Vidyasagar University

Midnapore-721102, West Bengal

The Syllabus for

MASTER OF LIBRARY AND INFORMATION SCIENCE

(M.Lib.I.Sc.)

(Based on NEP-2020)

(With effect from 2025-2026 Academic Session)

Title and Commencement
The programme shall be called the **Full-time Master of Library and Information Science (M.Lib.I.Sc.) Programme** under the Faculty of Arts & Commerce.

This syllabus shall come into force from the academic session **2025–2026**.

Objectives of the Programme
The primary objective of this programme is to equip students with advanced professional skills in information and knowledge management so that they can effectively serve society through libraries or information centres and prepare themselves for research in the field.
The specific objectives are as follows:

1. To help students understand the advancement of various principles of Library and Information Science and develop professionalism to work effectively in the contemporary "Information Age."
2. To acquaint students with the development of the Universe of Knowledge and methods of its organization in libraries and information systems.
3. To train students in information management techniques and equip them with the necessary skills to apply Information and Communication Technologies (ICT) in libraries and information centres.
4. To make students aware of various sources of information and train them in information dissemination techniques for different user groups, ensuring the optimal use of graphic and recorded knowledge across disciplines.
5. To develop critical thinking, problem-solving, and decision-making abilities among students for professional and societal growth.

Eligibility
The minimum qualification for admission to the Master of Library and Information Science programme is: A **Bachelor's degree with Honours/Major (in any discipline)** at the 10+2+3 level, and a **Bachelor of Library and Information Science (B.Lib.I.Sc.)** from this University or any other university recognized as equivalent by the Statutory Bodies/Regulatory Authorities of the University, subject to conditions prescribed thereof.

Intake Capacity
18 (Eighteen) students.
Reservation policies shall follow the rules prescribed by the State Government and as notified by the competent authorities from time to time.
Foreign nationals, whether residing in India or abroad, and Indian nationals residing abroad may be admitted to the programme as per the policy guidelines of the Government of India and the University Executive Council.

Academic Calendar
As per the **University Academic Calendar**.

Duration and Semester System
The duration of the programme leading to the degree of **Master of Library and Information Science (M.Lib.I.Sc.)** shall be **one academic year**, divided into **two semesters**.
A student must complete the programme within **one year** from the date of admission.

Programme Outcomes (PO)
Upon successful completion of the programme, students will be able to:

1. Understand the advanced principles of Library and Information Science and develop professionalism to work in the modern "Information Age."
2. Gain familiarity with the development of the Universe of Knowledge and its organization in libraries and information systems.
3. Acquire skills in information management and the application of ICT in libraries and information centres.

4. Understand various sources of information and methods of dissemination to different user groups, ensuring effective utilization of recorded knowledge across disciplines.
5. Develop as critical thinkers, problem solvers, and decision-makers in the profession and society.

Programme Specific Outcomes (PSO)

1. Understanding the philosophy of librarianship.
2. Awareness of different parameters of the knowledge society.
3. Ability to organize information using modern tools and techniques.
4. Awareness of academic metrics and the ability to assess the efficacy of academic and research evaluations.
5. Capacity to conduct small-scale research activities and prepare research reports in various areas of Library and Information Science.

Career Opportunities

Graduates of this programme may pursue careers as:

1. Researchers (M.Phil. and Ph.D. degrees in LIS).
2. Consultants or Reference Librarians.
3. Directors or Heads of Information Centres.
4. Library and Information Officers/Managers.
5. Documentation Officers.
6. Information Analysts.
7. Media Monitors or Media Librarians.
8. Archivists or Manuscript Managers.
9. Assistant Librarians, Deputy Librarians, or Librarians in higher academic institutions and research centres.
10. Teaching faculty in Library and Information Science schools.

Course / Programme Structure

- The **M.Lib.I.Sc.** curriculum consists of **44 credits** distributed across **21 courses** in one academic year, divided into two semesters.
- The programme carries a total of **1100 marks**.
- Internal Assessment marks are awarded through **Continuous Evaluation (CE)**, **Practical (PRC)**, **Project (PRJ)**, or a combination of these components, as decided by the respective course teacher.
- If the internal assessment is based on Continuous Evaluation (CE), it will include a combination of **tests, term papers, and/or seminar presentations**.

