CERTIFICATE COURSE ON DIGITAL LIBRARY

Duration: 6 Months

Credits: 16 (4x4)

Eligibility Criteria: Diploma or Bachelors or Masters in Library and Information Science

Course Objectives:

The course is designed as a vertically integrated programme in which the first two papers build a strong conceptual and technological base, and the third paper focuses specifically on digital libraries. The initial papers develop understanding of ICT infrastructure, computer and network systems, internet technologies, metadata and bibliographic standards, e-resources, consortia, ERM, open access, and research data management, thereby equipping learners with the essential tools and vocabulary of the digital information environment. On this foundation, the third paper concentrates on digital library concepts, architecture, standards and interoperability, collection development, planning and implementation, search and browse interfaces, semantic web and linked data, and digital preservation. It also provides hands-on exposure to major open-source digital library platforms such as DSpace, Greenstone and EPrints, and introduces key national and international digital library initiatives, enabling learners to design, manage and evaluate robust digital library systems in academic and research settings.

Target Learners:

- BLIS and MLIS students specializing in Library and Information Science.
- Working librarians in academic, public, special and research libraries.
- Information professionals and knowledge managers involved in digital services.
- Library staff responsible for e-resources, data management or digital library projects.
- Any other interested individuals.

DETAILED SYLLABUS

Course I: ICT in Libraries

Unit 1 Foundations of ICT In Libraries

Concept and Evolution of ICT, Scope of ICT in Library and Information Science, Components of ICT: Hardware, Software, Networking.

Unit 2 Computer Systems for Libraries

Generations and classifications of computers, Basic components of a Computer - Arithmetic Logic Unit, Memory Unit, Input and Output devices: keyboards, monitors, printers, scanners, secondary storage elements.

Unit 3 Application and System Software in Library Context

Types of Software: System, Application, and Service Software, Office and Productivity Tools (Word Processors, Spreadsheets, Databases)

Unit 4 Networking Concepts and Library Connectivity

Evolution, Need, and Advantages of Computer Networking in Libraries, Types of Networks: LAN, MAN, WAN, VPN, Components of computer Networking

Unit 5 Network Topologies and Media

Overview of Physical and Logical Network Structures, Switching Technologies: Circuit, Packet, and Cell Switching, Transmission Media.

Unit 6 Internet Technology and Protocols

Internet Architecture, TCP/IP Protocol Suite and IP Addressing, Domain Naming Systems, URLs and Web Hosting.

Unit 7 Basics of Website development

Concept, definition, evolution of website, types of websites, Protocol: HTTP &Website usage, Protocols: HTTP HTTPS, Website development: requirements, Hosting, Role of AI in website development

Unit 8 Network Security in Library

Fundamentals of Cybersecurity in Library Networks, Types of Threats: Malware, Phishing, Ransomware, Dos Attacks, Firewalls, Encryption, Authentication Systems, Institutional Data Protection, Privacy and Backup.

Unit 9 Metadata and Bibliographic Standards

Metadata Concepts and Types, MARC 21 Standards: Structure, Tagging, and Encoding, Dublin Core Metadata Elements for Digital Resources, Metadata for Interoperability.

Unit 10 Integrated Library Management Systems (ILMS)

Concept, definition, and purpose of ILMS, Evolution of library automation and management systems, Modules: acquisition, cataloguing, circulation, serials control, and OPAC, Role of ILMS in managing print and digital resources.

Unit 11 Search Engines and Discovery Systems

Search Engine, Types of Search engines, Specialized Academic Search and Discovery Portals OPAC Vs. Discovery Services, Search Strategies, Boolean Logic, Field Searching, and AI Based Search Tools.

Unit 12 Web 2.0, Web 3.0 Library 2.0, And Social Media Integration

WWW, WWW 2.0, WWW 3.0, Concept of Library 2.0. Social Media Integration, Concept of Library 2.0

Unit 13 Collaborative Services

Meaning of Collaborative Services, USER driven content in Libraries, Social Engagement in Libraries, Library Outreach through social media, Multimedia Tools for Library Outreach

Unit 14 Ethical Policy

Legal and Ethical Aspects: Copyright, Licensing, and Open Access, ICT Policies for Academic and Research Libraries.

Course II: E Resources, Knowledge and Research Data Management in Digital Environment

Unit 1 E -resources in Libraries

Definition, concept and need of e-resource, Evolution from traditional print to electronic collections, Types, e- resource aggregators, Advantages and challenges of resource.

Unit 2 DRM with E resources

Digital right management, Intellectual property right, Evaluation, Subscription models, Pricing models, Renewal issues of collection development of e resources.

Unit 3 E resources and consortia management

Modes of subscription of e resources by libraries, Library consortia: concept, Advantage, issues and challenges of consortia approach to e resource subscription

Unit 4 ERM in libraries

E resource Management; Concept, need, Infrastructural Needs for ERM, ERM Challenges, Advantage and Limitations of ERM, ERAMS, needs, capabilities, basics elements, Popular ERMS

UNIT 5 Digital Library Technologies and Platforms

Concepts of Digital Libraries and Institutional Repositories, Open-Source Digital Repository Software, Digital Collection Development, Metadata Creation, Indexing

Unit 6 Open-Access

Concept of Open access; need and importance in DL system, Role of open access in research visibility and data sharing, Management and integration of open-access resources in digital environments.

