Methods, Techniques and Tools**

Methods: Historical Research, Survey Research and Experimental Research

Case Study, Observation Method, Scientific Method, Delphi Method

Sampling Techniques

Data Collection tools :Questionnaire, Interview, Schedule, Observation, Scales and Check Lists ,  
Historical / recorded,

## **Unit – 3: Data Analysis and Interpretations**

Graphical presentation of data,

Measurement of Central Tendency, Mean, Mode, Median, Measurement of Variables

Measures of Dispersion, Correlation Studies and Regression Analysis

Chi Square test and Sociometry

## **Unit – 4: Research Reporting**

Research Report: Structure, Style, Characteristics, and Contents

Guidelines for Citation / References: Standards, rules, manuals

E-Citation and methods of Research Evaluation

Modern trends of Research – LIS and other disciplines

## **Unit – 5: Scientometrics**

Bibliometrics Studies: Concept, Definition

Bibliometric Laws, Citation Analysis

Scientometrics, Informetrics and Webometrics

Computerized data analysis: SPSS

## **Library Automation Theory**

**Paper: LIS303 Library Automation Theory**

**Unit – 1: Basics of Library Automation**

**Credit: 6 Marks: 70 + 30 = 100**

Library Automation: Meaning, importance and purposes

Advantages and Disadvantages in library Automation

Manual Vs Automated Systems

Online Catalogue- OPAC and Web OPAC

Library automation scenario in India with special reference to NE India

## **Unit 2: Planning Library Automation**

Planning and Implementation

Automatic Identification Methods: Barcode, RFID

RFID technology- Meaning, needs and features, RFID Components

Artificial Intelligence

Library Management Software: SOUL and Open Source Software

## **Unit 3: Housekeeping operations and Retrospective Conversion**

Automated Acquisition Control

Automated Circulation Control

Automated Serials Control

Library Administration and Report Generation

Retrospective Conversion: Concept, Need, Purpose and Techniques

Retrospective Conversion Outsourcing: Planning and Prospects

Retrospective Conversion in Academic Libraries of India: INFLIBNET Initiative

#### **Unit 4: Library Networks**

Library Network - Meaning and Scope

Library Networking in Indian perspectives: INFLIBNET, DELNET

Library consortia in Indian context UGC-INFONET, INDEST, CSIR & Others E-Resources Consortia

Internet Based Cataloguing – OCLC, LC, CORC (Cooperative Online Resource Cataloguing)

Bibliographic Utility Networks

#### **Unit – 5: Standardization in Automated Cataloguing**

Standardization in Cataloguing – Need and Purpose

Standards - ISBD, CCF, ISO-2709 and Z39.50

Metadata- MARC and Dublin Core

Trends in Library Cataloguing

**Part-A** Database Creation using CDS/ISIS or WINISIS Database Creation using SOUL **Part- B**

Installation and use: KOHA Barcode Generation

#### **Web Technology and Digital Library**

##### **Unit- 1 Digitization**

Digitization: meaning, needs and purposes

Digitization process: steps and tools

File formats: types and conversion

Capture devices, image editing software, OCR and UNICODE

##### **Unit- 2 Developing Digital Library**

Digital library: meaning, purpose, planning, steps and implementation

Digital Library Management Software (DLMS): Selection process and features (Greenstone, D-space and E-prints)

Metadata: meaning and methods of metadata creation

Digital Rights Management (DRM)

##### **Unit 3: Institutional Repository**

Definition, objectives, purpose & scope

Open Access Initiatives (OAI), Digital library initiatives in India

Institutional Repositories Vs Digital Library

Digital Preservation: needs, migration and replication

##### **Unit 4: Overview of Web Technology**

Web technology: meaning and applications

HTML: Basics, hypertext and hypermedia, HTML programming

URLs, WEB browsers, search engines, websites, directory, blogs and portals

Internet protocols and Internet security

##### **Unit 5: Internet and its Connectivity**

Internet Connectivity, Dial up, Leased line, ISDN and Wi-Fi

Remote Login and OAI/PMH

Web 2.0, Library 2.0, Semantic Web and Social Networks

Web page design and evaluation of Websites

Information Retrieval Systems

### **Unit – 1: Information Retrieval System**

IR Systems: Concept, definition, characteristics, components and functions

Subject indexing: Concept, principles, methods and systems

Problems in alphabetical subject indexing

Pre co-ordinate and post co-ordinate indexing systems

### **Unit –2: Indexing Languages**

Indexing Languages – Concepts, types and characteristics

Indexing Systems: Chain Procedure and Subject heading lists (Library of Congress List of Subject Heading and Seas List of Subject Heading)

Citation indexing: Concept and utilities

Computerized indexing and clustering technique

### **Unit – 3 Vocabulary Control and Online Information Retrieval**

Vocabulary control: definition and tools

Thesaurus: Importance, Structure and Steps for Construction

Intelligent information retrieval: Expert System

On-line searching and retrieval: elements and search formulation

### **Unit – 4: Information Retrieval Models**

IR models: concept and purpose

Search strategies: proximity search, truncated search, Boolean search, and federated search

Software"s for information retrieval

Criteria for evaluation of IR systems

### **Unit –5: Content Development**

Content Development: guidelines, norms, markup languages for content development

Content Management Systems (CMS): features and utilities

Natural language processing: Meaning, prospects and interfaces

Current trends in IR research

### **Academic Library and Information System**

#### **Unit -1: Development of Academic Libraries**

Academic Libraries: Objectives and Functions

Academic Library Services

Role of UGC and other Bodies in Promoting Academic Libraries

Monitoring/ Accreditation Agencies in Academic library (UGC, NAAC),

#### **Unit -2: Collection Development**

Selection of Books

Collection Development: - Nature, Types and Policies

Problems in Collection Organization

Collection Types

#### **Unit -3: Staffing Pattern and Staff Development**

Human Resource Management in Academic Libraries

Continuing Education Programmes Academic Libraries

Staffing pattern in Academic Libraries

Role and Status of the Library Staff

#### **Unit -4: Resource Sharing Programme**

Resource Sharing: Need and Objectives

Information and Library Network(INFLIBNET)

Academic Library Networks

E- Resource Consortia: Indian Initiatives

#### **Unit – 5 Future of Academic Library**

Academic Library Administration

Financial Management of Academic Libraries

Recent Development in Academic Libraries in India

Quality Indicators ( Best Practices in Academic libraries)

Public Library System

#### **Unit 1 Public Libraries:**

Meaning, importance, functions.

Role of Public Library in literacy and mass education.

Public Library Movement in India

Role of Raja Rammohun Roy Library Foundation (RRRLF) and National Library and Ministry of Culture, Govt. of India

#### **Unit 2 Public Library Legislation in India:**

Study of salient features Southern States of India

Study of salient features Northern States of India

Study of salient features Eastern and Western States of India

Study of salient features North-Eastern States of India

#### **Unit 3 Organization of a Public Library:**

Manpower Development: Qualifications, recruitment, job description. Job analysis, staff manual.

Public Library Finance: Sources, budgeting, accounting and auditing.

Library Building: Planning, Concept of Modular Building. Library Furniture

Collection Development : Print, Non Print (including Electronic documents)

#### **Unit 4 Automation & Resource Sharing**

Networking, Integrated public library system.

Library Automation: Automating the house-keeping services in various sections in the public libraries.

Library services to special groups of people including Physically handicapped, mentally challenged, Visually impaired, Prisoners and Children.

Role of National Mission for Manuscripts (NMM) on Digitization of manuscripts and rare documents.

#### **Unit 5 Managing Public Library**

Public Library Administration

Financial Management of Public Libraries

Recent Development in Public Libraries in India

Library & Information Policy : national and International

#### **Preservation and Conservation of Library and Archival Materials**

##### **Unit 1 Preservation and Conservation**

Definition, Need, Policy and planning

History of preservation of documentary repositories. Evolution of writing materials



Types of library materials- paper documents, physical elements of book, Non-book materials, digital object

Enemies of Library materials: physical agents, chemical agents and biological agents.

## **Unit 2 Management of Preservation programme**

Organization and Planning of preservation Programmes

Materials, structure, manufacturing technology and development of written media

Technology and structure of records

Main components of library records.

## **Unit 3 Restoration of Documents**

Cleaning, Removal of stains, fumigation, de-acidification, Lamination, encapsulation of documents including those of manuscripts, rare documents, paintings and maps

Bindings of documents: Purpose, Kinds of bindings-Publishers casing, paperbacks, reinforced binding

Binding Materials- Covering materials, sewing and pasting materials, ornamentation materials;

Management of binding work.

## **Unit 4 Special Preservation Processing**

Machine Readable form – microfilming, databases, CD-ROM

Environmental control

Binding design, planning

Furniture and fittings

## **Unit 5 Preservation of Digital Resources**

Concept, Purpose of Digital preservation

Planning, Steps for Digital preservation

Process of Digital preservation

National and International Initiatives

## **Management of E Resources\***

**Paper: LIS405.E-4 Management of E Resources\***

**Unit 1** Concept of E resource

**Credit: 6 Marks: 70 + 30 = 100**

Concept characteristics, advantages and disadvantages

Format of E-resources: Off-line, Online, Databases

E-journals, characteristics, advantages and disadvantages

E-book, characteristics, advantages and disadvantages

Online Databases, characteristics, advantages and disadvantages

E-publishing: concept and process

DOI

## **Unit 2 Acquisition of E-resources**

Collection Development of e-resources: policies, new guidelines

Evaluation and Selection of e-resources

Acquisition / Subscription of e-resources – Modes:

Direct

Consortia

Trail

Publishers of e-resources: products and services

Availability of e-resources

Open access  
Paid resources

### **Unit 3 E-Resources Consortia for Resource Sharing**

Consortia and E-resources

National: AICTE-INDEST; UGC-INFONET; N-LIST; DeLCON and other consortia

International: OCLC and Other consortia

Role of Consortia in resource sharing

Paradigm shift of resource sharing in consortia based environment

### **Unit 4 Issues and Challenges for managing E- Resources**

Technological Changes

Financial: pricing models; modes of access

Digital right management, copyright issues for access and distribution

Manpower training

User awareness training

### **Unit 5 R-resource management system software**

ERMSS: concept, need, purposes,

Life cycle of resources

ERMSS: products and services

Future of E- Resource Management

ROI: return on investment; cost-effectiveness

Statistical analysis; decision making

Recent Trends in e-resource management

Metrics Studies (Bibliometrics, Informetrics, Scientometrics, Webometrics)

#### **Unit-1 Bibliometrics**

Concept, definition, need

Scope & Parameters

Bibliometric Laws & their Applications

#### **Unit-2: Informetrics**

Concept, definition, need

Application in knowledge mapping

Tools and techniques

#### **Unit- 3 Scientometrics**

Concept, definition, need

Application in knowledge mapping

Tools and techniques

#### **Unit-4 Webometrics**

Concept, definition, need

Application in knowledge mapping

Tools and techniques

#### **Unit-4 Citation analysis, Impact Factor, Online citation index**

Concept of citation analysis, Formulas for measuring Citation

H-index

I-index

G-index

Impact factor concept, need, Formulas for measuring impact factor

o

Citation Indexing Databases and Services

Scopes;

Web of Knowledge;

Google Scholar and

others

## **Agriculture Library and Information Systems and Services**

### **UNIT – 1: Agricultural Science Libraries and their Development**

Objectives and Functions

History and Development of Libraries with Special Reference to India

Role of ICAR, Committees and Other Agencies in the Development of Agricultural Libraries in India

### **UNIT – 2: Collection Development and Management**

Periodicals, Conference Literature, Grey Literature, Patents, Standards, Specifications and Government Publications, etc.

Non-Book Materials

Electronic Resources and Online Databases

### **UNIT – 3: Library Organization and Administration**

Organizational Structure

Staff Manual, Library Surveys, Statistics and Standards, etc.

### **UNIT – 4: Information Services**

CAS, SDI, Abstracting and Indexing Services

Library Bulletin, Newspaper Clipping Services

Computerized Services

Resource Sharing and Networking: AGRIS, INAGRIS, CABI, etc.

Information Literacy Programmes

### **UNIT – 5: Financial and Human Resource Management**

Determination of Finance, Sources of Finance

Types of Budget

Nature, Size, Selection, Recruitment, Qualification and Training

Responsibilities and Duties

Competency Development

## **BHU Banaras Hindu University**

### **Research Methodology**

#### **Block I: An Overview of research**

Unit 1 : Origin of research; Administrative Verses Critical Research; Research for different purposes.

Unit 2 : Context in Research

Unit 3 : Significance of research; the process of theory building

Unit 4 : Aspects of Research; and Before Research Begins

#### **Block II : Steps for conducting Research**

Unit 1 : Title, Introduction, Rationale, Problem, Aim & Objectives

Unit 2 : Theoretical/ Conceptual/ Operational Framework; Hypothesis

Unit 3 : Methodology: Design, Universe/ Population, Variables, Sample, Instruments, Types of Data, Data Collection, Time Schedule, Budget, Limitations, etc.

Unit 4 : Data Analysis Methods, Writing of Report, Summary, Executive Summary, Conclusions & recommendation.

**Block III: Contemporary Research Designs**

Unit 1 : Qualitative, Quantitative, Interpretative, Basic & Applied

Unit 2 : Experimental/ Naturalistic, Laboratory/ Field Research, Cross Section & Longitudinal

Unit 3 : Participant Observation; Non-Participant Observation, Overt & Obtrusive

Unit 4 : Content Analysis

3

**Block IV: Sampling Methods**

Unit 1 : Formative, Process & Summative Research: Probability & Non-probability; Sample & Sampling; Pre-test, Pilot-test & Post-test.

Unit 2 : Survey Design in Probability Sampling; Simple Random, Systematic Random, Stratified, Multistage Cluster Sampling

Unit 3 : Survey Design in Non- probability Sampling: Purposive, Convenience & Quota Sampling; Designing of Instrument; Ethical Issues & Current Problems

Unit 4 : Aspects of Media for research

**Block V: Qualitative Research Designs**

Unit 1 : Case studies

Unit 2 : Ethnography

Unit 3 : Participant Observation and non-participants Observation

Unit 4 : Focus Group, Ground Theory Methods, Action Research, Narratology.

**Block VI: Subject Specific Research Designs**

Each Department will be requested to help the students to have grounding in specific Research Methodologies that are applied/ used in respective discipline.

**Block VII: Statistical Analysis**

**Review of Literature**

4 Credits

**Unit 1. Study into development of subject**

Scope of subject- divisions and sub-divisions, classification, application areas

Study of landmarks- year and period of contribution, name of contributors and their significant contributions, title and the year and period of publication of the original work

Trend of research- growth of literature on subject, degree of documentary seepage, scattering and application of information on research in the subject and other discipline

Educational trend- development of education in subject, level of education-undergraduate and research.

**Unit 2. Study of sources of information**

Documentary sources-study of available documentary resources.

Primary sources-study of outstanding text book advanced treatises and primary periodical publications

Secondary sources- encyclopaedia dictionaries directories glossaries adhoc bibliographies indexing and abstracting periodicals annual reviews year-books etc.

Institutional sources – study of institutes engaged in subject concerned

Conferences-International and local

Research projects –International and local

Human sources - Study of people engaged in subject their specialties and worksinternational, national and local.

Study of electronic resources-web resources online databases e- journals, indexing and abstracting services, citation index (web of science) etc.

**Unit 3: Writing Proposal and Report**

Types of documents

Audience analysis

Document design and information presentation

Writing skills

Preparation of bibliography and references

2

**B Independent Reading**

2 Credits

**Unit 1: Independent Reading**

Selection of topic

Collection of literature and assimilation

Preparation of commentary

Seminar

**Computer Literacy**

2 Credits

**Unit 1: Computer Literacy**

Using word processor

Making presentation

Using statistical tools

**BHU MLIS**

**Foundations of Library & Information Science**

**Unit 1: Library and Librarianship**

Libraries, Documentation and Knowledge Resource Centres

Librarianship: Profession, Ethics and Challenges

Types and Function of Libraries Five Laws of Library Science & their Implications

Library Building, Furniture and Equipment

**Unit 2: History & Development of Libraries, Documentation & Knowledge Resource Centres**

Development of Libraries & Knowledge Resource Centres

Library Legislation: Need, Function, Salient feature of State Library Acts in India

Model Public Library Act

Information System & Services: Concept and propositions

**Unit 3: Library Associations & Organisations for Promotion of Libraries**

Professional Organisations: Objectives, Functions & Professional Activities

National & Regional Associations: ILA, IASLIC, and UPLA

International Associations: IFLA, American Library Association and CILIP

NAPLIS, National Knowledge Commission, National Mission on Libraries

**Unit 4: Library Outreach Activities**

Library Resource Sharing

Public Relation & Extension activities

Library Consortia: FORSA, ICOLC, SPARC & E-Shodhsindhu

**Unit 5: Intellectual Property Rights**

IPR: Concept, Need & Types

Press and Registration of Books Act

Delivery of Books Act

Indian Copyright System and WIPO

**Computer Basics and Applications**

**Unit 1: Computer Basics**

Computer: Definition, Developments and Computer Generations

Classification of Computers

Basic Components of a Computer, Computer Peripherals

**Unit 2: Hardware and Software Components**

Computer Hardware: Components, Functions

Processors, Memory, Storage and Input/output Peripherals

Computer Software: Types & Functions

Operating Systems: Types and Functions with reference to Windows and Linux

**Unit 3: Software Packages**

Word Processing Packages

Desktop Publishing

Library Application Software: CDS/ISIS

**Unit 4: Library Automation**

Library Automation Software: an Overview

Use of Computers in the house keeping operation  
Retrospective Conversion  
Library Software Packages: Features, Selection, Market Value  
Study of available Library Automation Suites

**Unit 5: Networking**

Definition, Need, Client Server Architecture  
Network Types & Topologies  
Components of Networks

**Note:** Internal Assessment will be reserved for Hands on experience on computer  
Operations with reference to  
Linux  
Office Management Suite

**Knowledge Organisation: Library Classification & Cataloguing (Theory)**

**Unit 1: Basics of Classification**

Definition, Need and Purpose of Classification  
Concept of Call Number, Class Number & Book number  
Species of Classification Schemes  
Salient Features of DDC, CC and UDC  
Notation: Definition, Kinds and Function

**Unit 2: Theoretical Foundations of Classification**

Canons of Classification  
Phase Relations, Common Isolates & Other Auxiliary Tables of DDC, CC and UDC  
Postulational Approach to Classification, Five Fundamental Categories and Facet Sequence  
Principles of Helpful Sequence  
Devices and Indicator Digits  
Recent Developments in Classification

**Unit 3: Basics of Cataloguing**

Library Catalogue: Definition, Function, Types & Physical Forms  
Kinds of Catalogue Entries and their Functions  
History of Catalogue Codes  
Salient Features of AACR-II and CCC

**Unit 4: Normative Principles and Subject Cataloguing**

Normative Principles & Canons of Cataloguing  
Subject Cataloguing: Chain Procedure, Subject Heading Lists.  
Filing of Catalogue Entries & Alphabetization

**Unit 5: Bibliographical Formats & Other Aspects**

Machine Readable Catalogue, OPAC & Web OPAC  
Standards of Bibliographic Descriptions and Record Formats : ISBD, MARC21, ISO – 2709/Z39.2, FRBR, FRSAD, FRAD, RDA, Dublin Core  
Centralised and Cooperative Cataloguing, Simplified Cataloguing, Programmes for Cooperative Cataloguing: BIBCO, CONSER & NACO  
Cataloguing of Non-Book Materials: Cartographic Materials, Electronic Documents, Audio-visual Materials and Continuing Resources

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## **Paper IV: Knowledge Organization: Library Classification & Cataloguing- I (Practical)**

Steps in Classification, Classification of Documents by Colon Classification and Dewey Decimal Classification 22<sup>nd</sup> edition with the following details –

*Colon Classification:* Basic Subject, Compound and Complex Subject, Five Fundamental Categories, Facet Sequence, Phase Relations.

*Dewey Decimal Classification:* Main Class, Divisions, Tables, Use of Schedule & Relative Index.

Cataloguing of Books and Periodicals in accordance with the latest available edition of AACR and Sears List of Subject Headings: Works of Single, Shared and Mixed Responsibilities (personal, corporate etc.)