Credit Structure
First Semester

Paper Code	Course Title	Full Marks	Credit
LIS-IKS-501	Indian Knowledge Organization System	**50**	**2**
LIS-DSC-502	Information and Communication Theories	**50**	**2**
LIS-DSC-503	Knowledge Organization (Theory)	**50**	**2**
LIS-DSC-504	Information Sources, Products and Services	**50**	**2**
LIS-DSC-505	Information Representation and Retrieval	**50**	**2**
LIS-DSC-506	Management of Information Systems and Services	**50**	**2**
LIS-DSC-507	Information and Communication Technology for LIS (Theory)-I	**50**	**2**
LIS-DSC-508	Application of Information and Communication Technology in LIS (Practice)-I	**50**	**2**
LIS-DSC-509	Research Methodology	**50**	**2**
LIS-DSE-510 (Elec.)	510A: Library Service Platform 510B : AI/ML in Libraries	**50**	**2**
LIS-DSE-511 (Elec.)	511A: Health Information System 511B: Legal Information System	**50**	**2**
	Total	**550**	**22**

Second Semester

Paper Code	Course Title	Full Marks	Credit
LIS-DSC-551	Information Policy and Knowledge Economy	**50**	**2**
LIS-DSC-552	Intelligent Information Retrieval	**50**	**2**
LIS-DSC-553	Studies of Research Metrics	**50**	**2**
LIS-DSC-554	Quantitative Techniques in Research	**50**	**2**
LIS-DSC-555	Information and Communication Technology for LIS (Theory)-II	**50**	**2**
LIS-DSC-556	Application of Information and Communication Technology in LIS (Practice)-II	**50**	**2**
LIS-SEC-557	557A: Digital Resource Management 557B: Virtual Learning Management System	**50**	**2**
LIS-SEC-558	558A: Data Carpentry 558B: Designing of Community Information System	**50**	**2**
LIS-OJT-559	Internship project	**50**	**2**
LIS-GRP-560	Guided Research Project	**100**	**4**
	Total	**550**	**22**

Credit Structure
First Semester

Course Code	Course Title	Credit Pattern			Credit Value	Marks Distribution		
		Lecture (L)	Field-Self Study-Tutorial (FST)	Practice (P)		Semester Examination	Internal Assessment	Total Marks
LIS-IKS-501	Indian Knowledge Organization System	1	1		2	40	10	50
LIS-DSC-502	Information and Communication Theories	1	1		2	40	10	50
LIS-DSC-503	Knowledge Organization (Theory)	1	1		2	40	10	50
LIS-DSC-504	Information Sources, Products and Services	1	1		2	40	10	50
LIS-DSC-505	Information Representation and Retrieval	1	1		2	40	10	50
LIS-DSC-506	Management of Information Systems and Services	1	1		2	40	10	50
LIS-DSC-507	Information and Communication Technology for LIS (Theory)-I	1	1		2	40	10	50
LIS-DSC-508	Application of Information and Communication Technology in LIS (Practice)-I			2	2	40	10	50
LIS-DSC-509	Research Methodology	1	1		2	40	10	50
LIS-DSE-510 (Elec.)	510A: Library Service Platform 510B : AI/ML in Libraries	1	1		2	40	10	50
LIS-DSE-511 (Elec.)	511A: Health Information System 511B: Legal Information System	1	1		2	40	10	50

Second semester

Course Code	Course Title	Credit Pattern			Credit Value	Marks Distribution		
		Lecture (L)	Field-Self Study-Tutorial (FST)	Practice (P)		Semester Examination	Internal Assessment	Total Marks
LIS-DSC-551	Information Policy and Knowledge Economy	1	1		2	40	10	50
LIS-DSC-552	Intelligent Information Retrieval	1	1		2	40	10	50
LIS-DSC-553	Studies of Research Metrics	1	1		2	40	10	50
LIS-DSC-554	Quantitative Techniques in Research	1	1		2	40	10	50
LIS-DSC-555	Information and Communication Technology for LIS (Theory)-II	1	1		2	40	10	50
LIS-DSC-556	Application of Information and Communication Technology in LIS (Practice)-II			2	2	40	10	50
LIS-SEC-557	557A: Digital Resource Management 557B: Virtual Learning Management System	1	1		2	40	10	50
LIS-SEC-558	558A: Data Carpentry 558B: Designing of Community Information System	1	1		2	40	10	50
LIS-OJT-559	Internship project			2	2	40	10	50
LIS-GRP-560	Guided Research Project			2	2	40	10	50