Unit 7 Open Access Resources and platforms

Types of Open Access, Open access Resources, Open access Platforms, Major international and national repositories

Unit 8 Organization of Knowledge

Concept of Knowledge Organization, Library Classification: Concept, Cataloguing

Unit 9 Bibliographic Control and Subject heading

Bibliographic Control, Concept of Indexing: Type, Computerized Indexing, Subject Headings

Unit 10 Metadata

Metadata: Concept, Types and Functionalities, Metadata Standards: MARC, Dublin Core (DC), METS, etc. Protocol For Metadata Harvesting (PMH), Open Archives Initiatives (OAI Model)

Unit 11 Data in Library

DIKW Model: Concept of Data, information, knowledge and wisdom, Type of data and data resources, Concept of Big data in Libraries and Information Cntre, Open data: Characteristics and standards, , Linked data in library

Unit 12 Data, storage, security and data repositories

Data storage, data protection, security, sharing and ethics, Data repository: types, functions, resources and software for data repositories

Unit 13 Research Data Management

Data Management: data collection, data collection tools, Concept of research data management, RDM software and services: Free and Open sources

Unit 14 Emerging trends in Library data management

Artificial intelligence, machine learning, blockchain, and cloud solutions in data management, Data privacy, protection and cyber-security trends, new data governance strategies for libraries

Course III: Foundation of Digital Libraries

Unit 1: Introduction To Digital Library

Definition, Historical Evolution of DL, Differences from Traditional/Virtual Libraries, Need of DL, Components of DL System, DL Services

Unit 2: Technical Infrastructure, Architecture and Standards Of DL

Hardware, Software, Networking, Client-Server Models, DL Architecture; Components and Models, Cloud Computing and DL, Standards for Communication and Interoperability (Z39.50, OAI-PMH).

Unit 3: Collection Development In DL

Digital Collection; Types, Digitization and Its Benefits, E Resources: Selection Criteria and Evaluation, Licensing Aspects, Knowledge Organization in DL: Need, Challenges, Levels, Tools, Knowledge Organization in Traditional Vs Digital Library.

Unit 4: Planning, Implementation, Infrastructure and HRM In DL

Planning of DL; Information Needs, Quality in Plan, Security, IT Infrastructure, Digitization: Need, Determining Materials, Process, Tools, Access, Staffing and Budget, Key Guidelines for Creating DL System. Requirements And Feasibility, Human Resource Planning, IFLA/UNESCO Manifesto for DL.

Unit 5: Browsing and Search Interface In DL

Searching in DL, Browsing in DL, Emerging trends of searching and browsing in Digital Library

Unit 6: Semantic Web and Linked Data In DL

Evaluation of Semantic Digital Library (SDL), Core services Provided by SDL Core Technologies and Architecture of SDL Example of SDL Initiatives, Application of Linked Data in DL: Benefits and Challenges

Unit 7: Digital Preservation & Conservation in Digital Library

Concept of Digital Preservation, Preservation Strategies in Digital Library, Challenges of Digital Preservation, Digital Library Conservation; Aspects of digital conservation, Role of Librarians in digital preservation and conservation, Metadata Standards for digital curation (PREMIS, METS) Digitization techniques, file formats, long term storage, Cloud Archiving and Blockchain

Unit 8: Open-Source Toolkits

Comparative Studies Between Popular Open-Source Software for Digital Libraries: DSpace, GSDL, E-print, Omeka, Benefits of Open-Source Software Of DL, Popular Examples DLs Based on Open-Source Software: Indian and Global.

Unit 9: Registry and Item Management in Digital Library

Registries, Digital Library Registries, Functions of Digital Library Registries, Digital Library Handle System, DOI as a handle system, Integrating Author Identification services to DL/IL, Orcid Integration to DSpace

Unit 10 Case Study of DL Software: E print

E print software, Key features, Versions of E-Prints, System Requirements for E-Print installation, E-Print Workflow

Unit 11: Case Study of DL Software: GSDL

Greenstone Digital Library Software (GSDL), Versions of Greenstone, System Requirements, Customization whereabouts in Greenstone2 and Greenstone3, Greenstone Librarian Interface (GLI), Advanced Management Features

Unit 12: Case Study of Popular Dl Software: DSpace

Functional Overview: Data Model, Metadata, E-People, Authorization, Ingest Process and Workflow, Persistent URLs and Identifiers, Search and Browse, OAI Support, System Architecture, DL adopting DSpace

Unit 13: DL Evaluation and Marketing

DL Evaluation: Concept And Need, Process of Evaluation, Criteria of Evaluation, Models of DL Evaluation, Marketing Of DL

Unit 14: DL Initiatives and Recent Trends

Popular Indian Initiatives: NDLI, E-Shodhsindhu, Vigyan Prasar Digital Library, NDBIAC, National Mission for Manuscripts, E-Shodhsindhu, TKDL, Kalasampada, ONOS; Global Initiatives: Project Gutenberg, NDLTD, NDSL, DLESE, ArXiv, Pandora, Europeana, Oxford Digital Library, Cambridge Digital Library, OAISTER.

Course IV: Practical and Viva

Practical and viva will be conducted on any one open-source digital library software (DSpace, Greenstone or EPrints), with a focus on understanding system architecture, installation and configuration steps, basic customization of the user interface and metadata, and hands-on demonstration of key functional modules such as collection/community structure, submission and workflow, search and browse services, user/admin management and interoperability features.