MARC21 Format for Bibliographic Description

### **Library Management**

#### **Unit 1:** Principles of Library Management

Principles of Management & their application in Libraries and Information Centres

Elements of Management Process: POSDCORB

Total Quality Management (TQM)

#### **Unit 2:** Collection Development

Policies & Principles: Print and Digital Resources

Selection-tools for Books and Non-book Materials

Handling of Government Documents and Manuscripts

#### **Unit 3:** Library House Keeping Activities: Routines & Workflows

Acquisition & Processing of Reading Materials – Principles, Routines and Records

Technical Processing: Routines and Tools

Circulation: Methods, Routine, Records and Serials Control

Shelving, Maintenance, Stock Verification and Preservation of Library Materials

Annual Report and Statistics

#### **Unit 4:** Personnel Management

Human Resource Development

Staff Recruitment, Selection & Training, Staff Formula

Staff Development, Motivation & Leadership Quality Improvement

Staff Manual

#### **Unit 5:** Financial Management

Sources of Library Finance

Budget Estimation

Budgeting Techniques

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**Paper VI: Computer Applications (Practical)**

Hands-on experience with computer operation with reference to

Web Page Designing

Syntax of HTML Document

Formatting of HTML Document

CDS/ISIS– Database creation, Management and Retrieval

MARC Format

**Information Sources & Services****Unit 1: Nature of Information Sources**

Concept of Information Source

Kinds of Information Source – Primary, Secondary and Tertiary

Basic Reference & Information Sources and Criteria for Evaluation

**Unit 2: Reference Tools**

Bibliographical Sources: National Bibliographies, Trade Bibliographies

Language Dictionaries

Encyclopaedia

Yearbooks & Directories

Biographical & Geographical Sources

**Unit 3: Electronic Sources**

CD-ROMs and Multimedia

Electronic Books and Electronic Journals

Electronic Databases

**Unit 4: Web Resources**

World Wide Web: Services & Facilities

Websites & Sources – Subject Portals, Digital Libraries, Discussion-Forums, Bulletin-Boards, Consortia, Wikis, Blogs & RSS

**Unit 5: Information Services**

Information Services: Concept, Types and Need

Type of Information Services: Literature Search, Documentation Service, Translation Service and Document Delivery Service

CAS and SDI Service

Electronic Information Service

**VIII: Knowledge Organisation: Library Classification & Cataloguing – II (Practical)**

Classification of Documents with Complex Subjects according to DDC 22<sup>nd</sup> edition and Colon Classification

Cataloguing of Documents involving complicated Personal and Corporate Authorship, Periodicals according to AACR-II.

**Universe of Knowledge and Research Methods****Unit 1: Universe of Knowledge**

Definition, Source of Knowledge, Types of Knowledge

Characteristics of the Universe of Knowledge

Subjects having Knowledge as their field of Study

Modes of thinking: Authoritative, Speculative, Tenacious and Positivistic

**Unit 2: Modes of Formation of Subjects**



Fission, Fusion, Distillation, Lamination, Loose Assemblage  
Spiral of Scientific Method

**Unit 3: Research Methods**

Research –Definition, Nature, Characteristics, Purpose and Kinds of Research

Scientific Methods: Features

Research Methods – Historical, Survey and Experimental

Formulation of Research Design: Exploratory, Descriptive, Diagnostic and Experimental

Sampling Technique

**Unit 4: Methods of Data Collection & Representation**

Collection of Data: Questionnaire, Interview and Case Study

Presentation of Data: Table, Diagram, Graphs etc.

Research Ethics and Plagiarism

Technical Writing & Writing Skills

**Unit 5 : Statistical Methods & Metrics in Library and Information Science**

Statistical Measures: Measures of Central Tendency; Measure of Variability; Correlation; Chi-square Test

Bibliometrics, Scientometrics & Webometrics: Meaning, Scope Parameters

Bibliometric Laws & their Applications

Citation and Referencing Style

**Information Retrieval (Theory)**

**Unit 1: Subject Analysis and Representation**

Fundamentals of Retrieval Systems: Nature & Characteristics

Problems of Subject Analysis & Representation: Contribution of Cutter, Kaiser, Ranganathan, Farradane & Coates Subject

Thesaurus: Definition, Types, Function, Structure & Construction, Thesaurifacet

**Unit 2 : Abstracting**

Abstracting : Definition, Types, Slant in Abstracting

Principles & Canons of Abstracting

**Unit 3: Subject Indexing**

Subject Indexing : Concept & Development

Assigned Indexing:

Pre-coordinate Indexing System – Chain Indexing, PRECIS, POPSI

Post Coordinate Indexing System – Uniterm

Derived Indexing : KWIC, KWOC, Citation Indexing and Full text

**Unit 4: Information Searching & Retrieval**

IR models: Cognitive, Probabilistic etc.

IR Performance Evaluation

Search Techniques: Boolean, Proximity, Truncation etc

Web-based Retrieval

XML Retrieval

**Unit 5: Modern IR Applications**

Artificial Intelligence & Man-Machine Interface

Natural Language Processing

Concept Maps & Ontology

Data Mining

Semantic Web, Linked Data & Big Data

## **Information Retrieval (Practical)**

Classification of documents with complex subjects according to UDC and Colon

Classification

Cataloguing of documents involving complicated personal & corporate authorship, complex periodicals & non-book material

Indexing practice and Vocabulary Control Device practice

## **Information Technology and System Design**

**Unit 1:** Information Technology: Basics

Overview of Information Technology

Computer and Communication Technology

Application of Information Technology in Libraries

Digitization and Digital Divide

Digital Preservation

**Unit 2:** Internet & WWW

Internet: Overview and History

Uniform Resource Identifiers, Hyper Text, Hyper Link, and Hyper Media

Internet Protocol – HTTP, HTTPS, FTP, Remote Login, Z39.50, OAI-PMH

Browsers and E-mail

Search Engine –Types and Evaluation

Interactive Web

**Unit 3:** Database Management System

Database: Definition, Concept, Components and Types

Database Structure: Logical Data Structure, Physical Data Structure

Database Management System Models : Structure– Hierarchical, Networking, Relational and Object Oriented

**Unit 4:** System Analysis and Design

System Analysis and Design: Concept and Types

System Design and Development

Implementation & Evaluation

**Unit 5:** Digital Library

Digital Library: Conceptual Framework and Architecture

Digital Object Management

Digital Library : Procedure and Implementation

Digital Library Software

## **Information Science and Knowledge Management**

**Unit 1:** Information Science

Data: Definition, Scope and Types

Information: Definition, Scope, Type, Nature and property

Conceptual difference between Data, Information and Knowledge

Representation of Information: Sign, Signal, and Symbol

Information Science: Definition Scope and Objectives

Information Science as a Discipline and its Relationship with other Subject

**Unit 2:** Information Systems and Communication

Communication Process, Channels, Models and Barriers

Information Generation: Modes and Forms  
Information Communication: Theories & Models  
Information System: MIS, DSS, and Expert System

**Unit 3 : Library, Information and Society**

Information Society: Genesis, Characteristics and Implications  
Changing role of Libraries and Information Centres in Society  
Concepts of Freedom, Censorship, Fair Use, Creative Commons  
Policies Relating to Information: Intellectual Property Rights, Right to Information Act, SHEPRA/RoMEO Project, COPE

**Unit 4: Information Economics and Information Industry**

Information as an Economic Resource  
Information Industry: Primary, Secondary etc.  
LIS Products and Services as a Marketable Commodity  
National Information Policy

**Unit 5: Knowledge Management**

Knowledge Management: Concept and Scope  
KM System, Information Management Vs Knowledge Management  
Stage and Process of Knowledge Management  
Tools of Knowledge Management  
Information Sources & Products in Science & Technology  
XIV (b) Information Sources & Products – Social Sciences  
XIV (c-1) Bibliometrics and Scientometrics □ ---3 Credits  
XIV (c-1) Yoga □ ---2 Credits

**XIV (a) Information Sources & Products in Science & Technology**

**Unit 1: Science & Technology**

Overview of Major Subjects of Science & Technology  
Physics  
Chemistry  
Engineering & Technology

**Unit 2: Sources of Information**

Primary Sources of Information: Periodicals, Research Reports, Patents, Specifications etc.  
Secondary Sources of Information: Bibliographies, Indexes and Abstracts, Encyclopedia, Year book etc.  
Evaluation of Important Secondary Sources from the view of their Information Value  
Databases in Science & Technology

**Unit 3: Role of Research Institutes & Professional Organizations in the development of Science & Technology**

India  
U.K.  
USA

**Unit 4: Information Systems and Services in Science & Technology**

National  
International

**Unit 5: Information Analysis & Repackaging**  
Content Analysis

Consolidation

Repackaging

### **Sources & Products in Social Sciences**

#### **Unit 1:** Overview of Social Science

Developments in Major Subjects of Social Science

Sociology

Political Science

History

Economics

#### **Unit 2:** Sources of Information

Primary Sources of Information: Periodicals, Research Reports, Patents, Specifications etc.

Secondary Sources of Information: Bibliographies, Indexes and Abstracts, Encyclopedia, Year book etc.

Evaluation of Important Secondary Sources from the view of their Information Value

Databases in Social Sciences

#### **Unit 3:** Role of Research Institutes & Professional Organizations in the Development of Social Sciences

India

UK

USA

#### **Unit 4:** Information Systems and Services in Social Science

National

International

#### **Unit 5:** Information Analysis and Repackaging

Content Analysis

Consolidation

Repackaging

### **Information Users & Needs**

#### **Unit 1:** Information Users

Identification of Users

Concept of Need, Want, Demand & Requirement

User Categories: Planners, Policy Makers, Managers, R&D Personnel, People at Grass Root Level

Information Seeking Behavior Models

#### **Unit 2:** Uses of Information

Uses of Information in Management activities

Uses of Information in Decision Making

Uses of Information in R & D

Role of Information in Raising the Standards & Quality of Life

Technology Innovation & Technology Transfer

#### **Unit 3:** User Studies

Scope and Content of User Studies

Studies by Types of Libraries : Different User Groups, Different Disciplines

Critical Review of Some Large Scale User Studies

#### **Unit 4:** Methodology of User Studies

Qualitative & Quantitative Paradigm

Data Collection Methods

Other Specific Techniques– Scenario Analysis, Interaction Analysis, Delphi Method, Repertory Grid  
Evaluation of User Survey

### **Unit 5: Information Literacy**

Information Literacy: Concept and Types

Information Literacy Models Concept & Importance of User Education

User Education Methods

### **Information Technology Applications (Practical)**

Digitization

Creation & Maintenance of Digital Library

Library Automation

## **School of Library and Information Science Central University of Gujarat**

### **Knowledge Society**

Evolution of Knowledge Society, Components, Dimensions, and Indicators of Knowledge Society. Data, Information, and Knowledge-Conceptual Differentiation; Knowledge based Institutions: different kinds; objectives and functions; library as a social and knowledge institution

Information and communication: Models, channels and barriers; Diffusion of Innovations; trends in scientific communication

History of Libraries: ancient, medieval, modern

Five Laws of Library Science

Legislative framework for library development and information provision; Public Library legislation; Delivery of Books Act; Right to Information Act; IPR and Copyright

National Information Policy; Components; National Knowledge Commission, professional ethics, professional bodies and association (National and international). Information profession; Professional Ethics, Professional Bodies (national and international) and their activities.

Information Literacy: Purpose, functions, objectives and models. Information Literacy – Global Perspectives

### **Knowledge Organization I: Classification**

Universe of Subjects: Formation, structure and development of subjects

Library Classification: Meaning and Purpose; Historical Perspectives, Mapping of Universe of subjects in major schemes of Library classification – Dewey Decimal Classification, Universal Decimal Classification, Library of Congress Classification and Colon Classification.

General Theory of Classification; Normative Principles; Three planes of work; Five Fundamental Categories: PMEST; Facet Analysis- Postulates; Principles of facet sequence. Principles of helpful sequence.

Call Number and its components

### **Knowledge Processing I: Cataloguing**

Purpose, function and objectives of library catalogue; Library catalogue and similar other tools:

Bibliographies, Publisher's catalogue, Accession list and Shelf list

Evolution of the physical forms of the library catalogue

Inner forms of library catalogue

Standards for Bibliographic Organization; International Standard Bibliographic Description (ISBD),  
Functional Requirements of Bibliographic Records (FRBR)  
Catalogue Codes – Classified Catalogue Code, Anglo - American Cataloguing Rules 2 and Resource  
Description and Access (RDA)

Single Personal Authorship; Joint Authorship; Works of more than three Authors  
Collaborative Works; Series; Multivolume Works; Pseudonymous Authors  
Composite Works  
Corporate Authorship: a) Government Publications b) Proceedings of Conferences, Seminars, Workshops, etc.  
c) Other Corporate Bodies: Organizations, Institutions, Societies, etc.  
Uniform Titles; Sacred Scripture; Anonymous Works

### **Information Sources and Services**

Information sources –Documentary and Non-Documentary; Primary, Secondary and Tertiary Sources and  
their characteristics. Regional language information sources and services; Govt. Information Sources  
Different categories of information systems: libraries, documentation centres, information clearing houses,  
referral centres, information analysis centres, databanks etc; their structure, functions, products, and services;  
National & International information organizations, systems, centres, programs  
Electronic Resources: e-Journals, e-Books, Online Databases, Digital Reference Collection and Institutional  
Repositories, e-print archives, ETDs  
Web Resources: Blogs, Portals, Wikies, Subject Gateways & Virtual Libraries, Social Book Marking etc.  
Information Needs, use and user studies, information literacy. Information Products and Services: Document  
Delivery, Current Awareness sources and services; Trend Reports, Information Analysis and Consolidation  
Products and services.  
Reference and Information Services, Virtual/Digital Reference Services  
Recent Trends: E-alerts, Web alerts, Web 2.0 tools for delivering information services and others

### **Information Communication Technology**

Evolution of digital computers; Computers hardware, software, storage devices and their application in  
libraries  
Operating Systems: Linux, Windows, Shell programming  
Computer software applications - MS Office and Open Office  
Hypertext, Hypermedia, Multimedia and File Formats, User Interfaces and data visualization  
Networks and networking concepts; Internet; World Wide Web; Search Engines Open Source Software  
applications in libraries  
Linux and Windows installation  
MS Office and Open Office  
Web searching and evaluation

### **Management of Libraries and Information Centres**

Library as a System; Components and subsystems of a Library and their inter-relationships; Acquisition  
and Collection Development: policy, procedures, Document circulation – functions, procedures, and  
methods, Serials control – functions, procedures and methods, Stock verification. Organizational structure,  
Library Authority and Library Committee.  
Management functions – planning, organizing, staffing, leading, Budgeting and controlling. Project  
Management: PERT, CPM, Management of change; Reporting: Types of reports: Annual Report-

compilation, contents and style, Library statistics. Preservation of Library materials, Library Building, Library space planning,  
Human Resource Management: Delegation, communication and participation, Job description and analysis; Job evaluation, Inter-personal relations, Recruitment procedures, Motivation; Group dynamics, Training and development, Discipline, grievances, performance appraisal.  
Financial Management: budgeting and different types of budgets- PPBS, ZBB, Line Budget; Costing, cost and benefit analysis, Resource mobilization. Outsourcing.  
Performance parameters: Measurement, Reengineering. Time and Motion Study, SWOT; TQM - Definition, concept, elements, Quality audit, LIS related standards, Technology management, ISO 9000 series  
Marketing of library & information services

## **Information Storage and Retrieval**

Information Retrieval and Vocabulary Control: Information Retrieval: Concepts, Features, Components & process, Genesis & Development  
Subject Indexing and Vocabulary Control: Concept & Need, Derived Indexing: Printed indexes & Database access systems; Subject Heading Lists, Thesaurus: Structure and Functions and design, Trends in Indexing: Automatic Indexing etc.; Name Authority Control & Access Points  
Subject Indexing Techniques: Chain Indexing, Postulate Based Permuted Indexing System(POPSI), Preserved Context Indexing System(PRECIS); Post-Coordinate Indexing Systems: Concept, Uses & Types: UNITERM Indexing System, Optical Coincidence System, Batten System, Citation Indexing: Concept and development. Online Citation Indexing Tools: SCOPUS, Web of Science, Google Scholar, CiteSeerX Beta etc.  
Operational IR Systems: From OPACs, Federated Search Systems, Discovery Systems etc. Web: Retrieval Systems: Web Information Retrieval System: Features; Information Retrieval Models and their Applications; Models based on Input/Output; Data retrieval model, Information retrieval model, Knowledge retrieval model  
Models based on Theories and Tools: Boolean model, Vector space model, Mathematical model  
Web Search Strategy: Characteristics of Web Information Retrieval, Web and Information Retrieval Tools: Need, Types and Features, Information Retrieval Process:  
Techniques & Refinement, Information Retrieval Beyond Text, Information Retrieval Beyond English  
Evaluation of Information Retrieval Systems: Methods and Parameters; Current Trends in IR Systems, research and development  
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## **Knowledge Organization II: Classification**

Canons for classification.  
Notation: Kinds, special features  
Relevance of classification in the context of digital libraries  
Trends in Library classification  
Classaurus, automatic classification, Web Dewey  
Ontologies and Folksonomies: OWL and SKOS

## **Knowledge Processing II: Cataloguing**

Bibliographic Standards: MARC, UNIMARC, MARC21, MARC XML, MARC family of Formats, Authority Files, CCF; ISO 2709; Retro conversion  
Metadata and metadata standards: Dublin Core  
Subject Cataloguing: Vocabulary control devices. Lists of Subject Headings, Thesauri. General theory of subject indexing languages (SIL)

Co-operative Cataloguing, Centralized Cataloguing, CIP, Pre-Natal Cataloguing; Union Catalogue - WorldCat, IndCat

Recent trends in cataloguing: Copy Cataloguing, Next generation catalogues, Web scale discovery services

Preparing MARC 21 records

□ **Preparing Catalogue Entries (Main, Added and Reference Entries) for Non-Book Materials using Anglo American Cataloguing Rules -2 revised edition.** Assigning Subject Headings (Using at least one Standard Subject Heading).

Serials

Cartographic Materials

Manuscripts

Graphic Materials

Printed Music

Sound Recordings

Motion Pictures & Video Recordings

Micro Forms

Electronic Resources

## **Library Automation**

Library Automation: Definition, need, purpose and advantages.

Planning for Automation: Steps in Automation - Developing a basic technology plan;

Identifying goals and objectives; Describing existing library services and technology;

Assessing needs and priorities.

Understanding the features of some Library Management Software package. Selection criteria for Library management software. Hardware and Software selection; and Implementation.

Areas of Automation: Design and development of automated system for Acquisition, Cataloguing, Access to Catalogue (OPAC), Circulation and Serial Control.

Barcode Technology: Meaning, need, purpose and advantages. Types of barcodes and their application. RFID technology and its application in libraries.

Integrated Library Systems: SOUL, WINISIS, Koha

Artificial Intelligence (AI): Concept, use. Expert Systems / Knowledge based systems and its application in Libraries and Information Centres

Designing Library Website

## **Digital Libraries**

Research – concept, meaning, need and process of research; types of research: fundamental and applied including inter-disciplinary and multi-disciplinary approach. Research Design – conceptualization and operationalization; Identification and formulation of problems; Hypothesis: Nominal and operational definition, ethic aspects. Review of Literature, Writing research proposals.

Research Methods – scientific, historical, descriptive, survey methods, case studies, Delphi & experimental methods.

Research Techniques and Tools sampling and methods sampling. Tools for data gathering -- Questionnaire, interview, observation, methods of data analysis using statistical methods and techniques including Bibliometrics, Scientometrics, Informetrics and Webometrics

Use of statistical package: SPSS or SAS or any other well-tested and proven packages.

Research Reporting – structure, style, concepts, guidelines for research reporting, style manuals – Chicago, MLA, APA etc. and Current Trends in Library & information science Research.



## **Web Technologies and Web-based Information Management (Theory and Practice)**

Foundations of Digital Libraries; Open Access and Institutional Repositories; Multilingual Digital Repositories.

Digitisation: Planning and Implementation, and Best Practices. Preservation of Digital Objects: PREMIS. Digital Rights Management (DRM), Copyright issues

Standards and Protocols for Digital Libraries: Character Encoding Standards, Metadata Standards, Persistent Identifiers & DOI, OAI-PMH

Users and Usage of Digital Libraries: Quantitative and Qualitative Evaluation

Digital Library Initiatives: National and International; Case studies of digital libraries

## **Library Internship in a Recognized Library/Information Centre**

Web Technologies: Concepts and Principles. Markup Languages: HTML, XML, DHTML, XHTML

Network Protocols: TCP/IP, FTP, SSHD, SOAP, etc.

Web Programming: java scripts and JSP

Database connectivity: ODBC, JDBC, Web servers: Apache etc.

Open URL and Federated Search Engines, Discovery Services, Access tools – remote/web access, Access Management Technology, Relevant W3C Standards and Protocols.

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Search Engines, cluster based search engines and building search engines. Search Algorithms

Web 2.0: RSS feeds, Blogs, Wikies etc; social media

CMS (Content Management Systems): Concept, Types and Principles, CMS Architecture, CMS Software; Content Creation for Web; tools for content creation

Digital Library: Tools and techniques and Software

Digital Preservation and Selection of Materials for Digitization

Open Source Software for Digital Library Creation

Creation of Digital Library using at least one Open Source Software using open source software like DSpace, GSDL, Fedora, Eprints, etc.

## **Knowledge Management**

Knowledge Management: Concepts, types, theories and principles

Knowledge economy – features / characteristics, national information infrastructure, complex nature of knowledge, taxonomy of knowledge & Knowledge Management (KM) strategies.

KM Systems: infrastructure. Intellectual capital – components, measurement, KM measurement.

Technology for KM -- KM enabling tools, knowledge portals and its characteristics, knowledge sharing and various sharing models, knowledge culture etc.

Strategies for implementing KM practices. Case Studies

## **Informetrics and Scientometrics**

Concept and Definition of Bibliometrics, Scientometrics, Informetrics and Webometrics. Pioneers in Bibliometrics, Scientometrics, Informetrics and Webometrics Limitations of Bibliometrics, Scientometrics, Informetrics and Webometrics

Bibliometrics Laws. Bradford's Law, Zipf's Law, Lotka's Law, 80/20 Rule, Ortega Hypothesis. Mathew effect in Reward System, Intellectual Epidemics as a model of Scientific Communication

Indicators of publication productivity. Factors influencing publication productivity Publication Productivity of Institutions and National research activity. Publication productivity by discipline Publication productivity dynamics of institutions, regions or countries, journals and Individuals Scientific Collaboration. Co-authorship as a measure of scientific collaboration. Collaboration rate. International Collaboration

Indicators of citation Impact. What is citation? Reasons for citing. Citation Indexes. Citation databases (Scopus, Web of Knowledge, Google Scholar etc.). Application of citation indexes. Factors that influence citation impact. Journal citation measures: the impact factor, immediacy index, half-life etc., Relative citation indicators Role of H-Index in evaluation. Co-Citation coupling and bibliographic coupling analysis.

Emerging Trends in Bibliometrics, Scientometrics, Informatics, Webometrics and Altmetrics

## **Social Science Information Systems**

**Information System:** Basic Concepts, Components, Types and Characteristics of an Information System.

**Structure and Development of Social Sciences:** Definition Scope, Landmarks and research Trends in the disciplines of Humanities, Political Science. Public Administration, Economics, management, Sociology History, Psychology and Education.

**Social Science Information System: Components:** Sources: Types and Media: Print and Non-Print, Electronic and Web Based. Institutions connected with Social Science Information Generation and Dissemination.

**Study of the activities of Social Science Institutes and Organizations:** Evaluation of Existing Information Systems and Networks in Social Sciences at National and International Level: ICSSR, NASSDOC, ICWA, Indian Institute of Management-Ahmedabad, Indian Institute of Public Administration, National Council for Applied Economic Research, National Institute of Public Finance and Policy, TISS, UNESCO, ICHR, London School of Economics and Political Science.

**Social Science Databases:** Critical study of Social Science Databases such as PROQUEST,

## **Community Information Systems**

Information System: Basic Concepts, Components, Types and Characteristics of an Information System.

Meaning, definition, need, scope, uses and implications of Community Information Systems

Survey of an emerging field that covers key principles for working in libraries or the wider non-profit/public sectors as individuals, organizations, and communities harness new technologies and media. Evaluation of Existing Information Systems and Networks in Social Sciences at National and International Level

Application of Information Communication Technologies – Radio (FM and other) TV, Computers, Mobile Technologies and other.

Setting up of Community Information System – Needs analysis, planning, designing, application, executing, and evaluation. Invisible colleges; Folklore; Mass media etc.

Sustainability studies – funding, executing, evaluation, reporting.

Design and development of Information System for NGO's

## **Science Information Systems**

Information System: Basic Concepts, Components, Types and Characteristics of an Information System.

Structure and Development of Social Sciences: Definition Scope, Landmarks and research trends in the disciplines of pure and applied sciences.

Science Information System: Components: Sources: Types and Media: Print and Non-Print, Electronic and Web Based. Institutions connected with Science Information Generation and Dissemination.

Study of the activities of Science Institutes and Organizations at the national and international levels: Evaluation of Existing Information Systems and Networks in Social Sciences at National and International Level. Indian National Science Academy, BARC, Indian Institute of Technology (IIT), Indian Space Research Organization ISRO; NISCAIR, DESIDOC, NCSI, NISSAT, ENVIS, NSTMIS, Biotechnology Information

System Network, National Informatics Centre, International Council for Science (ICSU), CERN, NASA, INIS, ASTINFO, PRISM, etc.

Science Databases: Internet-based scientific information sources and services Critical study of Open source and commercial Science Databases; Web of Knowledge, PROQUEST, Science Direct, Nature, ACS, ASME, IEEE, ACM Digital Library, SCOPUS, INSPEC, Chemical Abstracts, PLoS, arXiv, etc.

## **Agricultural Information Systems**

Information System: Basic Concepts, Components, Types and Characteristics of an Information System.

Structure and Development of Social Sciences: Definition Scope, Landmarks and research trends in the discipline agriculture and allied sciences.

Agricultural Information System: Components: Sources: Types and Media: Print and Non-Print, Electronic and Web Based. Institutions connected with Agricultural Science Information Generation and Dissemination.

Study of the activities of Agricultural Science Institutes and Organizations at the national and international levels: Evaluation of Existing Information Systems and Networks in Social Sciences at National and International Level Indian Council of Agricultural Research (ICAR), National Science Academy, Consortium for e-resources in Agricultural Science (CeRA), Agricultural Science and Technology Information System (AGRIS), FAO, Consultative Group on International Agricultural Research (CGIAR)

Agricultural Science Databases: Internet-based scientific information sources and services Critical study of Open source and commercial agricultural science Databases : PGR portal, ROHU Database, SCOPUS, Web of Knowledge, PLoS, etc.

## **Health Information System**

Information System: Basic Concepts, Components, Types and Characteristics of an Information System.

Structure and Development of Social Sciences: Definition Scope, Landmarks and research trends in the disciplines of health sciences.

Health Science Information System: Components: Sources: Types and Media: Print and Non-Print, Electronic and Web Based. Institutions connected with Health Science Information Generation and Dissemination.

Study of the activities of Health Science Institutes and Organizations at the national and international levels: Evaluation of Existing Information Systems and Networks in Social Sciences at National and International Level. Indian National Science Academy, ICMR, National Medical Library, WHO Library, UN

Health Science Databases: Internet-based health information sources and services Critical study of Open source and commercial Science Databases; Web of Knowledge, PROQUEST, Science Direct, Nature, Medline Plus, PubMed, EBSCO, Chemical Abstracts, PLoS, PsycINFO, Pharmacopeia, International Pharmaceutical Abstracts (IPA), SCOPUS, POPLINE, etc.

# **SCHOOL OF INTERDISCIPLINARY AND APPLIED SCIENCES**

## **CENTRAL UNIVERSITY OF HARYANA,**

## **MAHENDERGARH**

## **Foundations of Library and Information Science**

Unit 1: Information, Knowledge and Society

Meaning and Characteristics of Data, Information, Knowledge, Wisdom and their interrelationship;

Data, Information and Knowledge as Service

Knowledge Society; Role of digital information and data in everyday life  
 Information Cycle: Generation, Storage and Dissemination, Use, Sharing and Publishing of information  
 Sustainable Development Goals (SDGs) and Role of Information as Key Resource  
 Unit 2: Librarianship and Libraries  
 Philosophical Foundations, Five Laws of Library Science, professional Ethics  
 Historical Development of Libraries, Librarianship as profession and emergence of Library and Information Science as discipline  
 Role of Libraries in Socio-economic, Cultural, Educational, Scientific and Technological Developments  
 Types of Libraries and Information Centers: Objectives, Features, Functions  
 Unit 3: Access to Libraries and Information and Legal Issues  
 Access to Library Sources and Resources  
 Open Access movement, OERs, Open Data, Open Science and Open Knowledge  
 The Press and Registration of Books Act; The Delivery of Books and Newspapers (Public Libraries) Act; Copyright Act  
 Right to Information Act; IPR & Legal Issues; Information Technology Act  
 Unit 4: Role of Professional Associations, Agencies, Networks and Information Systems  
 Role of Professional Associations: IFLA, ALA, CILIP, ASLIB and SLA  
 Role of National Professional Associations: ILA, IASLIC, IATLIS  
 Role of UNESCO, UGC and RRRLF, NIC in the promotion and development of libraries  
 Role of Library Networks and Consortia: INFLIBNET, DELNET, OCLC, e-ShodhSindhu, and Information Systems: INIS, AGRIS, ENVIS

## **Information Communication Technology and Libraries**

Unit 1: Fundamentals of Computers  
 Concept, Generations, Types, Hardware  
 Units of Computers: Arithmetic and Logic Unit, Control unit, Input and Output Unit, Memory Unit  
 Software: System Software, Operating Systems-MS-Windows, UNIX and LINUX;  
 Software: Application Software - MS-Word, MS-Excel and MS-Power point; Open Office  
 Unit 2: Library Automation  
 Meaning, Purpose, Historical Development  
 Planning and Implementation of Automation in Housekeeping Operations, Retrospective Conversion  
 Library Management Software: Proprietary, Free and Open-Source Software (FOSS); Evaluation  
 Standards for Library Automation: MARC, 39.50 protocols  
 Unit 3: Data Structure, Algorithm and Databases  
 Data structure: Array, Linked list, Tree, Graph, Map  
 Algorithm: Search, Sort,  
 Database: Relational Database, Field, Dimension, Tables, Queries, Indexing  
 Languages: SQL, Python  
 Unit 4: Computer Networks and Library Networks  
 Computer Networks: Concept, Need, Topologies, Types: LAN, MAN, WAN; Clientserver  
 Wireless Communication: Media, Wi-fi, Li-fi, Satellite Communication, Mobile  
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 Internet: Web Browsers, WWW, E-mail; Search Engines (Meta & Entity); Internet Protocols and Standards: HTTP, SHTTP, FTP, SMTP, TCP/IP, URI, URL; Search Strategies  
 Data Security and Network Security: Firewalls, Cryptographic Techniques, Anti-virus

software, Anti- spyware, Intrusion Detection System

## **Information Communication Technology and Libraries**

### **Unit 1: Basics of Computer**

Setting up Desktop : Screen Resolution, Adjusting the Desktop icons, Power and Sleep mode, Remote Desktop connection

Installation and Use of Operating System: Windows and Linux

Installation and Use of Application software: Word Processing Software, Spread Sheet Management Software and Power Point Presentation Software, Desktop publishing (Page maker, Coral Draw, LaTeX)

### **Unit-2: Storage and Search Strategies**

Data Storage: On Premise and Cloud

Data Migration: Storage Migration, Application Migration

File formats for Data Migration: CSV, EXE, MARC

Search Strategies: Adopting various Search Strategies and Filters

### **Unit 3:Library Management Software**

Installation/Setting up of Library Management Software: KOHA , SOUL

Setting up a Library and Familiarity with Library Management System Software Modules

Generation of Various Reports

Barcode, RFID, NFC (Near Field Communication), QR Code, Biometric, Smartcard: Features and Applications.

### **Unit-4: Web Hosting**

Web hosting (domain)

Application Architecture

Website Designing (HTML, JavaScript,) Server Side (PHP, SQL)

Website Designing Tools: Bootstrap, Webflow, Google Web Designer); Wix

## **Academic Library Systems**

### **UNTI I: Role of Academic Libraries**

Concept, Need, Purpose, Functions, and Present set up of different types of Academic Libraries in India

Role of academic libraries in online, blended and lifelong learning

Role of statutory bodies/Institutions like UGC, AICTE, MCI/NMC, PCI, CoA and others in the growth and development of Academic Libraries of higher education in India; Committees and Commissions: Report of the Kothari Commission,

Radhakrishnan Commission, Mudaliar Commission, Ranganathan Committee

Accreditation and Ranking Agencies: Accreditation: NBA, NAAC; Ranking: NIRF, QS World University Ranking, The World University Ranking and others; Finding key features of the top ranked institutional libraries

### **UNTI II: Effective Resources Management**

Manpower Development: Requirement, Qualifications, Recruitment, Job description, job analysis, staff manual with reference to policies of UGC, AICTE and other bodies; Skills and Competencies, Training and Development

Library Finance: Sources Type of Budgets, Methods of financial estimation and budget preparation; resources mobilization

Collection Development: Print and Non-Print including Electronic Documents, using and supporting Development of OERs and MOOCs

Library Buildings: Planning and Standards. Risk and disaster management guidelines, Green Library Building, Building Learning Commons/ Learning Spaces for users and local community

### **UNTI III: Library Organization and Management**

Library authority and leadership role

Centralized v/s Decentralized System: Departmental Libraries;

Organization of Various Sections: Acquisition, Book section, Periodical, Technical, Reference or Help desk, Circulation and Library Management Section, ICT or Digital Learning Centre

Library Furniture, Equipment and Stationaries, Branding and Social Media Presence

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UNIT IV: Resource Sharing, Networking, Consortium and Policies

Concept, Need and Purpose of Resource Sharing, Networking and consortium

National Networks and Consortia: INFLIBNET, e-Shodh Sindhu,

Institutional Repositories (IR): Concept, Need, National and International Academic IRs/ eTDs/Digital Repositories

National Education Policy 2020 and Role of Libraries; Integration of the Library with the Institutional ERP like Samarth, Learning Management System (LMS), SWAYAM MOOCs, IRINS, etc.

## Public Library Systems

UNIT I: Public Libraries

Meaning, Importance, Objectives and Functions; Public Library Movement in India:

Recommendation by S.R. Ranganathan

Agencies for Development of Public Libraries: UNESCO, IFLA; Role of Raja Ram Mohan Roy Library Foundation (RRRLF) and National Library (Kolkata), Ministry of Culture GOI, National Missions- National Mission on Libraries, National Mission for Manuscripts, National Literacy Mission, NPTEL

Public Library System: National; Regional and State; Library Governance and Role of Public Library in lifelong learning

UNIT II: Organization and Administration

Collection Development: Print, Non-print and Online Database

Manpower Development: Qualification, Requirement, Job description, Job Analysis and Staff Manual

Public Libraries Finance: Source, Budgeting, Accounting and auditing; Library

Building: Planning, concept of modular building and Library Furniture

UNIT III: Automation, Resources Sharing and Services

Library Automation: Automating the house-keeping services in various sections in the public libraries

Resource Sharing and Networking, Integrated public library system

Community Information Service; Library Services to Special Group of people including physically handicapped, mentally challenged, visually impaired, prisoners and children

UNIT IV: Policies and Legislation

Library & Information Policy: Library & Information Policy at National and International level in India, Advisory Committee for Libraries, National Knowledge Commission, National Education Policy 2020 and Public Library

Library Legislation: Need, Purpose, Objectives and Model Library Act

Library Legislation in India: Structure and Salient Features

## Special Library Systems

UNIT I: Special Libraries

Concept, Role, Characteristics and Functions of Special Libraries

Development of special libraries in USA, UK and India

Role of Special Libraries Association of India, UK and USA  
Changing Role of Special Libraries: Case Studies  
UNTI II: Effective Resources Management  
Manpower Development and Recruitment: Qualifications, Job Description and Staff Manual  
Collection Development and Management of Government Documents, Maps, Manuscripts, Newspaper Clippings, Serials, specifications (patents and standards) Technical Reports and Theses  
Financial Management and Auditing: Sources of Finance and Budgeting Techniques, Accounting, Auditing  
Library Building: Library Building: Principles, Planning and Features  
UNTI III: Information Services  
Support for the Intelligent Organization, Self-Support Services  
Information Services: Bibliographic, Current Awareness (CAS), Alerts, Digest, Documentary Delivery, Indexing, Abstracting, Referral, Selective Dissemination (SDI), Translations, Consultancy  
Information and Content Analysis, Consolidation and Repackaging, Trend Reports  
Excellence in special library services and products  
UNTI IV: Resource Sharing and Marketing of Information  
Resource Sharing Concept, Areas, and Factors, elements and process  
Resources Sharing Networks: RLIN, OCLC, etc  
Marketing of Information: Concept, marketing plan, Marketing Strategies, Social Media Strategies  
Value of Information, User Benefits, ROI, Evidence Based Librarianship

## **Learning Skills**

Unit-1: Introduction to Learning  
Meaning of learning, Nature of Learning, Sequence of Learning, Teaching learning process, its relationships (with studying, teaching, education),  
Learning Process, Learning Trajectories  
Different types of learning (Enquiry-based learning, Activity-based learning, experiential learning, Resource Based Learning, Outcome Based Learning, Guided Learning, Work Based Learning, Individual and Collaborative Learning)  
Learning Behaviour: Perceptions and Reality; Human Behaviour  
Unit-2: Learning Opportunities and Resources:  
Understanding Learners, Learning Needs, Art of Learning and Unlearning  
Learning as Life Skill, Learning to Learn, Lifelong learning,  
Avenues for Learning: Class, Sports complex, Laboratories, Clubs and cells,  
Learning Resources: Media and information management, Online education, Web-based resources, OERs, Libraries, Practical training, Dissertations and reports  
Unit-3: Twenty First Century Learning Skills  
Critical thinking and Creative thinking  
Communicating and collaborating  
Learning as career  
Mapping learning requirements for the present time and future  
Unit- 4-Improving Learning Skills  
Identify weak areas; Practice better habits in your daily life;  
41 | P a g e  
Take an appropriate course; Participate in volunteer opportunities, finding meaning within the opportunity one gets  
Adhering to datelines, working in teams, adapting to environmental changes, highlighting learning skills in the resume, interview

Assess yourself in the group, with the seniors, evidences of practice of learning

## **Media and Information Literacy**

### **Unit-1: Introduction**

Definition of Media, Information, Technology

Digital Literacy; Media and Information literacy

Meaning and Development of Traditional and New Media

Types and Characteristics of Traditional and New Media, Fusion between Traditional and New media

### **Unit-2: Information Sources/ Resources**

Sources of Information; Mass Media, Libraries, Archives, Internet, etc.

Role of various Information Source/Providers

Locating the Sources; Retrieve sources from a Variety of Information Systems

Evaluate / Analyse / Relate/Interpret Sources, Messages and Information; Select

Appropriate Sources; Evaluating Sources; Sharing and Publishing Avenues

### **Unit-3: Media and Information Literacy**

Knowledge of available Communication and Information Resources, Media Communication, Information Chain

Basic Principles such as Freedom of Expression and Information

Reflections on Learning, Metacognition

Enquiring and Engaging in Research Skills and Processes, Critical Thinking,

Pluralism of Ideas/Respect of others' Opinions, Tolerance, Respect of Authorship,

Social Responsibility, Wise use of Information

### **Unit-4: Legal, Ethical, and Societal Issues in Media and Information**

Copyright, plagiarism, computer addiction

Cyber bullying, dangers of internet use, 'Fake news'

Information overload

Obsession of information, media and social issues

## **Indian Ethos and Ethics for Information Professionals**

### **Unit-1: Professional Ethics**

Introduction to professional ethics and values

Code of professional ethics: National and International

Librarianship as a service profession

Library philosophy as guide for values and ethics

### **Unit-2: Ethical dilemma**

Ethical values towards institution/society and the library

Ethical values towards staff and users

Ethical values towards other libraries, associations and profession

Ethical values towards the issue of plagiarism, computer/internet filtering, user privacy, copyright, censorship, free and open access

### **Unit-3: Self-management as Ethical Practices in Indian Ethos**

(For self-discipline and personal development, the following lessons from ancient Indian sources and leaders for motivation to be ethical)

### **Unit-4: Indian value system and professional ethics for librarianship**

Ethics for LIS managers

Ethical Philosophy- Indian perspective

Need for Spiritual Values in LIS Management

Holistic approach to ethics for Library and Information Professionals



## **Knowledge Organization and Retrieval-I:**

### **Library Classification**

Unit 1: Library Classification

Introduction to Library Classification: Concept, Objectives & Functions

Call Number: Class number, Book Number and Collection Number

Modes of Formation of Subject

Notation & Five Fundamental Categories

Unit 2: Library Classification Scheme & Current Trends

Types of Classification Schemes: Enumerative, Faceted and Analytico-Synthetic

Normative Principles of Library Classification

Modern Knowledge Origination Tools: Thesauri, Taxonomies and Folksonomies

Semantic Web: SKOS and OWL, Reclassification

PART I: Construction of Class Numbers for documents of different disciplines / subjects using Colon Classification 6th Revised edition

Dealing with Basic Subjects, complex subjects, complex isolates and complex array isolates

Use of Anteriorising and Posteriorising Common isolates, Language isolates, Space isolates & Time isolates

Use of different Devices

PART II: Construction of Class Numbers for documents of different disciplines / subjects using Dewey decimal classification 22nd/23rd edition

Analysis of a work; direct approach; Main classes, Divisions and Sections

Using synthetic features: Add from schedules

Use of Table 1 'Standard Subdivisions'; Table 2 'Area'; Table 3 'Subdivisions of individual literature'; Table 4 'Subdivisions of individual languages'; Table 5 'Racial, Ethnic, National Groups', and Table 6 'Languages'

## **Knowledge Organization and Retrieval-II: Library Classification**

Unit 1: Library Catalogue & Codes

Introduction to Library Catalogue: Concept, Objectives & Functions

Forms (Kinds): Physical and inner form of Library Catalogue

Classified Catalogue Code with additional Rules for Dictionary catalogue code (CCC)

Anglo-American Cataloguing Rules -2(AACR-2) & Resource Description and Access (RDA)

Unit 2: Bibliographic Description & Controlled Vocabulary

Standards for Bibliographic Description: ISBDs, FRBR, CCF

Bibliographic Record Format: MARC, UNIMARC

Vocabulary Control – Concept, Design

Subject Cataloguing: Techniques for Deriving Subject Headings

PART 3: Preparing Catalogue Entries (Main, Added and Reference Entries) for Books (Monographs) using Anglo American Cataloguing Rules -2 revised edition and Assigning Subject Headings to all entries (Using at least one Standard Subject Heading)

Single Personal Authorship; Joint Authorship; Works of more than three Authors

Collaborative Works; Series; Multivolume Works; Pseudonymous Authors

Composite Works

Corporate Authorship

Organizations, Institutions, Societies

Uniform Titles; Sacred Scripture; Anonymous Works

PART 4: Preparing Catalogue Entries (Main, Added and Reference Entries) for Non-Book Materials using Anglo American Cataloguing Rules -2 revised edition. Also

Assigning Subject Headings (Using at least one Standard Subject Heading)  
Serials  
Cartographic Materials  
Manuscripts  
Graphic Materials  
Printed Music  
Sound Recordings, Motion Pictures & Video Recordings

## **Management of Libraries and Information Centers**

Unit 1: Principles and Functions of Management  
Concept, Definition, Functions and Principles of Management, and Schools of Management Thoughts  
Change Management and Total Quality Management  
Marketing as Philosophy approach  
Scope and Application of Management Approaches and in L& Centers  
Unit 2: Integrated Library Management System  
Acquisition Management: Selection, Acquisition, Vendor's Communication, Billing and Processing  
User Services Management: Membership Services, Circulation, Alerts, Document delivery, customized products and services, Remote Access, Discovery Based Services  
Access Management: Shelving, Stock Verification, Security issues, Barcode, RFID, Smart cards,  
Stock Management: Stock verification, Maintenance and preservation,  
Information Management: Library Statistics and Library Analytics, Annual report  
Unit 3: Planning Perspectives  
Strategic Planning: Goal Setting, Policy making, Forecasting  
Operational Planning Techniques (Use of planning tools like Gantt chart, PERT/CPM)  
Financial Planning (sources and generation of income) and Financial Management (Budgeting, Accounting, Auditing)  
Space Planning and Disaster Planning for library and information Centre  
Event Planning and management  
Unit 4: People Management  
Team Management in library and information Centre, Library Managers and their roles  
Analyzing performances of staff  
Motivating employees and users, Self-management for library managers  
Human resource development, Outsourcing and hiring of staff

## **E-Resource Management**

UNIT I: Electronic Resources Collection Development  
Concept, Need, Characteristics, Benefits and Drawbacks of e-resources  
Types of e-Resources: E-databases, E-journals, E-books, Linking Technologies, etc.  
Preservation of e-Resources  
Collection Building Process - Formulating Policy  
Budgeting, Pricing, Licensing, Ordering and Receiving, Evaluation of e-Resources  
UNIT II: e-Resources: Negotiations, Licensing, and Access  
Model Licenses and Guidelines for Collection Building  
Negotiation –Concept and Need  
Copyright in the Digital Environment and User Training  
Delivery of e-Resources & Access Management and Authentication  
UNIT III: Consortia

Concept, Need and Purpose of Consortia  
Growth, development of Consortia and steps followed in formation a Consortia  
Collection Building of e-Resources through Consortia  
National and International Consortia: E-ShodhSindhu, IIMs, CSIR and OCLC. ETDs:  
Shodhganga  
UNIT IV: Usage of Electronic Resources  
Management of Information Needs: with alert, document delivery, ask-a-librarian services  
Usage Statistics, e-Resource Usage Analysis  
Standards and Guidelines (COUNTER); Processing, Analysis and Presentation of Data  
Discovery based services

## **Collection Development**

UNIT I: Collection Development  
Collection Development – Concept; Goals and Methods  
Components of Collection Development  
Theories and principles of Selection by Ranganathan; Drury; Dewey; Library of Congress  
and American Library Association  
Selecting Materials/Basic Tools and Criteria for Selection  
UNIT III: Collection Development Programme and Process  
Collection Development Program  
Universe of Published Materials  
Collection Development Policy/Weeding out Policy  
Budgeting & Finance  
UNIT II: Collection Analysis and Review  
Collection Analysis as a Management Tool  
Approaches to Collection Analysis  
Methods of Collection Based Analysis  
Outreach, Liaison Activities & Marketing  
UNIT IV: Collection Management  
Collaborative Collection Development  
Vendor Relations, Negotiation & Contracts  
Trends and the Future of Collection Development  
Ethical & Legal Issues of Collection Development

## **Preservation and Conservation**

UNIT I: Understanding Preservation  
Preservation: Concept, Need, advantages and challenges  
Types of Preservation – Physical & Digital preservation  
Type Materials to be preserved  
Basic Preservation Management Techniques  
UNIT II: Preservation Theory  
Preservation Principles  
Preservation Theoretical Model  
Open Archival Information System (OAIS)  
Concept of rarity and intrinsic value  
UNIT III: Preservation Planning  
Protective enclosures/measures, Selection, Review of materials for conservation or  
replacement  
Setting priority for conservation and preservation.

Indoor and outdoor Security challenges

User awareness and staff training and evaluating material

UNIT IV: Preservation of Digital Material

Digitization, Formats, Reformatting (copying and imaging) and preservation replacement.

Digitization Project (Project Proposal: budgets, personnel, funding, project plan and output, benefits to the institute / organization)

Technological Tools for Digital Preservation

Case studies

### **Life and Works of S R Ranganathan**

Unit-1: Life and Philosophy of SRR

Early childhood, education and values, Making of Ranganathan (Indian scriptures and individuals),

SRRs approach to subjects-multi-disciplinary, transdisciplinary

Ranganathan's seminal works Five Laws of Library Science and other works in various themes of Library and Information Science

Biographies and autobiography of Ranganathan

Unit-2: SRR's Works-Administration and Routine Work

Key ideas from Library Administration

Library Manual, Organization of Libraries

Library Book Selection

Other related works

Unit-3: SRR's Works- Knowledge Organisation and Processing

Key ideas from Elements of Library Classification, Organisation of Libraries

Philosophy of Library Classification, Prolegomena to Library Classification, Depth Classification, Hidden Roots of Classification, Classification and Communication, Classified Catalogue Code, Cataloguing Practice

Heading and Canons, Subject Headings and Facet Analysis, and other related works.

Unit-4: SRR's Works- Reference Service, Documentation

Key ideas from Reference Service

Documentation: Genesis and Development, Documentation and its facets,

Social Science Research and Libraries, Social Bibliography,

Physical Bibliography for Librarians, and other related works

### **Digital Libraries, Content Management and e-Learning Platforms**

#### **UNIT I: DIGITAL LIBRARIES**

Digital libraries: Definition, Objectives, Scope of Digital libraries

Digital Resources: Nature, Characteristics and types

Design and Organization of Digital Libraries - Architecture, Interoperability, Compatibility

Digital library initiatives: National and International

#### **UNIT II: CONTENT MANAGEMENT SYSTEM**

Content Management System (CMS): Concept, Definition and Scope

CMS Tools

Features and functionalities of its stakeholders

Theoretical Framework of CMS

Evaluation and selection criteria for CMS

#### **UNIT III: E-LEARNING PLATFORMs (LMS & MOOCs)**

Learning Management System: Concept, need, features and functionalities  
LMS Tools  
Stakeholders and their role & responsibilities Modules / plugin of LMS  
MOOCs: Concept, features and functionalities  
Popular MOOCs platforms  
UNIT IV: STANDARD, PROTOCOL AND LEGAL ISSUES  
File Formats and Character Encoding Standards: ASCII, ISCII, Unicode  
Interoperability Standards: OAI-PMH , OAI-ORE  
Metadata: Concept, Types, Metadata Standards: Dublin core, METS, MODS  
Legal Issues – Intellectual Property Rights (IPR), Copyright, Licensing

## **Digital Libraries, Content Management and Learning Management Systems**

UNIT I: BASIC SYSTEM REQUIREMENT OF SOFTWARE  
Commonalities and Uniqueness of DL, CMS and LMS software  
Digital library software  
Content Management Software  
Learning Management Software  
UNIT II: DIGITAL LIBRARY SOFTWARE  
Installation and use of Dspace  
Installation and use of GSDL  
Digitization Process  
Creating Digital Library/ Institutional Repository and Case Studies  
UNIT III: CONTENT MANAGEMENT SOFTWARE  
Installing of open-source CMS  
Customisation of CMS  
Content population using CMS interface  
Case Studies  
UNIT IV: LEARNING MANAGEMENT SOFTWARE  
Installation of open source LMS and Customisation of LMS  
Course creation and Uploading  
Modules: Assessment, Assignment, announcement, Discussion Forum, chat and Enrol  
User  
Case Studies

## **Informetrics and Scientometrics**

UNIT I: Introduction to Bibliometrics, Scientometrics, and Informetrics and related Laws  
Concept and Definition of Librametrics, Bibliometrics, Scientometrics, Informetrics, Webometrics and Altmetrics.  
Theoretical foundation of Bibliometrics and Scientometrics; Limitations of Bibliometrics, Scientometrics, Informetrics and Webometrics  
Classical laws of Bibliometrics - Bradford's Law, Zipf s Law, Lotka's Law, Brookes, Leimkhler, Bookstein Formulation, Bradford-Zipf Distribution; Price Theory, Ortega Hypothesis.  
Garfield's Law of Concentration, Mathew effect, Other models of Scientific Communications  
UNIT II: Evaluative Bibliometrics  
Theoretical foundations of Citation Analysis – Merton's Normative Frameworks, Social Constructivist Theory, Cronin's Micro-sociological view and other views.  
Historical Perspectives of Evaluative Bibliometrics

Publication productivity dynamics - Journal level, Institutional level, Regional level, National level, Global level, Discipline level publication  
Research Collaboration Dynamics-Individual, Institution, Regional, National and Global level.

UNIT III: Bibliometrics/ Scientometrics Indicators and Emerging Trends

Bibliometric data sources: Scopus, Web of Science, Google Scholar; Crossref;

Microsoft academic

Bibliometric Data Collection: Citation counting methods.

Journal citation measures - Journal impact factor, Journal Citation Indicator, Immediacy index, CiteScore, SNIP, Weighted Impact -Eigenfactor, SJR; Half-life; Normalized Impact Indicators

Individual Impact measures-H-Index, g-index, etc; Co-Citation Analysis, Bibliographic coupling.

UNIT IV: Advanced learning in Bibliometrics/ Scientometrics

Scientometrics Analysis Tools- R Software -Bibliometrix, Publish or Perish, Bibexcel, etc.;

Network Visualization Software – Vosviewer; Pajek, Sci2Tools, CiteSpace, etc

Altmetrics and Webometric data source and Analysis

Responsible Research Metrics – DORA declaration, Leiden Manifesto, etc.

## **Advances in ICT and Libraries**

Unit-1: Artificial Intelligence

The Conceptual Framework, A Basic Understanding of how AI and ML work, their underlying Logic and their Limitations;

Understanding the potential societal impacts of AI, especially in the area of Education and Libraries

Scope of AI in Library Functions, Resources and Services

Examples of AI Application in Libraries

Unit-2: Library Carpentry

Impact of big data on the business, society and libraries, need for managing data for the benefit of the stakeholders

The Concept of Data Carpentry and Library Carpentry; Skill requirements (Core- regex, shell scripting, Openrefine; standards- SQL, NoSQL, Python; and advanced(MARCEdit, data reconciliation, named entity extraction, sentiment analysis, etc.

Tools & services related to data discovery (Kaggle, Google Data search, Zenodo, re3data); data repositories (Dataverse, Dryad, Zenodo); and governmental data portals including data.gov.in. and Data

Data wrangling processes through REST/API based data fetching and GREL based data extraction in the open-source data wrangling software called Openrefine.

Unit-3: Research Data Management

Concept of Research Data, Quality of Research Data, Research Cycle and generation of research Data

Presentation of research data, Research Data Storage and Preservation,

Metadata practices and key elements, Citing Research data,

Research Data Management Technologies and Tools: Cloud based and Machine hosted

Unit-4: Application of GIS in Libraries

Introduction to Geographical Information System; Geographical Data in Libraries, GIS Data Standards

Accessibility (Critical GIS, Ontologies, and Semantics),

GIS and Managing collection and services, GIS and LIS education

Understanding how to store, manipulate and analyze GIS data

## **Ranganathan and Modern Library Management**

Unit-1: Ranganathan as Leader in managerial excellence

Areas of modern management for service organization

Modern management thinkers and S R Ranganathan

Worldview on Ranganathan's approach to library management.

Modern Management approaches vis-a-vis Ranganathan's approach

Unit-2: Quality Library Services

Service quality approach in libraries

User Centredness

Process improvement, Standardization,

Other Ranganathan's key ideas from the LIS literature

Unit-3: People Management

Place of staff in the library's Trinity, Staffing,

Team work, Motivation,

Self-management

Other Ranganathan's key ideas from the LIS literature. .

Unit-4: Marketing of Services

Attributes of grocery stores: then and now

Shop analogy in Ranganathan's Literature

Salesmanship, Public Relations and Promotion

An account of literature on modern marketing vis-à-vis Ranganathan's approach to Marketing

## **Ranganathan and Modern Knowledge Organization and Management**

Unit-1: Foundation

Facet analysis

Normative principles

Layers of classification

World view on Ranganathan's role in Knowledge Organisation and management

Unit-2: Faceted Classification in ISKO

Core concepts

Processes

Methods, Approaches and Philosophies

Context and Applications

Unit-3: Ontologies and Taxonomies and Colon ontology

Hierarchies

Domain Conceptualization

Examples from different domain

Unit-4: Modern applications

Semantic web

Linked data

Big data

## **Information Sources, Resources, Systems and Services in Biological and Applied Sciences**

Unit-1: Information Resources

Literatures and resources related to Biological and Applied Sciences  
 Type of Information Resources of Biological and Applied Sciences  
 Database of Biological and Applied Sciences; Free and Open Resources of Information  
 Resources of Biology, Biotechnology and Bioinformatics  
 Network Libraries Based on Biological Science and Applied Sciences ;Resource Sharing  
 and Consortium of Life Sciences, Biotechnology and Medical Sciences  
 Unit-2: Information Systems  
 Types of Information System; Infrastructures  
 Searching and Finding Tools; Literatures Search Tools and Techniques  
 Evaluation Process of Databases & Research Materials for Biological  
 Indexing Databases Scopus, WOS; Impact Factor & Citation Analysis  
 Unit-3: Information Services  
 Reference and Referral Services Under Biological Sciences & Applied Sciences  
 Impact Factor / Citation Analysis / Google Scholar / Orchid / Altmetrics  
 Index Services and basic knowledge about h-index, g-index, i10-index  
 Please review the above sub-titles, which I added 5-7 topics in each unit  
 Unit-4: Information Sources in the Branches of Biological and Applied Sciences  
 Information Sources on Biological and Applied Sciences  
 Information Sources on Biology / Biotechnology / Bioinformatics  
 Information Sources for Life Sciences  
 Exploring Sources for Veterinary Sciences, Plant & Agriculture Sciences, and Health &  
 Medical Sciences

## **Social Science Information Sources, Resources, Systems and Services**

Unit – I: Structure and Development of Social Sciences: Social Sciences  
 Development of Social Sciences disciplines and their relationship with other disciplines  
 Definition, scope, landmarks and research trends in Political Science, Public  
 Administration, Economics  
 Definition, scope, landmarks and research trends in Psychology, Sociology,  
 Definition, scope, landmarks and research trends in History and Law  
 Unit – II: Social Science Institutions engaged in Information generation and dissemination:  
 Role of Social Science Institutions  
 Centre for Policy Research.  
 Indian Council of Social Science Research.  
 Indian Council of World Affairs.  
 Indian Institute of Public Administration.  
 National Council for Applied Economic Research.  
 National Institute of Public Finance and Policy.  
 Tata Institute of Social Sciences.  
 Indian Council of Historical Research.  
 Institute of Economic Growth.  
 United Nation Educational Scientific and Cultural Organisation (UNESCO).  
 Unit – III: Social Science Information System, Associations and Networks  
 Information System: Concept and evaluation  
 Information Associations in Social Sciences  
 International Political Science Association  
 International Sociological Association  
 SocioSite; Social Science Research Network (SSRN)  
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 Social Science Council and Committee



International Social Science Council (ISSC)  
International Committee for Social Science Information and (ICSSD)  
Unit – IV: Social Science Aggregators, Databases and Repositories  
ProQuest, J-STOR, EBSCOhost, J-Gate, Population Information Online (POPLINE),  
Project Muse,  
UNESDOC Digital Library, Shodhganga, Networked Digit Library of Theses and  
Dissertations (NDLTD),  
IndiaStat, UN Data, India Government Data  
Open DOAR (Directory of Open Access Repositories), DOAJ (Directory of Open Access  
Journals)

## **Research Methodology**

### **UNIT I: Basics of Research**

Research: definition, concept, objectives and types  
Hypothesis: definition and types;  
Review of Literature; Literature Search: Print and e-Resources  
Writing Research Proposals

### **UNIT II: Research Methods**

Historical Method and Descriptive Method  
Survey Method and Case Study Method  
Experimental Method  
Ethnography

### **UNIT III: Data Collection Methods and Techniques**

Questionnaire Method  
Observation Method  
Interview Method

Population and Sample: concept, meaning and sampling techniques

### **UNIT IV: Data Analysis and Research Reporting**

Descriptive statistics : Measurement of Central Tendency and Standard Deviation  
Inferential statistic: Parametric and Non-Parametric  
Statistical tool: SPSS (Statistical Package of Social Sciences)  
Research Report – Concept, Structure & style, guidelines and Evaluation

## **Research Data Literacy**

### **Unit-1: Introduction to Research Data**

Importance of Research Data world around us  
Importance of Research Data literacy  
Research Data Lifecycle

Cases of Research Data Management

### **Unit-2: Research Data Lifecycle and Sharing of Research Data**

Research Data Sharing Within the Research Lifecycle  
Value of Research Data Sharing  
Concerns About Research Data Sharing  
Methods for Making Research Data Sharable

### **Unit-3: Research data Practices**

Best Practices for Creating Research Data Files  
Research Data Entry Options  
Research Data Integration Best Practices

### **Unit-4: Creating and Maintaining Research Data**

Research Data Manipulation Options

Define Research Data Quality Control and Research Data Quality Assurance  
Perform Quality Control and Assurance on Research Data at all stages of the Research Cycle

# Central University of Himachal Pradesh

Library Cataloguing

Management of Libraries and Information Centres

Knowledge Organization and Information Processing ( Practical): Cataloguing

Knowledge Organization and Information Processing (Practical):Cataloguing

Foundation of Digital Library

Community Lab for Library and Information Science

Research and Technical library system

Bibliometrics, Informametrics and scientometrics

Section A

Types of library systems

Role of libraries in the contemporary society

National libraries features, functions & activities

Academic libraries features, functions & activities

Special libraries features, functions & activities

Public libraries features, functions & activities

SECTION- B

Knowledge, Information and Data; Types of societies

Data types

Primary, secondary and tertiary information

Types of knowledge □ Agricultural society, industrial society

Knowledge society

SECTION-C

Information sources

Difference between ordinary book and reference book

Difference between Journal and Magazine

Difference between indexing service and abstracting service

Difference between handbook and directory

Difference between thesis and dissertation

Difference between patent and standard

SECTION-D

Computer Fundamentals

Computer Organisation -45-

Generations of Computers

Classification of computers

Computer memory: RAM, ROM

Secondary Storage: Characteristics of Hard disk and CD-ROM, DVDs, Blue-ray Disks Printers and

Scanners; Types and characteristics

Types of software.

# CENTRAL UNIVERSITY OF PUNJAB

## Fundamentals of Library & Information Science

### **UNIT – I: Library as a Social Institution 14 hours**

- Library as a Social Institution
- Development of Libraries in India; Committees and Commissions on Libraries in India
- Types of the Library (Academic, Public, Special, National)
- Role of Library and Information Centres in Modern Society
- Five Laws of Library Science and their implications

Reflection: Compare the different types of libraries

### **UNIT – II: Role of Professional Associations 14 hours and Organizations for the Development of Libraries**

- National Library of India: Concept, Functions and Services
- Professional Associations: ILA, ALA, IASLIC, CILIP, IATLIS, SLA
- Role of National and International Organizations: UGC, RRRLF, UNESCO and IFLA

Reflection: Compare the different professional association and national international organization 7

### **UNIT – III: Library Legislation and Legal Issues 16 hours**

- Library Legislation: Need, Purpose, Objectives
- Library Legislation in India: Structure and Salient Features
- Press and Registration Act
- Delivery of Books (Public Libraries) Act
- Right to Information Act

Reflection: Discuss the different library legislations and Model Library Act

### **UNIT – IV: Information, Communication, and Professional Ethics 16 hours**

- Information Life Cycle
- Professional Skills and Competencies
- Professional Ethics
- Role of Library and Information Professionals in Digital Era

Reflection: Discuss the changing role library and information science professionals

### **INFORMATION SOURCES AND SERVICES**

#### **Unit – I Reference and Information Sources: 16 hours**

- Information Sources - Nature, Characteristics, Types and Formats.
- Documentary and Non-Documentary sources of information
- Categories: Primary, Secondary and Tertiary information sources
- Electronic Information Resources - Subject Gateways, Web Portals
- Databases: Bibliographic, Numeric, Full text, Abstracting, Indexing and Citations Databases
- Evaluation of Reference sources and Web resources.

Reflection: Compare different types of information sources

#### **Unit – II Reference Services 16 hours**

- Reference Service: Concept, types, theories and trends.
- Referral Service: Concept, types
- Reference interview
- Information Users and their Information Needs: Categories of information users, Ascertaining Users' Information need

Reflection: Compare the different types of information needs of users

#### **Unit – III Information Services and Products: 14 hours**

- Information Services and products. : Concepts, definition, need and trends.

- Community Information Services
- Alerting Services: need, techniques and evaluation (CAS and SDI).
- Bibliographic, referral, Inter Library Loan, document delivery and translation services.

Reflection: Discuss the practical aspects of different information services

**Unit – IV National Centres, Information Systems and Services: 14 hours**

- Study of National, International and Commercial Information Systems and Services (NISCAIR, DESIDOC, INFLIBNET, DELNET, ERNET, NKN): Background, their services and products.

**Reflection:** Students will be encouraged to discover new services of national centres | Encouraging students to apply the concepts to real world

**Knowledge Organization – Classification (Theory)**

**Unit – I: Introduction to Knowledge Organisation 16 hours**

- Knowledge Organisation: Basic concept, Nature and Modes of Formation of Subjects.
- Knowledge Organisation - Classification – Theories, Canons, and Principles;
- Species of Library Classification.
- Brief introduction to descriptive and dynamic theory of classification
- Faceted and Enumerative Schemes of classification

Reflection: Student will comprehend the different canons of classification and apply concepts in problem solving

**Unit – II Colon Classification (CC) and Universal Decimal Classification (UDC) 16 hours**

- Colon Classification (CC): Salient features and Components:
- Facet analysis, principles of facet sequence, Fundamental Categories (PMEST), Devices, Notational System, Three planes, Mnemonics, Phase Relations, Common Isolates (ACI and PCT), Rounds and Levels, Index.
- Universal Decimal Classification (UDC): Salient Features
- Nature and Scope, Structure, Notational System, Arrangement and Tables in UDC.
- Common Auxiliary Tables: Scope and Examples.
- Common Auxiliary Signs: Scope and Types
- Master Reference File (UDC MRF): Basic Concept UDC Translations: Current Status.

Reflection: Understand the practical implications of the concepts 13

### **Unit – III Dewey Decimal Classification (DDC) 14 hours**

- Salient Features and Components of DDC: Structure and layout, organization of basic classes, hierarchy, coverage, notation, simplicity, memorability, hospitality, Chain-Structure, flexibility, manual, DDC Summaries, Relative Index, Table Schedules Summaries, entries, notes.

Reflection: Understand the practical implications of the concepts

### **Unit – IV Current Trends and Organization of the Web Resources 14 hours**

- Online Versions: Web Dewey, UDC online and LC Web (Brief Description).
- Brief Introduction of OCLC Classify,
- UDC Online Summary.
- Folksonomy: Basic concept, Tagging and Social Bookmarking.
- Semantic Web: concept, need, purpose, and advantages.
- Simple Knowledge Organisation System (SKOS), Taxonomies

### **Knowledge Organisation – Classification (Practical)**

#### **Unit – I Classification of Documents according to DDC (23<sup>rd</sup> Ed.) 14 hours**

- Classification of Documents representing simple subjects.
- Classification of documents using tables.

#### **Unit – II Classification according to DDC (23<sup>rd</sup> Ed.) 14 hours**

- Classification of documents representing compound subject.
- Classification of documents representing complex subject.

#### **Unit – III Classification of same document according to DDC 16 hours**

- The students will be asked to classify same title according to both DDC.

#### **Unit – IV Classification of documents according to UDC (3<sup>rd</sup> Abridged Ed.) 16 hours**

- Classification of Documents representing simple subjects.
- Classification of documents using Auxiliary tables.
- Classification of documents representing compound subject.
- Classification of documents representing complex subject.

### **Information Literacy in Library and Information Centres**

#### **Unit I: Introduction to Information Literacy 13 hours**

- Information: Characteristics of information; Types of information; Information society, Information literacy models, standards; concept of lifelong learning.

Reflection: Discuss various types of information and compare the different information literacy models

#### **Unit II: Types of Information Literacy 10 hours**

- Digital literacy, Digital divide and information literacy, Media literacy, computer literacy.

Reflection: Discuss different concepts of Information literacy in libraries

#### **Unit III: Information Literacy and Libraries 12 hours**

- Information literacy and types of libraries, Resource literacy, Research literacy.
- Types of Library Users and User Education

Reflection: Compare different types of information literacy in libraries

#### **Unit III: Information Literacy Policies 10 hours**

- International and national initiatives, Policies and guidelines IFLA, ALA, UNESCO, Information literacy skills and best practices.

Reflection: Compare the information literacy policies of different organizations

### **Information Sources in Science and Technology**

#### **Unit I: Information Sources 13 hours**

- Documentary and Non-Documentary Sources; Primary, Secondary and Tertiary Sources of Information.

Reflection: Understand the different information sources in science and technology

#### **Unit II: Reference Sources 10 hours**

- Categories, Characteristics and Usefulness (dictionaries, encyclopedias, yearbooks, directories, biographical sources, geographical sources, statistical sources, sources of current information) Evaluation of Reference Sources.

Reflection: Compare the usefulness of different reference sources 18

**Unit III: Electronic Sources of Information 12 hours**

- Electronic Sources: E-Books, E-Journals, ETDs, Web-OPAC; Subject Gateways/Portals, Databases, Bulletin Boards, Discussion Group/Forum, Multimedia Resources; Search Engines, search strategies, access to information sources.

Reflection: Compare the functionality different search operators

**Unit IV: Information Sources in Science and Technology 10 hours**

- Web of Science, Scopus, Scifinder, Major abstracting and indexing databases in Science and Technology. Open Access Resources like arXiv, ChemXseer, PubMed.

**Fundamentals of Preservation and Conservation of Library Materials****Unit-I Library Materials: Preservation and Conservation 13 hours**

- Need for Preservation and Conservation
- Evolution of Writing Materials
- Palm leaves and Birch Bark: Their Nature and Preservation
- Manuscripts, books, Periodicals, Newspapers, Pamphlets etc
- Non-Book Materials
- Guidelines of National Mission on Manuscripts.

**Reflection:** Understand the different types of library materials

**Unit -II Hazards to Library Materials and Control Measures 10 hours**

- Environmental Factors
- Biological Factors
- Chemical Factors
- Disaster Management

Reflection: Various factors of hazards to library materials and control

**Unit-III Binding 12 hours**

- Different Types of Binding for Library Documents
- Binding Materials
- Binding Process
- Standards for Library Binding

Reflection: Compare the varied types of binding 21



**Unit -IV Restoration and Reformatting 10 hours**

- Material Repair
- Microfilming and Digitisation

**Engineering and Technology Library and Information System****UNIT- I: Engineering and Technological Libraries and their Development 12 hours**

- Objectives and Functions
- History and Development of Libraries with Special Reference to India
- Role of Engineering and Technological Libraries
- Role of Agencies in the Growth and Development of Engineering and Technological Libraries in India

Reflection: Understand the objectives of engineering and technological libraries

**UNIT – II: Collection Development and Management****13 hours**

- Periodicals, Conference Literature, Grey Literature, Patents, Standards, Specifications and Government Publications
- Non-Book Materials
- Electronic Resources and Online Databases

Reflection: Discuss the collection development and management in engineering and technological libraries 23

### **UNIT – III: Library Organization and Administration and Information Services 10 hours**

- Organizational Structure
- Staff Manual, Library Surveys, Statistics and Standards, etc.
- CAS, SDI, Abstracting and Indexing Services Library Bulletin, Newspaper Clipping Services Computerized Services
- Resource Sharing and Networking: INDEST – AICTE Consortium
- Information Literacy Programmes

Reflection: Compare popular alerting services in engineering and technology libraries

### **UNIT – IV: Financial and Human Resource Management 10 hours**

- Determination of Finance, Sources of Finance,
- Types of Budget
- Nature, Size, Selection, Recruitment, Qualification and Training
- Responsibilities and Duties
- Competency Development

Reflection: Compare different types of budgeting techniques in engineering and technology libraries

### **Academic and Special Library Systems**

#### **UNIT- I – Academic Library and Collection Development 8 hours**

- Academic Libraries: Definition, Aims, Objectives and Roles.
- Role of UGC in the development of academic libraries in India.
- Library Collection: Types and Character.
- Collection Development Policy: Concept, Significance and Elements, Patron-Driven Acquisition (PDA).
- Marketing of Academic Library Services and Products.

Reflection: Compare different collection development policies

#### **UNIT- II Financial Management and HRM in Academic Library 8 hours**

- Financial Management: Concept and Sources of finance.
- Library Expenditure: Principles and Classification of Library Expenditure.
- Methods of Financial Estimation.
- Budgetary Standards and Norms.
- Preparation of Library Budget: Calculation of Expenditure,
- Contents of a Budget Document, Principles of Budget-making.
- Auditing: Concept, Types of Audit (Pre and Post Audit).
- Human Resource Management (HRM) in Academic Libraries

Reflection: Discuss the financial management and related concepts

#### **Unit – III Special Libraries 7 hours**

- Special Libraries Concept, role, characteristics, and functions.
- Development of special libraries in India.
- Role of IASLIC.

- Library and Information Policy at National Level in India.

## **Social Science Information Sources and System**

### **Unit – I Structure and Development of Social Sciences**

#### **13 hours**

- **Social Sciences:** Definition, scope, landmarks and research trends in the disciplines of Political Science, Economics, Sociology, Psychology, History.

Reflection: Discuss the research trends in social sciences

## **Unit – II Social Science Information Sources**

### **12 hours**

Evaluation of the following Information sources:

- Print and non-print, electronic and Web-based British Humanities Index. Current Sociology. Historical Abstracts. International Bibliography of the Social Sciences. Political Science Abstracts. Population Index. Social Science Citation Index. Sociological Abstracts. UN Demographic Yearbook. Business Periodicals Index. New Palgrave Dictionary of Economics. Social Science Index.
- Gazetteer of India. PAIS International. Wealth of India. Wilson Social Science abstracts. ECONLIT, PsychINFO, RePEC.

Reflection: Evaluate the different information sources in social science

## **Unit – III Social Science Information Institutions 10 hours**

- Study of the following Social Science Institutions engaged in information generation and dissemination:
- Centre for Policy Research. ICSSR. ICWA. Institute for Defence Studies and Analysis. Indian Institute of Public Administration National Council for Applied Economic Research. National Institute of Public Finance and Policy. Tata Institute of Social Sciences. UNESCO. Indian Council of Historical Research. Institute of Economic Growth.

Reflection: Discuss the information services of various social science information institutions

## **Unit – IV Social Science Information System 13 hours**

- Concept and evaluation. Evaluation of existing Information Associations, Systems and Networks in Social Sciences at national and international level. International Political Science Association. International Sociological Association. Socio Site. International Social Science Council (ISSC). International Committee for Social Science Information and Documentation (ICSSD). Social Science Research Network (SSRN)

## **Scholarly Communication and Information Literacy Skills**

### **UNIT – I: Fundamentals of Information Literacy**

- Descriptions of Data , Information and Knowledge
- Concept of Information Literacy
- Benefits of Information Literacy
- Need for Information Literacy

Reflection: Understand the benefits of information literacy

### **UNIT – II: Types and formats of information sources**

- Printed sources and electronic sources
- Primary, secondary, and tertiary sources
- Published and unpublished sources
- Free and commercial sources
- General and scholarly sources

Reflection: Comprehending the different types and format of information sources

### **UNIT –III: Methods for selection, evaluation and retrieval of information**

- Knowledge organization in Library
- Tools for searching information: Library catalogues, Databases, Search Engines, Subject Gateways and Directories.
- Searching Techniques: Boolean, Wildcard, Truncation, Phrase and Keyword searching.

- Evaluation of Information Resources – Peer Reviewed Literature.

Reflection: Comprehend the social and practical implications of the concepts

#### **UNIT –IV: Academic Social Networking Sites and Databases**

- Citation and Indexing Databases: Web of Science and Scopus
- Reference Management Systems : Mendeley
- Academic SNSs: ResearchGate, Academia.edu, ORCID
- Plagiarism: Concept and Types

Reflection: Compare the different ASNSs

#### **Foundations of Computer & Information Technology in Libraries (Practical)**

##### **Unit I Operating Systems and Application Software**

- Installation and Functions of Different Operating Systems: Window & Linux
- Setting of Desktop, Library Server and its Maintenance
- MS Office: Word, Excel, Access and PowerPoint Presentation

##### **Unit II Database Creation and Library Software**

- Installation and Creation of Databases: Import, Export, Hyperlinks and using XAMP (Apache, MySQL, PHP,)

##### **Unit III Applications of Cloud based Services**

- Google drive
- Drop Box
- One Drive
- Google docs
- Developing websites using open source blogs

#### **Knowledge Organization – Cataloguing and Metadata**

##### **Unit – I Forms of Library Catalogue 16 hours**

- Library Catalogue: Concept, objectives and functions
- Physical forms of Library Catalogue:
- Conventional and Non-conventional, Web OPAC.
- Types of Catalogue: Dictionary Catalogue, Classified Catalogue, Alphabetic-Classified Catalogue, Alphabetic-Subject Catalogue

Reflection: Compare different types of catalogues

##### **Unit – II Catalogue Entries and Subject Cataloguing 14 hours**

- Catalogue Entries: Main entry and Added entries (According to CCC 5th ed. and AACR-2).
- Subject Cataloguing: Meaning, purpose, objectives, approaches (Chain Procedure and Sear's List of Subject Headings).

Reflection: Understand the theoretical aspects of cataloguing standards

##### **Unit – III Normative Principles and Union Catalogue 14 hours**

- Union Catalogue: Concept, purpose, Union Catalogues of INFLIBNET, DELNET and OCLC.
- Selective, Simplified and Centralized Cataloguing. Authority File, Shelf List, ISBN, ISSN
- Canons and Principles of Cataloguing: Their application to CCC and AACR -2 and its revision.

Reflection: Compare the different union catalogues 34

#### **Unit – IV Current Trends in Cataloguing 16 hours**

- Metadata: meaning, purpose, use, & types.
  - Metadata Standards: DUBLINCORE, MARC 21
  - Standards for Bibliographic Information Interchange & Communication: Z39.50
  - Standards for Bibliography Record Formats and Description: ISBD, CCF, RDA, FRBR
- Knowledge Organisation - Cataloguing and Metadata (Practical)**

#### **Unit – I Anglo American Cataloguing Rules, 2nd ed. 1988 part - 14 hours**

- Single authorship. Shared authorship.
- Collections and works produced under editorial direction.
- Works of mixed responsibility (Collaborators).
- Revision of works. Adaptation of texts. Biographical works.
- Pseudonyms. Sacred scriptures and Multi-volume documents.

Note: Sears List of Subject Headings will be followed for Subject Cataloguing.

#### **Unit – II AACR - 2 14 hours**

- Corporate authorship Government bodies: Executive, Legislative, Judiciary; Institutions, Associations, Conferences Proceedings).
- Composite books (With and without collective title page, bound with). Microforms.
- Computer files. Sound recordings. Motion pictures and Video recordings.
- Serials (to be set in question No. 1 only)

Note: Sears List of Subject Headings will be followed for Subject Cataloguing.

#### **Unit – III Classify Catalogue Code, 5th ed. by Dr. S.R. Ranganathan 20 hours**

- Single authorship. Shared authorship.
- Work of mixed responsibility (Collaborators).
- Adaptation of texts and Pseudonyms.
- Multi-volume documents.
- Corporate authorship (Government bodies: Executive, Legislative, Judiciary; Institutions, Associations, Conference Proceedings).
- Composite books (ordinary and artificial).
- Festschrift volumes.
- Serials (to be set in question No. 1 only)

**Note: Chain Procedure will be followed for Subject Cataloguing.**

**Unit IV: Classify Cataloguing 12 hours**

- MARC 21
- LCSH (Library of Congress Subject Heading)

**Information Storage and Retrieval**

**Unit – I Indexing Systems and Techniques 16 hours**

- Assigned and Derived Indexing.
- Pre Coordinate and Post Coordinate indexing.
- Chain Indexing, PRECIS, POPSI. Key Word Indexing:
- KWIC, KWAC, KWOC.
- Concept of Automatic Indexing.
- Citation Indexing: Features of Scopus. Web of Science, Google Scholar

Reflection: Compare the different indexing systems

**Unit – II Vocabulary Control 14 hours**

- Vocabulary Control: Need, Purpose, Functions, types and characteristics.
- Vocabulary Control Tools
- Subject Headings: Library of Congress Subject Headings, Sears List of Subject Headings and Medical Subject Headings, Thesaurus
- Features, Structure and Construction, ERIC, UNESCO Thesaurus. Taxonomies.

Reflection: Comprehend the practical implications of vocabulary control in libraries

**Unit – III Information Searching and Media 14 hours**

- Search Methods and Search Strategy: Boolean Search, Heuristic Search, Proximity Search, Phrase Search, Truncation search etc.
- Information Searching in Different Media: Print, Electronic and Internet.
- Federated Search: Concept and Features.
- Web-Scale Discovery System (WSDS): Concept and Features.
- Data Mining



Reflection: Understand the search methods and search strategy

**Unit – IV Information Retrieval System and Abstracting System 16 hours**

- Abstracting Concept, Definition and types
- Information Retrieval System: Concept, definition, types, characteristics, components of ISRS. Information Retrieval Models.
- Library information retrieval systems
- Evaluation of an Information Retrieval System

**Management of Libraries and Information Centres**

**Unit 1: Schools of Management Thought 14 hours**

- Classical, Neo-classical and Modern management theories
- Principles of Scientific Management
- Fayol's Principles
- Functions of Management (POSDCORB)

Reflection: Understand the social and practical aspects of school of management thought

**Unit – II Library Resource Management 14 hours**

- Library and Information Centers Management - Book Selection Tools and Principles
- Library Acquisition, Technical Processing, Circulation, Serial Control, Maintenance and Stock Verification;
- Preservation and Conservation; Hazards and Control Measures of Library Materials.

Reflection: Understand the concept of Library resource management

**Unit – III - Human Resource Management and Marketing 16 hours**

- Human Resource Management – Planning, Job Analysis, Job Description, Job Evaluation, Selection, Recruitment, Motivation, Training and Development, Performance Appraisal
- Project Management - SWOT, PEST, PERT / CPM.
- Total Quality Management (TQM)
- Marketing of Library Products and Services

Reflection: Understand the concept of human resource management and marketing in library and information centres 40

#### **Unit – IV – Library Planning and Financial Management 16 hours**

- Financial Management in Libraries - Sources of Finance, Resource Mobilisation, Budgeting Methods; Cost Effective and Cost Benefit Analysis, Annual Reports & Statistics; Library Authority and Committee.
- Library Building, Furniture and Equipments; Green Library Building; Information Commons; Makers Space; Security and Safety.
- Management Information System (MIS), MBO, Change Management, Disaster Management, Crisis Management.

Reflection: Understand the library planning and financial management in library and information centres

#### **Foundations of Computer & Information Technology in Libraries**

##### **UNIT – I: Introduction to Computers 16 hours**

- Computers: Generations, Types, Hardware, Input and Output Devices, Computer Architecture
- Data Representation and Storage (ASCII, ISCII, Unicode)
- Introduction to System Software and Application Software
- Operating Systems: DOS, Window, IOS, Linux etc.
- Applications Software: Word Processing, PowerPoint Presentation
- Communication Software: FTP, Email and Messaging

Reflection: Discuss the various aspects of computers generations

##### **UNIT – II Introduction to Communication Technology 14 hours**

- Computer Networks - Topologies, Types of Networks
- Internet - Web browsers, WWW
- Internet Protocols and Standards – HTTP, SHTTP, FTP, SMTP, TCP/IP, URI, URL.
- Hypertext, Hypermedia, Multimedia, Video conferencing, Virtual Reality, Augmented Technologies.

Reflection: Compare the different topologies

##### **UNIT – III: Database Management Systems 16 hours**

- Database: Concepts and Components
- Database Structures, File Organization and Physical Design
- Database Management System: Basic Functions, Potential Uses

Reflection: Understand the concept of database management system

## **UNIT – VI: Internet Technology 14 hours**

- Basics of Internet
- Search Engines and Meta Search Engines
- Internet Search Techniques
- IOT (Internet of things)
- Introduction to Web Servers: Apache Server and Internet Information Server.

### **Knowledge Management**

#### **Learning Outcomes**

After Successful Completion of the course, the students will be able to:

- Conceptualize knowledge management and knowledge economy
- Determine the various strategies deployed in knowledge management
- Examine the tools used in knowledge management systems.
- Justify the importance of Knowledge management in libraries and information centres

### **Unit I -Knowledge Management: Basics 12 hours**

- KM Meaning, Principles, Tools, Components and Architecture.
- Knowledge Economy: Features, characteristics, Need, complex nature of knowledge, taxonomy of knowledge

Reflection: Understand the relationship between different concepts

### **Unit II- Knowledge Management: Strategies 13 hours**

- Capturing tacit knowledge – methods
- Knowledge codification – tools and procedures
- Knowledge Mapping; Knowledge testing; Knowledge transfer

Reflection: Comprehend the methods of capturing knowledge

### **Unit III – Knowledge Management System: Tools 10 hours**

- Data visualization
- Data mining
- Managing knowledge workers

Reflection: Understand the tools of knowledge management

### **UNIT IV – Knowledge Management Portals 10 hours**

- Knowledge Management in Library and Information Centers
- Knowledge creation and knowledge architecture – Nonaka's model
- Types of knowledge; KM Systems

45

Reflection: Understand the application of knowledge management in library and information centres

### **Agriculture Information Source and System**

## **UNIT – I: Agricultural Science Libraries and their Development**

13 hours

- Objectives and Functions of Agriculture libraries
- History and Development of Libraries with Special Reference to India
- Role of ICAR, Committees and Other Agencies in the Development of Agricultural Libraries in India

Reflection: Understand the agricultural science libraries development in India

**UNIT – II: Collection Development and Management**

10 hours

- Periodicals, Conference Literature, Grey Literature, Patents, Standards, Specifications and Government Publications, etc.
- Non-Book Materials
- Electronic Resources and Online Databases

Reflection: Comprehend the collection development and management in agricultural science libraries

**UNIT – III: Library Organization, Administration and Information Services<sup>47</sup>**

12 hours

- Organizational Structure
- Staff Manual, Library Surveys, Statistics and Standards, etc.
- CAS, SDI, Abstracting and Indexing Services Library Bulletin, Newspaper Clipping Services Computerized Services
- Resource Sharing and Networking: AGRIS, INAGRIS, CABI, etc. Information Literacy Programmes

Reflection: Understand various types of information services and networks in agricultural science libraries

#### **UNIT – IV: Financial and Human Resource Management**

**10 hours**

- Determination of Finance, Sources of Finance
- Types of Budget
- Nature, Size, Selection, Recruitment, Qualification and Training
- Responsibilities and Duties
- Competency Development

Reflection: Understand the finance and human resource management in agricultural science libraries

#### **Public Library and Community based information System**

##### **Unit – I – Public Library 13 hours**

- Meaning, importance, functions.
- Role of Public Library in literacy and mass education.
- Public Library Movement in India: Recommendation by S.R. Ranganathan, Advisory Committee for India, UNESCO manifesto, Role of Raja Ram Mohan Roy Library Foundation (RRRLF) and National Library (Kolkata).
- Organisation of Public Library System: National, regional and State, Library governance.

Reflection: Discuss the public library movement in India

##### **Unit – II - Public Library Legislation in India 10 hours**

- Study of salient features of existing library acts in India: Andhra Pradesh, Arunachal Pradesh, Bihar, Chattisgarh, Goa, Gujarat, Haryana, Karnataka, Kerala, Maharashtra, Manipur, Mizoram, Odisha, Rajasthan, Tamilnadu, Uttar Pradesh, Uttaraanchal, West Bengal.
- Library and Information Policies at National and International level

Reflection: Discuss various library legislations

##### **Unit – III Organization of a Public Library 12 hours**

- Manpower Development: Qualifications, recruitment, job description. Job analysis, staff manual.
- Library Finance: Sources, budgeting, accounting and auditing. Library Building and Equipment Planning, Concept of Modular Equipment Building. Library Furniture and Equipment.
- Collection Development: Print, Non Print (including Electronic documents. Organization of various Sections: Periodical, Technical, Reference, Circulation and Maintenance Section.

Reflection: Comprehend the practical and social implications of various concepts

#### **Unit – IV Resource, Sharing and Automation 10 hours**

- Networking, Integrated public library system.
- Library Automation: Automating the house- keeping services in various sections in the public libraries.
- Library services to special groups of people including physically handicapped, mentally challenged, visually impaired, Prisoners and Children.

Reflection: Discuss resource sharing, in-house operations and information services in public libraries

#### **Scholarly Communication and Information Literacy Skills**

#### **UNIT – I: Fundamentals of Information Literacy**

- Concept of Information Literacy
- Benefits of Information Literacy
- Descriptions of Data , Information and Knowledge
- Need for Information Literacy

Reflection: Understand the information literacy

#### **UNIT – II: Types and formats of information sources**

- Printed sources and electronic sources
- Primary, secondary, and tertiary sources
- Published and unpublished sources
- Free and commercial sources
- General and scholarly sources

Reflection: Understand different types of information sources

#### **UNIT –III: Methods for selection, evaluation and retrieval of information**

- Knowledge organization in Library

- Tools for searching information: Library catalogues, Databases, Search Engines, Subject Gateways and Directories.
- Searching Techniques: Boolean, Wildcard, Truncation, Phrase and Keyword searching.
- Evaluation of Information Resources – Peer Reviewed Literature.

Reflection: Discuss the searching and evaluation of information

#### **UNIT –IV: Academic Social Networking Sites and Databases**

- Citation and Indexing Databases: Web of Science and Scopus
- Reference Management Systems : Mendeley
- Academic SNSs: ResearchGate, Academia.edu
- Plagiarism: Concept and Types

#### **Library Automation, Digital Libraries and Networking**

##### **Unit I: Library Automation 16 hours**

- Library Automation Needs, scope and Definition
- Library Automation – Areas, Planning, Selection of Hardware and Software, Implementation and Evaluation
- Standards for Library Automation.
- Barcode, RFID, NFC (Near Field Communication), QR Code, Biometric, Smartcard: Features and Applications.

Reflection: Discuss the different aspects of library automations

##### **Unit – II: Library Automation Standard and tools 16 hours**

- In-house Operations: Acquisition, Cataloguing, Circulation, Serial Control, OPAC, etc. Bibliographic Standards: Dublin Core and MARC 21
- Introduction to Metadata: Types of Metadata
- Library Software Packages: Overview and House Keeping Operations
- Case Studies: Koha

Reflection: Discuss library in-house operation and standards and tools of library automation

##### **Unit – III: Digital Library and Institutional Repository 16 hours**

- Digitization – Planning, Selection of Materials, Hardware, Software, Process, Issues.
- Digital Library: Genesis, Characteristics, Types, Architecture; Standards, Formats and Protocols, DOI.
- Digital Library Initiatives – National and International.

- Institutional Repositories - Need, Purpose, Types and Tools

Reflection: Understand the concept of digital library and Institutional repository

#### **Unit –IV: Networking 12 hours**

- Networking : Need, benefits, topologies
- Internet technology
- Wireless Communication – Media, Wi-fi, Li-fi, Mobile Communication
- Networks Security- Firewalls, Anti-virus software

### **Research Methodology and Statistical Techniques**

#### **Unit – 1 Concept of Research 16 hours**

- Research - Concept, Characteristics, Scope and Research Ethics
- Types of Research – Basic and Applied, Interdisciplinary and Multidisciplinary.
- Research Methods: Historical, Descriptive, Experimental and Delphi.
- Research Design, Review of Literature; Hypothesis; Sampling Techniques.

Reflection: Student will comprehend the difference between different types of research.

#### **Unit – II Research methods and Statistical Techniques 16 hours**

- Methods of Data Collection (Qualitative and Quantitative): Questionnaire, Interview, Observation, Library Records, Scales and Checklist.
- Statistics- Data and Variables
- Correlation, Regression and Cross Tabulation
- Statistical Packages – Spreadsheet, SPSS.

Reflection: Students will understand the different methods of data collection.

#### **Unit – III Research Report Writing 14 hours**

- Research Proposal and Report Writing and Citation Tools
- Reference Management Tools
- Evaluation of Research Report.

Reflection: Students will learn the structure of research proposal and report writing including reference management tools 58



#### **Unit IV Research Metrics 14 hours**

- Metric Studies in LIS - Bibliometrics, Scientometric, Webometrics, Altmetrics;
- Impact Factors – Journal, Institutional and Authors; h-Index, g-Index, i10 Index.
- Research Trends in Library and Information Science

Reflection: Discuss different research metrics

#### **Library Automation and Digital Libraries (Practical)**

##### **Learning Outcomes**

After the Completion of course, the students will be able to:

- Design a fully-fledged automation system for various functions of the library.
- Create an institutional repository for capturing the intellectual output of the organization.

##### **I. Library Automation Practice**

- Koha
- NewGenLib
- Other available software

##### **II. Digital Library Software**

- D-Space
- E-Print
- Greenstone

#### **Evaluation Criteria: Total Marks - 50 Marks**

Continuous Assessment: - 25 Marks

- Practical Record: (10)
- Lab Performance (15)

End- Term Assessment: - 25 Marks

- Conduct of practical (15)
- Viva (10)

#### **Research Data Management and Emerging Trends in LIS**

##### **Unit – I Research Data Management**

15 hours

- Types of data and sources
- Storing, Curation and Preservation of Research Data
- Documentation and Metadata
- Data Management Plan and related tools
- FAIR Principles

Reflection: Students will learn the role of librarians in Research Data Management

##### **Unit – II Research Data Management Services 15 hours**

- Concept of Research Data Management Services, Need and benefits
- Data repositories
- Starting Research Data Management Services
- Planning and organizing the RDM services

- Promoting the RDM services
- Evaluating and refining the RDM services

Reflection :  
Understand the research

data services in libraries

**Unit – II Web Technology and Web Based Services 15 hours**

- Web 2.0 and 3.0 - Library 2.0- Concept, Characteristics, Components; Instant Messaging, RSS Feeds, Podcasts, Vodcasts, Ask a Librarian
- Web – Scale Discovery Services
- Mobile based Library Services and Tools –Library Apps, Mobile Library Instructions, SMS Alerts, Geo-Location, Reference Enquiry

Reflection: Students will learn different Web 2.0 tools and technologies and mobile based library services

**Unit – III Social Web Networks and Content Management Systems etc**  
**15 hours**

- Collaborative Services- Social Networks, Social Tagging
- Content Management Systems
- Research Information Management System
- Research Information Management Tools (IRINS, VIVO)

Reflection: Discuss various social web networks and understand the Research Information Management System

**Overview: ICT, Digital Libraries and Library Automation**

**Unit - I**

- Management - Principles, Functions and Schools of thought.
- Library and Information Centers Management - Book Selection Tools and Principles; Library Acquisition, Technical Processing, Circulation, Serial Control, Maintenance and Stock Verification; Preservation and Conservation; Hazards and Control Measures of Library Materials.
- Human Resource Management – Planning, Job Analysis, Job Description, Job Evaluation, Selection, Recruitment, Motivation, Training and Development, Performance Appraisal; Staff Manual.
- Financial Management in Libraries - Sources of Finance, Resource Mobilisation, Budgeting Methods; Cost Effective and Cost Benefit Analysis, Annual Reports & Statistics; Library Authority and Committee.
- Project Management - SWOT, PEST, PERT / CPM.
- Total Quality Management (TQM) - Concepts, Principles and Techniques, Six Sigma; Evaluation of Services of Libraries and Information Centers.
- Library Building, Furniture and Equipments; Green Library Building; Information Commons; Makers Space; Security and Safety.
- Management Information System (MIS), MBO, Change Management, Disaster Management, Crisis Management.
- Knowledge Management – Principles, Tools, Components and Architecture.
- Marketing of Library Products and Services – Plan, Research, Strategies, Mix, Segmentation, Pricing and Advertising; Management Consultancy.

**Unit - II**

- Computer Technology - Character Representation (ASCII, ISCII, Unicode); Computer Hardware, Software; Storage Devices; Input and Output Devices.
- Types of Software - System Software, Application Software.

- Programming Languages – Object Oriented, Procedural, High Level, Scripting; Web Languages.
- Telecommunication - Transmission Channels, Mode, and Media, ISDN, PSDN, Multiplexing, Modulation, Standards and Protocols.
- Wireless Communication – Media, Wi-fi, Li-fi, Satellite Communication, Mobile Communication. Computer Networks - Topologies, Types of Networks – LAN, MAN, WAN.
- Internet - Web browsers, WWW, E-mail; Search Engines, Meta and Entity Search engines.
- Internet Protocols and Standards – HTTP, SHTTP, FTP, SMTP, TCP/IP, URI, URL.
- Hypertext, Hypermedia, Multimedia, Video conferencing, Virtual Reality, Augmented Technologies.
- Data Security, Network Security, Firewalls, Cryptographic Techniques, Anti-virus software, Anti-spyware, Intrusion Detection System.
- Web 2.0 and 3.0 - Library 2.0- Concept, Characteristics, Components; Instant Messaging, RSS Feeds, Podcasts, Vodcasts, Ask a Librarian
- Collaborative Services- Social Networks, Academics Social Networks, Social Tagging, Social Bookmarking.
- Web – Scale Discovery Services
- National Information Systems and Networks: NISCAIR, DESIDOC, SENDOC, ENVIS, INFLIBNET, DELNET, NICNET, ERNET, National Knowledge Network (NKN), Biotechnology Information System Network
- International Information Systems and Networks: INIS, AGRIS, INSPEC, MEDLARS, BIOSIS, ERIC, Patent Information System (PIS), Biotechnology Information System (BIS).
- Library Resource Sharing and Library Consortia – National and International.

### **Unit – III**

- Library Automation – Areas, Planning, Selection of Hardware and Software, Implementation and Evaluation; Standards for Library Automation.
- Barcode, RFID, QR Code, Biometric, Smartcard: Features and Applications.
- Digitization – Planning, Selection of Materials, Hardware, Software, Process, Issues.
- Digital Library: Genesis, Characteristics, Types, Architecture; Standards, Formats and Protocols, DOI.
- Digital Preservation - Need, Purpose, Standards, Methods, Techniques, Projects (National and International).
- Digital Library Initiatives – National and International.
- Institutional Repositories - Need, Purpose, Types and Tools; Institutional Repositories in India; ROAR, DOAR, SHARPA-ROMIO.

- Content Management Systems – Architecture, Data Integration, CMS Software – Selection, Implementation and Evaluation.
- Application of Artificial Intelligence, Expert Systems and Robotics in Libraries; Social Mobile Analytics Cloud (SMAC); Cloud Computing.
- Ontology – Tools (RDF, RDFS, Potege); Semantic Web, Linked Data, Big Data, Data Mining, Data Harvesting.
- Community Information Services.
- Reference Service – Concept and Types; Referral Services
- Alerting Services - CAS, SDI, Inter Library Loan and Document Delivery.
- Mobile based Library Services and Tools – Mobile OPAC, Mobile Databases, Mobile Library Website, Library Apps, Mobile Library Instructions, Augmented Reality, SMS Alerts, Geo-Location, Reference Enquiry.

#### **Unit – IV**

Research - Concept, Purpose, Functions, Scope and Ethics; Types of Research – Basic and Applied, Interdisciplinary and Multidisciplinary.

Research Methods: Historical, Descriptive, Experimental and Delphi.

Research Design - Selection of Research Problem, Review of Literature; Formulation of Research Problem; Hypothesis – Formulation, Types and Testing; Sampling Techniques.

Methods of Data Collection: Questionnaire, Interview, Observation, Library Records, Scales and Checklist.

Data Analysis and Interpretation - Presentation of Data; Statistical Methods/ Techniques.

Statistical Packages – Spreadsheet, SPSS, Bibexcel, 'R' Statistics.

Research Report Writing and Citation Tools – Structure, Style, Contents, Guidelines; Style Manuals; Online Citation Tools; Reference Style Management Tools; Antiplagiarism Tools; Evaluation of Research Report.

Metric Studies in LIS - Bibliometrics, Scientometric, Webometrics, Altmetrics; Impact Factors – Journal, Institutional and Authors; h-Index, g-Index, i10 Index.

Trends in Library and Information Science Research.

#### **Entrepreneurship in Library and Information Science**

##### **UNIT I Entrepreneurship 4 Hours**

- Entrepreneurial Structure; Nature, Characteristics, functions and its role in economic development
- Entrepreneurship- problems and prospects in India
- Entrepreneurial Behaviour and Skills

Reflection: Understand the practical and social implications of concepts

##### **UNIT II Entrepreneurship and Library and Information Science 3 Hours**

- Role of industries/entrepreneur's associations and self-help groups
- Funding opportunities for start-ups. Basic start-up problems
- Preliminary contracts with the vendors, suppliers, bankers, principal customers.
- Contents of business plan/ project proposal

**Activities:** Understand the practical and social implications of concepts in library and information science

UNIT III Socio-Info-entrepreneurship

**4 hours**

- Social Info-entrepreneurship: concept, definition, implications, planning, implementation, sustainability etc , Case studies
- Study of information systems, planning, designing, structure, workflow, evaluation
- Open access information systems: Indian kanoon, India code
- Commercial information system: LexisNexis, Westlaw
- Reflection: Discuss the impact of entrepreneurship to society

#### **UNIT IV Planning, Evaluation and Sustainability 4 hours**

- Planning, Management and Development of products, Information services etc.
- Assessment of existing information systems (open access and enterprise), different models of information system, Case studies

#### **Business Information System**

##### **Unit – I Business Information: 12 hours**

- Nature and characteristics: Its role, generation and utilization.
- Systems view of business information. Components of Business Information Systems:
- Resources, centres, consultants, suppliers, financial organisations, industrial promoters, etc. Users of business information: Categories, role, functions, and need.

Reflection: Discuss the various aspects of business information

##### **Unit – II Business Information Sources and Products 10 hours**

- Sources of Information: Directories, Digests, Market, Research Reports, Trade Literature, Technical Notes, Company Profiles, Patent, Design and Trade Marks, Standards, Databases. Information services: CAS, SDI, Technical Enquiry Service, other computerised services.

Reflection: Compare business information sources and products

##### **Unit – III Business Information Institutions and Networks 13 hours**

- Information Networks: overview of Business Information Networks.
- Institutional: national and international: Studies related to the activities of: NIDCS, IIFT, ITPO, CII, FICCI, UNIDO, UNCTAD

Reflection: Compare business information networks

##### **Unit – IV Organising Business Information for End user Support 10 hours**

- Database System: Business Measurement System

- Business Planning System. Text Management System: Text retrieval system
- Office systems Management Support Systems: Decision support systems; information centres.
- Resources of Business Information, CMIE

### **Health Sciences Information System**

#### **Unit – I Health Science Information**

##### **12 hours**

- Growth and development of Health Science.
- Types of Health Science libraries/information centres.
- Information Services: Current Awareness Service, SDI service, Indexing and abstracting service, Literature search.
- Users of Health Science information.

Reflection: Students will learn the growth and development of different health science libraries

#### **Unit – II Health Science Information Sources**

##### **10 hours**

- Sources of Information: Documentary: Printed and non-print. (list to be provided by the concerned teacher).

Reflection: Students will learn the different sources of information in health science

#### **Unit –III Health Science Information Institutions**

##### **13 hours**

- National Medical Library.
- WHO. ICMR. Department of Biotechnology.
- Council of Ayurveda and Siddha.
- Council of Homeopathy.
- National Institute of Health and Family Welfare.
- CDRI. CFRI. CFTRI. NIN. NII. NIC



Reflection: Compare the services of different types of health science information institutions.

Unit – IV Information Systems and Networks

**10 hours**

- HELLIS, MEDLARS, BIOSIS. Trends in Health Science Information System. Application of Hypertext, Hypermedia, Multimedia. Expert System and Artificial Intelligence.

Reflection: Compare information systems and networks information services

**Information Analysis, Consolidation, and Repackaging**

**Unit – I Information Analysis, Consolidation and Repackaging**

13 hours

- Concept, need and process.
- Guiding Principles for arrangement and presentation of idea in a helpful sequence.
- Information Consolidation Products: Concepts, types, design, development and methodology.
- Knowledge and skills required for information analysis and consolidation.

Reflection: Understand the information consolidation products

**Unit – II Information Products 10 hours**

- Nature, concept, types, design and development.
- Information News-letters, Hand Books, House Bulletins, In-house Communication, Trade Bulletin, Product Bulletin, State-of-the-Art Report, Trend Report, Technical Digests

Reflection: Compare different information products

**Unit – III Content Analysis, Abstract and Abstracting 10 hours**

- Content Analysis: Concept types and processes.
- Abstract: Definition and types, Characteristics and Qualities of good abstracts.

- Abstracting: need, process.
- Computers and Abstracting.
- Abstracting organizations and Services.

Reflection: Students will understand the content analysis and abstracting concepts

#### **Unit – IV Planning, Management and Marketing of an Information Analysis & Consolidation Unit 12 hours**

- Planning and Management of Information Analysis and Consolidation Units.
- Marketing of Information Concept, need and benefits;
- 5 Ps of Information Marketing;
- Marketing of profit and non- profit organization;
- Trends in marketing of Information Services and Information Marketing in India.

#### **Legal Information System**

##### **Unit – I Legal Information 12 hours**

- Nature and characteristics: Its role, generation and utilization.
- Legal information life cycle: stages, workflow etc.
- Different types of information sources: Primary, secondary and tertiary
- Users of legal information: Categories, role, functions, and need.

Reflection: Learn about different sources of the legal information

##### **Unit – II Legal Information Sources and Services 10 hours**

- Sources of Information: Directories, Digests, Research Reports, Trade Literature, Case laws, Company Profiles, Patent, Design and Trade Marks, Standards, Gazettes, Databases.
- Information services: CAS, SDI, Technical Enquiry Service, other online services.

Reflection: Compare different sources and services of legal information

##### **Unit – III Legal Information Institutions and Networks 13 hours**

- Information Networks: an overview of legal Information Networks.
- Institutions generating legal information : Supreme Court of India, High Courts of India, Tribunals, District Courts, Lok Adalats etc

International organization in legal information dissemination: WorldLII, CommonLII, LIIofIndia 80

Reflection: Compare the services of legal information institutions and networks

#### **Unit – IV Legal Information Management and evaluation 10 hours**

- Database System: Online and Offline legal information databases
- Legal Information System: Planning, designing, maintaining and updating, search operators, search strategies etc.
- Legal information systems: LexisNexis, Westlaw, Indlaw, Manupatra etc
- Legal information literacy

## **Ph.D. (Library and Information Sciences)**

### **RESEARCH METHODOLOGY**

#### **Unit I: Research Approaches 16 hours**

- Research approaches: Logical positivism, phenomenology, ethnography, and triangulation, quantitative, qualitative; types of research and their applications: according to purpose and method
- Historical Research: Primary and secondary sources of information, external and internal criticism of the source
- Descriptive Research: Assessment studies, evaluation studies, ex-post facto studies, replication and meta-analysis.
- Experimental research: Types of experimental research designs: designing and developing appropriate experimental designs for research problems.

#### **Unit II: Quantitative and Qualitative Research methods and Tools 16 hours**

1. Quantitative research methods and tools: Selection, types and application
2. Qualitative research methods and tools: Selection, types and application
3. Mixed Method: Meaning and characteristics, designs and their application

#### **Unit II: Sampling Techniques 12 hours**

1. Process to select a problem and review of related literature
2. Sampling design: Selecting appropriate probability and non-probability sampling techniques for qualitative and quantitative research problems

#### **Unit IV: Data Analysis and Intellectual Property Rights 16 hours**

1. Data analysis in quantitative & qualitative research: Content analysis, inductive, logical
2. Intellectual Property, intellectual property protection (IPP) and intellectual property rights (IPR), WIPO (World Intellectual Property Organization)

### **RESEARCH COMPETENCIES**

#### **Course Content**

- Identify research gaps on a selected research area
- Summarize the findings of different research studies
- Formulate research questions, objectives and hypothesis
- Select appropriate approach and design for different research topics
- Develop tools for research and standardise them
- Ascertain the methods involved in data collection
- Analyse quantitative and quantitative data using appropriate techniques
- Conduct action research

### **E-RESEARCH TOOLS AND TECHNIQUES**

#### **Course Contents**

**Unit I: E-research and Electronic resources 8 hours**

- E-research –concept, advantages, limitations
- Trends in E-research
- E-reference sources: Indexing and Abstracting databases, Shodganga, NDLTD, E-encyclopedias, citation databases etc.

**Unit II: E-research Tools 8 hours**

- Online survey tools
- Visualizing data tools
- Search engines- Academic search engines, general search engines, metasearch engine
- Search strategies- search operators, alerting tools, RSS feeds etc.

**Unit III: Metric Studies and Statistical Tools 8 hours**

- Calculation of Impact Factor for journals, h-index and g-index for authors and institutions, SCImago Journal Rank (SJR) indicator
- Analyzing parametric and non-parametric data using SPSS.

**Unit IV: Academic Social Networking Sites and Reference Management Systems 6 hours**

- Creating Google Scholar Profile, ORCID ID, ResearchGate and Microsoft Academic Search.
- Creating citation styles using Mendeley and Zotero reference management system.

**Transaction Mode:** Lectures, PPT, Collective thinking, YouTube, Discussion  
Research and Publication Ethics

**Unit I Philosophy and Ethics 3 hours**

- Introduction to Philosophy : definition, nature and scope, content, branches
- Ethics : definition, moral philosophy, nature of moral judgements and reactions

**Unit II Scientific Conduct 5 hours**

- Ethics with respect to science and research
- Intellectual honesty and research integrity
- Scientific misconducts : Falsification, Fabrication, and Plagiarism (FFP)
- Redundant publications : duplicate and overlapping publications, salami slicing
- Selective reporting and misrepresentation of data

**Unit III: Publication Ethics 7 hours**

- Publication ethics : definition, introduction and importance
- Best practices/ standards setting initiatives and guidelines: COPE, WAME, etc.
- Conflicts of interest
- Publication misconduct : definition, concept, problems that lead to unethical behaviour and vice versa, types
- Violation of publication ethics, authorship and contributor ship
- Identification of publication misconduct, complaints and appeals
- Predatory publishers and journals

**Unit IV Open Access publishing 4 hours**

- Open access publications and initiatives

- SHERPA/RoMEO online resource to check publisher copyright & self-archiving policies
- Software tool to identify predatory publication developed by SPPU

Journal finder/journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer, Journal Suggester etc.

#### **Unit V Publication Misconduct 4 hours**

- Group Discussions: Subject specific ethical issues, FFP, authorship; conflicts of interest; complaints and appeals: examples and fraud from India and abroad
- Software tools: Use of plagiarism software like Turnitin, Urkund and other open source software tools

#### **Unit IV Databases and Research Metrics 7 hours**

- Databases: Indexing databases; Citation database: Web of Science, Scopus etc.
- Research Metrics: Impact Factor of journal as per Journal Citation Report, SNIP, SJR, IPP, Cite Score; Metrics : h-index, g-index, i10 index, almetrics

## **Central University of Tamil Nadu**

### **Fundamentals of Library & Information Science**

#### **Unit 1: Libraries - Modern Concepts, Role and Types**

Library & Society: Role of Libraries in Socio-economic cultural and Educational development; Information Institutions of Different kinds: Libraries, Archives, Documentation Centres, Information Analysis Centres, Museums and their respective roles and functions; Five Laws of Library Science and their Implications.

#### **Unit 2: Laws relating to Libraries and Information**

Library legislation: need and essential features' Library legislation in India; Model Public Library Act and its features; Press and Registration Act; Delivery of Books and Newspapers (Public Libraries) Act; Copyright Act; Right to Information Act.

#### **Unit 3: Professional Associations and Organizations**

Library and Information Profession: ethics and standards; Professional Associations: National and International; Information and Documentation Organizations: Role of UNESCO, NISCAIR, DESIDOC, NASSDOC, RRRLF, UGC.

#### **Unit 4: Knowledge Society**

Characteristics and attributes of Information / Knowledge Society; Legal and Ethical Issues; Information and Knowledge as Economic Resources; Economics of Information; The digital divide; National Information Policy, National Information Infrastructure.

#### **Unit 5: Users and their needs**

Types of Communication; Theories and Models of Communication; Channels – formal and informal; Information Transfer Cycle; Barriers to Communication Categories of users; information use contexts; Information seeking behaviour;

Theories of Information behaviour: ASK hypotheses; Contributions of Belkin,  
**Information Systems and Services**

Unit 1: Information Systems

Definition, Types and Characteristics; Planning, Designing and Evaluation of Information System.

Unit 2: National and International Information Systems and Services

ENVIS, BIS, PIS; AGRIS, INIS, INSPEC, MEDLARS, OCLC, Web of Science, SCOPUS, SCIFINDER, Google Scholar, BIOSIS, ERIC.

Unit 3: Information Networks and Consortia

Resource Sharing and Networking – Objectives and Scope; Features and Characteristics of Library Networks; Data Networks – NICNET, ERNET, NKN; Library Networks: INFLIBNET, DELNET; Library Consortia: e-ShodhSindhu, NKRC (CSIR-DST).

Unit 4: Information Products and Services

Information services, concept, definition need and trends; Reference and Referral Services, Virtual Reference Service; Alerting services – CAS, SDI; Bibliographic, Document Delivery Services; Reference Interview and search techniques; Information analysis, consolidation and repackaging.

**Personality Development and Communication**

**Skills**

Unit 1: Personality and its Characteristics

Personality Types, Traits and Characteristics; Social, Soft and Influencing Skill Development; Attitude, Appearance, Time and Stress Management Skill.

Unit 2: Communication Skills

Professional Communication Skills (Verbal, Non-Verbal & Written); Communication; Understanding the Audience, Presentation, Body Language, Interpersonal Skills and listening Skills; Technical Communication Skills and Editorial Tools.

Unit 3: Marketing Skills & Public Relations

Marketing Planning and Strategy; Publicity and Promotion; Public Relations and Liaising with Library Authority and Patrons.

Unit 4: Leadership and Vision

Organizational Ability, Team Leadership and Problem Solving; Project Management, Short term and long term planning, Disaster Management, Time Management, Stress Management, Conflict and Crisis Management; Visionary Futuristic Approach, Preparation of Vision Document; Negotiation Skills & Strategies.

**Management of Library & Information Centres**

Unit 1: Schools of Management Thought

Classical, Neo-classical and Modern management theories; Principles of Scientific Management; Fayol's Principles; Functions of Management (POSDCORB).

## Unit 2: Systems Analysis and Design

Systems Theory; Open and Closed Systems; Project Management Techniques – PERT/CPM, Decision Tables; Data Flow Diagram; Quality Management (TQM, Six Sigma); Change Management, Disaster Management, SWOT Analysis.

## Unit 3: Resources Management

Collections, Space, Furniture and Equipment; Human Resources: Job Analysis, Job Description, Job Classification, Selection and Recruitment, Performance Appraisal; Financial resources: Budgeting, Accounting, Auditing; Resource mobilisation.

## Unit 4: Preservation and Conservation of Library materials: Print and Electronic

Environmental, Chemical and Biological factors affecting Library Materials; Conservation Techniques of Library Materials; Binding.

## Unit 5: Marketing of Library & Information Products and Services

Marketing concepts, Market Research, Marketing strategies, Marketing Mix, Market Segmentation, Marketing Plan.

## Information Literacy

### Unit 1: Introduction to Information Literacy

Information: Characteristics of information; Types of information; Information society, Information literacy models, standards; concept of lifelong learning.

### Unit 2: Approaches of Information Literacy

Digital literacy, Digital divide and information literacy, Media literacy, computer literacy.

### Unit 3: Information Literacy and Libraries

Information literacy and types of libraries, Resource literacy, Research literacy.

### Unit 4: Information Literacy Policies

International and national initiatives, Policies and guidelines IFLA, ALA, UNESCO, Information literacy skills and best practices.

## Knowledge Organisation – Classification (Theory)

### Unit 1: Knowledge Organization

Universe of Knowledge/Subject: Nature and Attributes; Modes of Formation of Subjects.

### Unit 2: Theories of Classification

Schools of Classification; Normative Principles; The Three planes of work; Principles and postulates of Helpful Sequence; Facet Analysis; Notation: Kinds and Hospitality; Call Number.

### Unit 3: Classification Schemes

Features of Library Classification Schemes; Salient Features of DDC, UDC, and CC.

### Unit 4: Interdisciplinary Applications of Knowledge Organisation

## Theories

Application of facet theory of knowledge organisation in website designing, faceted search, domain modelling. SKOS.

## Knowledge Organization - Cataloguing and Metadata (Theory)

### Unit 1: Bibliographic Records

Bibliographic Entities and Bibliographic Records; Bibliographic files of different kinds, Bibliographic Objectives.

### Unit 2: Content Description rules and subject headings

Indexing languages, controlled vocabularies, rules for choice of heading, rendering of names, subject heading lists.

### Unit 3: Rules for Bibliographic Description

Principles of Description; FRBR; Standards for Description: ISBD, AACR-2, RDA; Standards for Machine Readable Bibliographic Records – ISO2709 and the MARC family of Formats, MARC- XML.

### Unit 4: Metadata

Types of Metadata; Metadata Standards: Dublin Core, Encoded Archival Description (EAD).

## Knowledge Organisation - Classification (Practical)

### Scheme 1: Dewey Decimal Classification - Practical

Classification of Macro and Micro documents using specified edition of DDC.

### Scheme 2: Universal Decimal Classification - Practical

Classification of Macro and Micro documents using specified edition of UDC.

## Knowledge Organization - Cataloguing and Metadata (Practical)

### Cataloguing Practical

Cataloguing of different kinds of documents – Print and E-resources using appropriate standards – AACR-2R, MARC 21, and KOHA software.

Main and Added Entries of Documents: Single Author, Joint Authors, Editors, Corporate Author, Continuing Resources (Serials), Pseudonyms Author and Anonymous Books, Non-Book Materials (e-resources), Assigning Subject Heading to Documents-Sear's List of Subject Heading

## Technical Communication

### Unit 1: Technical Writing

Communication Process - Types: Verbal, Non-verbal; Formal, Informal; Types of writing; Technical writing: Principles, characteristics; Language as a medium for communication; readability; Audience Research.

### Unit 2: Organization, Layout and Presentation of Information



Learned papers and popular articles, Technical Reports and project proposals; Book design and page layout.

#### Unit 3: Mechanics of Writing

Common problems in spelling, grammar, usage and punctuation; Use of Style manuals – Chicago, APA and MLA; Reference Management Software; Copy editing and proof reading.

#### Unit 4: Oral Presentation Skills

Requirements for Audio Visual presentation.

### Community Information Systems

#### Unit 1: Community Information Services (CIS)

Community Information Services – Definition, Need, Features and objectives; Providers of Community Information Services: Systems, Agencies and Institutions, Libraries as CIS Providers; Role of public libraries, Library Outreach Programmes, Library Publicity and Public Relation; Community Information Systems and Services: Global and National Scenario.

#### Unit 2: Community Information Resources

Documentary Sources: vital statistics, land records, official publications, magazines, maps & atlases, photographs, personal collections, leaflets, local history materials, etc.; Institutional Sources: Publications of local governments and government agencies, educational and religious institutions, NGOs, political parties, labour and peasant organizations, etc; Human Resources: village level leaders, field extension personnel, religious leaders, government officials, etc; Cultural heritage resources and Digital resources.

#### Unit 3: Local Studies

Definition and Scope, Types and kinds of local studies materials; Local studies — Collection and Organization in libraries; Government agencies, local organizations including the calendar of local events; Area Profile — Meaning, Structure and compilation; Local history, Local heritage and Oral history.

#### Unit 4: Planning of Community Information Centres

Community Information Centres: Planning and Role of Information Services; Access to Community Information Services.

Media and Mechanisms; Projects and initiatives on community information organization; Digital Community Information Services; Community Information Portals.

### Information Sources in Science and Technology

#### Unit 1: Information Sources

Documentary and Non-Documentary Sources; Primary, Secondary and Tertiary Sources of Information.

#### Unit 2: Reference Sources

Categories, Characteristics and Usefulness (dictionaries, encyclopedias, yearbooks, directories, biographical sources, geographical sources, statistical

sources, sources of current information) Evaluation of Reference Sources.

### Unit 3: Electronic Sources of Information

Electronic Sources: E-Books, E-Journals, ETDs, Web-OPAC; Subject Gateways/Portals, Databases, Bulletin Boards, Discussion Group/Forum, Multimedia Resources,; Search Engines, search strategies, access to information sources.

### Unit 4: Information Sources in Science and Technology

Web of Science, Scopus, Scifinder, Major abstracting and indexing databases in Science and Technology. Open Access Resources like arXiv, ChemXseer, PubMed.

## Web based Information Resources

### Unit 1: General Introduction

Nature and characteristics of information; Role of electronic resources in scholarly communication; trends in scholarly communication.

### Unit 2: Electronic Information Resources

Definition, characteristics and types; Information Resources on the Internet – E-books, E-journals, information gateways, Open Course Ware, MOOC , DRM, DOI, Link resolvers, open access resources, open data initiatives , preprints, discussion forums, technical reports, OPACs, ETDs, Patents, reference sources, search tools, subject directories, courseware, software.

### Unit 3: Prominent sources in different subjects

Databases: Bibliographic, Full-text, numeric,; Ready Reference Sources – dictionaries, encyclopaedias, yearbooks, directories, biographical sources, geographical sources, handbooks and manuals and statistical sources.

## Introduction to ICT and Application in Libraries (Theory and Application)

### Unit 1: Computer Technology

Evolution of Digital Computers; Number systems; Character Representation: ASCII, ISCII and UNICODE; Basic Components of a Computer: Arithmetic Logic Unit; Control Unit; Memory Unit; Input / Output devices; System Software; Application software. Operating Systems: Linux, Windows; Fundamentals of programming; Introduction to 'C' programming; Objectoriented programming. Java, PHP.

### Unit 2: Introduction to Communication Technology

Tele-communication: Transmission Media, ISDN, PSDN, Multiplexing, Modulation, Standards and Protocols, Wireless Communication; Networking: Topology and levels of networks, Network protocols, Network Models (OSI), Tools and Devices. Hardware requirements; Network Types and topologies: LAN, MAN, WAN, Wireless; Bus, Star, Ring and Token; Setting up Server; Cloud Computing.

### Unit 3: Library Automation

Planning and implementation; Automation of in-house operations – file requirements for Acquisition, Cataloguing, Circulation control, Serials Control, OPAC; Library Security Technology: Barcode, QR code, RFID, CCTV, Biometrics, Smartcard.

Unit 4: Library Automation Packages

KOHA, Hands-on experience on Library Automation Software: KOHA.

## Digital Library and Content Management Systems (Theory)

Unit 1: Digital Library Concepts

Historical Development of Digital Libraries; Digital Library Concepts, Institutional Repositories (National & International Initiatives) Digital Library Architectures; Copyright, IPR and other legal issues . Software, Hardware and best practices; Scanners and scanner types; Optical character recognition and comparative study of OCR software.

Unit 2: Digital library software and Digital preservation

Features and comparative study of Greenstone, D-Space, and Eprints; Harvesting Metadata, OAI-PMH and DL. Standards and File formats, Harvesting Metadata, OAI-PMH and DL Interoperability; Harvester software; Digital Resources; strategy for preservation, unique identifiers, Users and user interfaces.

Unit 3: Introduction to CMS

Definition, Benefits; Principles of CMS; CMS Architecture. System and data integration in CMS. Introduction to content management, Content strategy and planning.

Unit 4: Creating and managing Websites

Adding and managing content, Adding managing functionality, Designing principles, best practices Concept of Search Engine Optimization. Word press, Drupal and Joomla.

## Digital Library and Content Management Systems (Practical)

Unit 1: CMS Practice

CMS and Community Information Systems; document management, records management, digital assets management. Design and Development of Library Website / portal using WordPress; E-content management using Joomla! / Drupal.

Unit 2: DL Practice

DSpace/GSDL.

## Knowledge Management

Unit 1 – Knowledge Economy

Features, characteristics, complex nature of knowledge, taxonomy of

knowledge; Need for Knowledge Management.

Unit 2 -Knowledge Management-Basics

Meaning and definition of KM; Types of knowledge; KM Systems; Knowledge creation and knowledge architecture – Nonaka's model.

Unit 3 – Knowledge Management-Strategies

Capturing tacit knowledge – methods; Knowledge codification – tools and procedures; Knowledge Mapping; Knowledge testing; Knowledge transfer.

Unit 4 – Knowledge Management System-Tools and Portals

Data visualization; Data mining; Managing knowledge workers. Knowledge Management in Library and Information Centers.

## Web Technologies

Unit 1: WWW: An Overview

Evolution and growth of Web; The Invisible Web; Internet Architecture: H/W & S/W Components, Client/Server Principle, Routers, Connection Types, ISP, Protocols, Uniform Resource Locator, IP Address; Domain Name System; Web servers: Apache etc.

Unit 2: Web Design Principles

Mark-up Languages: SGML, HTML, XML; Web Browsers: Internet Explorer, Mozilla Firefox, and Google Chrome.

Communication Tools: E-mail, Discussion Groups, Social Media Basic principles and practices in developing websites.

Tools and technologies associated to website designing, concept of web browsers-Page design and layout , design concepts , Mark up languages SGML, HTML, XML, CSS , Dream weaver, Web publishing and hosting.

Unit 3: Search Engines

Search Tools: Search Engines and Meta Search Engines; Intranet and Extranet: Components, Prerequisites and Services; Design and evaluation of Search engines.

Unit 4: Web Security

Internet Security: Worms, Viruses, Malware, Spyware, phishing, Cyber Crime: Provision in the Indian IT Act; Firewalls, Anti-Virus, Anti-Spyware.

## Integrated Library Management System (ILMS)

Unit-1: Integrated Library Management System (ILMS)

Definition, need, purpose and advantages. Manual system Vs Automated System: Historical Development of Library Automation; MARC I and MARC-II Project; Retrospectives conversion.

Unit-2: Planning for Integrated Library Management System (ILMS)

Systems analysis for ILMS: hardware, software, technical standards etc.; ILMS software – Proprietary software-Libsys, SLIM++, Easylib, and FOSS (Free and Open Source Software) – Koha, NewGenLib, E-Granthalaya, ABCD.

### Unit - 3: Areas of ILMS

Acquisition, Cataloguing, Copy cataloguing from LOC, Wordcat, IndCat, Access to Catalogue (OPAC), WebOPAC, Circulation Section, and Serial Control system; Integration of ILL in ILMS; Trends in ILMS.

### Unit – 4: Barcode Technology and RFID

Meaning, need, purpose and advantages. Types of barcodes : Dumb / Generic barcode and smart barcode – their application. RFID and its adoption and implementation; QR Code Technology; Data Integrate and security in ILMS.

## Academic Library System

### Unit 1: Academic Libraries: Functions and Services

Role of Academic Libraries in Higher Education; Academic Library Services; Academic Library Management; Role of UGC for Academic Library Development.

### Unit 2: Resource Development

Information / Intellectual Resources; Physical Resources including ICT Infrastructure; Human & Financial Resource.

### Unit 3: Staff Development and Continuing Education

Staffing Norms and Standards; Continuing Education Program for Academic Libraries; Personnel Management.

### Unit 4: Library Networks and Consortia

INFLIBNET- Objectives, Functions and Services; MHRD/UGC-INFLIBNET Initiatives for Academic Library Development: e-Shodh Sindhu /and N-LIST.

## Special Library System

### Unit 1: Special Library: Functions and Services

Types of Special Libraries; Special Library Management; Role of CSIR, ICAR, ICMR, DRDO, ICSSR etc.

### Unit 2: Special Library Services

Reference and Referral, Alert services, Web based services.

### Unit 3: Resource Planning and Development

Information / Intellectual Resources; Physical Resources including ICT Infrastructure; Human Resources and Manpower planning; Financial Resource; Planning of Technical Information Units / centers.

### Unit 4: Library Networks and Consortia

Mission oriented networks and consortia with special emphasis on India.

## Public Library System

### Unit 1: Public Library: Functions and Services

Role of Public Libraries: Public Library as Knowledge Centers; Changing Dimensions of Public Library Services; Public Library Management; Organizational Structure of Public Library system; Role of UNESCO, IFLA,

RRRLF, NKC, NLM, IPLM.

Unit 2: Resource Development

Information / Intellectual Resources; Physical Resources including ICT Infrastructure; Human & Financial Resources; Resource Mobilization in Public Library; Library Legislation in India.

Unit 3: Public Library Services

Public Library as community information centre; Web-Based Public Library Services.

Unit 4: Public Libraries: Trends and Development

ICT Application in Public Libraries; Resource Sharing and Networking.

## Intellectual Property Rights

Unit 1: Intellectual Property Rights

Meaning and scope; Categories of IP.

Unit 2: International Treaties on IPR

Berne Convention; Universal Copyright Convention; Stockholm Conference; Paris Conference; WIPO Copyright treaty; GATT; TRIPS.

Unit 3: National Laws

Copyright law of India and its amendments; Fair use provision; Patent law of India and amendments; Other Laws related to IPR.

Unit 4: Implications of IPR

Protection of web-based content; Copyright and libraries; Copy left movement; Creative Commons; Plagiarism.

Unit 5: Open Access movement

History of open access movement, approaches to open access, Stake holders of OA, policies and guidelines. Open access journals and repositories.

## Electronic Publishing

Unit 1: Basics of Electronic Publishing

History of scholarly publishing; Types of e-publications; Migration of peer reviewed journals from print to Web-based; Role of the Internet in access to scholarship; Digital publishing as a catalyst to interdisciplinary communication; Peer review process; Archival options for short and long term preservation; Software options for managing peer review Publications.

Unit 2: Stakeholders of Electronic Publishing

Universities, research institutions, university presses; Libraries and commercial publishers in scholarly communication; Newspapers and the transformation of journalism. Open Access Publishing; Large scale digitization projects at the international level.

Unit 3: Economics of Scholarly Publishing

Economics of digital publishing -- different models; Funding agencies; Copyright: The rights of publishers, authors, and readers; Protecting copyright vs. Creative Commons.

Unit 4: E-Publishing Technology  
Hardware and software, DTP software.

### Information Retrieval

Unit 1: Basic concepts of Information Retrieval

Overview of IR systems; Historical Perspectives; Measures of Performance and Evaluation.

Unit 2: Introduction to DBMS

File management vs. Database management, integrity and security issues. ER Models; Logical Database Design, Relational and Object Oriented Database Models, Normalization. SQL, Implementation in MySQL or PostgreSQL.

Unit 3: Indexing Systems and Techniques

Assigned Indexing vs Derived Indexing : Pre and Post Coordinate Indexing ; Citation Indexing.

Unit 4: IR Models

Boolean, Vector and Probabilistic Models; Alternative IR Models: set theoretic, algebraic models, and probabilistic models (Bayesian networks). Structured Text Retrieval Models: model based on non-overlapping lists and proximal nodes. Text Operations: document pre-processing (word stemming, stop words, thesauri), document clustering.

Unit 5: Information Search

Searching vs. browsing; dynamic query formulation: keyword based querying, pattern matching, structural queries, query protocols; Hybrid, statistical and knowledge approaches: query expansion and refinement based on similarity measures; Designing End User Interface Database searching Practice.

### Research Methods

Unit 1: Research: meaning and types

Concept, Meaning and Process of Research; Types of Research.

Unit 2: Research Design

Types of research design; Identification and formulation of problem; Hypothesis; Designing research proposal; Ethical aspects of research; Literature search: print, non-print and electronic sources; Literature Review.

Unit 3: Research Methods

Scientific Method; Historical Method; Descriptive Method; Survey and Case Study Method; Experimental Method and Delphi Technique; Bibliometrics, Informetrics, Scientometrics, Webometrics and Altmetrics.

Unit 4: Data Collection, Analysis and Interpretation

Collection of Data by Questionnaire, Interview, Observation and Sampling; Presentation of Data-Tables, Charts and Graphs; Interpretation of Data: Frequency Distribution, Measures of Central tendency, Analysis of Time Series, Co-relation Studies and Analysis of Variance; Regression Analysis; Use of Statistical Packages.



## Unit 5: Research Reporting

Structure, style, contents; Guidelines for research reporting; Style manuals; Reference management software; Methods of research evaluation. Current Trends in Library and Information Science Research.

## Informetrics and Scientometrics

### Unit 1: Informetrics

Genesis, scope and definition; Librametry, Bibliometrics, Scientometrics & Webometrics; Bibliometrics laws: Zip's law, Lotka's law, Bradford's Law of Scattering; Bookstein, Garfield, Price laws.

### Unit 2: Growth and Obsolescence of Literature

Various growth models; Aging factor and half-life.

### Unit 3: Application of Bibliometrics

Citation analysis: Bibliographic Coupling and Co-citation Analysis; Science indicators: Impact factor, h-index, g-index, i-10 index.

### Unit 4: Trends and Developments

Current trends and developments in Informetrics and Scientometrics; Software for bibliometric analysis with emphasis on Open sources software.

## Health Information Systems

### Unit 1: Health information

Categories of users and their needs; Overview of Health information stakeholders.

### Unit 2: Information sources

Documentary and Institutional sources.

### Unit 3: Information products and services

MEDLARS, PubMed, EMBASE, Medical Information Resources and services in India, National Medical Library (India).

### Unit 4: Trends and Developments

Current trends and Development in Health information systems and services.

## Agriculture Information Systems

### Unit 1: Agriculture information

Categories of users and their needs; Overview of Agriculture information stakeholders.

### Unit 2: Information sources

Documentary and Institutional sources.

### Unit 3: Information products and services

AGRIS, USDA, Agriculture Information Resources and services in India; CeRA (Consortium for e-Resource in Agriculture).

### Unit 4: Trends and Developments

Current trends and Development in Agriculture information systems and services.



## Industrial Information Systems

Unit 1: Industrial information

Categories of users and their needs; Overview of Industrial Information stakeholders.

Unit 2: Information sources

Documentary and Institutional sources.

Unit 3: Information products and services

UNIDO, Industrial Information Resources and services in India, SENDOC.

Unit 4: Trends and Developments

Current trends and Development in Industrial information systems and services.

## Ph.D. COURSE WORK

### RESEARCH METHODOLOGY

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Unit 1: Fundamentals of Research

- Research: Concept, Meaning, and Definition, Objectives of Research
- Methods of Research: Scientific Research, Historical Research, Descriptive Research, Qualitative Research, Quantitative Research, Pure vs Applied Research,
- Importance/Significance of Research

Unit 2: Planning and Designing of Research Problem

- Selection of Research Problem: Method of Selection, Sources of Problems, Process of Identification, Criteria of Selection, Formulation of Research Problem
- Hypothesis: Concept, Types, Functions, Formulation and Testing of Hypothesis
- Research Design: Steps/Methods of Research Design, Writing the Research Proposal
- Literature Search for Review: Print and Electronic Sources

Unit 3: Research Techniques & Tools

- Survey, Observation, Experimental, Case Study, Delphi, Schedule, Interview & Questionnaire
- Interview & Schedule: Types, Merits & Limitations
- Questionnaire: Types, Merits & Limitations

Unit 4: Sampling & Data Collection

- Meaning and Importance of Data, Sources of Data, Types of Data, Use of Primary and Secondary Data
- Sampling and Data Collection Tools: Sampling Techniques, Sample Design, Sample Size
- Statistical Tests, Analysis of Data (Descriptive Statistics), Interpretation of Tables, Graphical Presentation of Data

Unit 5: Research Reporting & Trends

- Organisation of Report, Structure, Style, Contents, Guidelines of Research Reports

- Research Methods in LIS, Current Developments
- Role of Research in the Development of Scholarship

## INFORMATION AND KNOWLEDGE SOCIETY

### Unit 1: Information Society

- Information Society: Attributes, Characteristics & Components
- Information Infrastructures: National and Global
- Information Economics, Economics of Information
- National Information Policy, Digital Information Literacy

### Unit 2: Knowledge Society

- Concept of Knowledge Society
- Knowledge Economy and Knowledge Industry
- Knowledge Management, National Knowledge Commission
- Libraries as Gateways to Knowledge, Role of Knowledge Professionals

### Unit 3: Digital Information Management

- Socio Economic Aspects of Digital Information
- Policies, Projects, Initiatives, Committees etc.
- Library Networks, INFLIBNET, Consortia, e-ShodhSindhu
- Electronic Theses and Dissertations
- Digital Library, National Digital Library (MHRD)

### Unit 4: Trends and Developments in Knowledge Society

- Role of Information in Planning, Decision Making, Innovations and National Developments
- Impact of Information and Knowledge Society on Education, Training and Research
- Conventional vs Web Based Learning, MOOC
- Trends and Developments in LIS Education and Research with Special Reference to Knowledge Society
- Impact of Social Media on Society and National Development

## RESEARCH AND PUBLICATION ETHICS (RPE)

### RPE 01: Philosophy and Ethics

- Introduction to Philosophy: Definition, Nature and Scope, Concept, Branches
- Ethics: Definition, Moral Philosophy, Nature of Moral Judgements and Reactions

### RPE 02: Scientific Conduct

- Ethics with respect to Science and Research
- Intellectual Honesty and Research Integrity
- Scientific Misconducts: Falsification, Fabrication, and Plagiarism (FFP)
- Redundant Publications: Duplicate and Overlapping Publications, Salami Slicing
- Selective Reporting and Misrepresentation of Data

### RPE 03: Publication Ethics

- Publication Ethics: Definition, Introduction and Importance

- Best Practices/Standards Setting Initiatives and Guidelines: COPE, WAME, etc.,
- Publication Misconduct: Definition, Concept, Types, Problems that Lead to Unethical Behaviour and Vice-versa
- Violation of Publication Ethics, Authorship and Contributorship
- Conflicts of Interests
- Identification of Publication Misconduct, Complaints and Appeals
- Predatory Publishers and Journals

Practice

RPE 04: Open Access Publishing

- Open Access Publications and Initiatives
- SHERPA/ROMEO Online Resources to Check Publisher Copyright & Self-Archiving Policies
- Software Tool/Website (UGC-CARE Website) to Identify Predatory Publications Developed by Savitribai Phule Pune University (SPPU)
- Journal Finder/ Journal Suggestion Tools viz. JANE, Elsevier Journal Finder, Springer Journal Suggester etc.

## AREA OF SPECIALIZATION

Theory

Unit 1: Study of Subject

- Scope of Subject: Divisions, Sub-divisions, Classification/Structure of the Subject, and Application Areas
- Study of Landmarks: Year and Period of Contribution, Name of Contributors and their Significant Contributions, Title and Year of Publication of the Original Work
- Trend of Research: Growth of Literature on the Subject, Scattering and Application of Information on Research in the Subject and other Disciplines
- Educational Trend: Development of Education in the Subject, Level of Education (UG, PG and Research)

Unit 2: Study of Documentary and Non-Documentary Sources

- Study of Primary Sources: Classical Text Books, Advanced Text Books and Leading Journal/Periodical Publications etc.
- Study of Secondary Sources: Encyclopaedia, Directories, Bibliographies, Biographies, Glossaries, Thesaurus, Terms Dictionary, Manuals, Indexing and Abstracting Periodicals, Annual Reviews etc.
- Institutional Sources: Study of Research Institutes, Specialised Departments, Government Agencies, National/International Agencies involved in Concerned Area/Subject; Conferences (International and National); Research Projects (International and National, Major & Minor)
- Human Sources: Study of Peoples involved in Area/Subject, their Specialties and Works at International, National and Local Level
- Study of E-Resources: Open Access Resources, Databases, E-Journals, E-Books, Indexing and Abstracting Services, Citation Indexes (SCI, SSCI, AHCI) etc.

Tutorial

### Unit 3: Proposal/ Report Writing

- Writing a Detailed Report on Literature available on Area of Study
- Finding Problem Statement, Writing of Literature Review, Identifying Research Gaps, Identifying Objectives of the Study and Hypotheses Formulation, Designing Research Methods
- Making of Subject Specific Bibliography
- Practice of Technical Writing Skills
- Participating in Subject Specific Seminar/Conference/Workshops
- Learning of Information Presentation Skills, Seminar Presentation

### Unit 4: Computer Literacy

- Learning Effective Use of MS-Word, MS-Excel, MS-Powerpoint
- Learning Online Analysis Tools and Techniques
- Practice of Mendeley, Zotero etc.
- Use of Grammar and Punctuation Tools
- Use of Statistical Tools and Techniques