Course Structure
First Semester

Course Content Structure			Marks Distribution		
Course Code	**Course Title**	**Course Summary**	**Semester Exam**	**Internal Assessment**	**Total Marks**
LIS-IKS-501	Indian Knowledge Organization System	Unit-1: Introduction to Indian Knowledge System	40	10	50
		Unit-2: Colon Classification: Theory			
		Unit-3: Colon Classification: Practice			
		Unit-4: Classified Catalogue Code			
		Unit-5: Indian Indexing System			
		Unit 6: Class Test/Project/Seminar Presentation			
LIS-DSC-502	Information and Communication Theories	Unit-1: Information: Nature, Characteristics and Scope	40	10	50
		Unit-2: Information Science: Evolution and Development			
		Unit-3: Communication of Information			
		Unit-4: Information Generation and Transfer			
		Unit-5: Class Test/Project/Seminar Presentation			
LIS-DSC-503	Knowledge Organization (Theory)	Unit-1: Theories of Library Classification	40	10	50
		Unit-2 : Classification of Subjects			
		Unit-3 : Classification and the Internet			
		Unit-4 : Classification as a navigating Tool in the distributed knowledge networks			
		Unit-4: Class Test/Project/ Seminar Presentation			
LIS-DSC-504	Information Sources, Products and Services	Unit-1: Electronic Information Sources	40	10	50
		Unit-2: Information Products and Services			
		Unit-3: Information Institutions and Systems			
		Unit-4: Library Networks and Consortia			

		Unit-5: Class Test/Project/ Seminar Presentation			
LIS-DSC-505	Information Representation and Retrieval	Unit-1: Information Storage and Retrieval Systems	40	10	50
		Unit-2: Indexing Languages, Controlled Vocabularies, Indexing Systems			
		Unit-3: Web Information Retrieval			
		Unit-4: Users and Information Retrieval			
		Unit5: Class Test/Project/ Seminar Presentation			
LIS-DSC-506	Management of Information Systems and Services	Unit-1: Management Thought and Planning of Information System	40	10	50
		Unit-2: System Analysis and its Application in LIS			
		Unit-3: Management Techniques			
		Unit-4: Recent Trends in Management			
		Unit-4: Class Test/Project/ Seminar Presentation			
LIS-DSC-507	Information and Communication Technology for LIS (Theory)-I	Unit-1: Computer Operating System	40	10	50
		Unit-2: High-level Programming Languages			
		Unit-3: Database Management System			
		Unit-4 : Computer Communication System			
		Unit-5: Class Test/Project/Seminar Presentation			
LIS-DSC-508	Application of Information and Communication Technology in LIS (Practice)-I	Unit-1: Linux User Level Tasks; Linux System Administration Tasks	40	10	50
		Unit-2: Advanced Level Markup Language and dynamic web pages			
		Unit-3:Highlevel Programming Languages suitable for library operations			
		Unit-4: Basics of Scripting Languages			
		Unit-5: Class Test/Project/ Seminar Presentation/Viva-Voce			

LIS-DSC-509	Research Methodology	Unit-1: Basic Concepts	40	10	50
		Unit-2: Research Methods			
		Unit-3: Research in the Context of LIS			
		Unit-4 : Research Publications: Ethics and Integrity			
		Unit-5: Class Test/Project/ Seminar Presentation			
LIS-DSE-510(Elec.)	510A: Library Service Platform	Unit-1: Library Service Platform Concepts and Components	40	10	50
		Unit-2: Library Software Ecosystem			
		Unit-3: Library Discovery			
		Unit-4: Library Workflow Integration			
		Unit-5:Class Test/Project/ Seminar Presentation			
	510B : AI/ML in Libraries	Unit 1: AI/ML Basics: Technical and Social	40	10	50
		Unit 2: Tools based on Generative AI			
		Unit 3: Large Language Models			
		Unit 4: Machine Learning based Knowledge Organization			
		Unit-5: Class Test/Project/ Seminar Presentation			
LIS-DSE-511 (Elec.)	511A: Health Information System	Unit-1: Basic Concepts	40	10	50
		Unit-2: Indian Health Knowledge Systems			
		Unit-3: Indian Health Information Systems			
		Unit-4: Health Information Institutions: Global Scenario			
		Unit-5:Class Test/Project/ Seminar Presentation			
	511B: Legal Information System	Unit-1: Concepts of Information in Legal System	40	10	50
		Unit-2: Sources of Legal Information			
		Unit-3: Indian Judiciary and Information Support			
		Unit-4: Legal Information Databases: Global Scenario			
		Unit-5: Class Test/Project/ Seminar Presentation			

Second Semester

LIS-DSC-551	Information Policy and Knowledge Economy	Unit-: Information Society Unit-2: Knowledge management Unit-3: Economics of Information Unit-4: Marketing of Library and Information Products and Services Unit-5: Class Test/Project/ Seminar Presentation	40	10	50
LIS-DSC-552	Intelligent Information Retrieval	Unit-1: Information Sources, Formats and Retrieval Unit-2: Searching in Information Retrieval System Unit-3: Evaluation of Information Retrieval Systems Unit-4: Intelligent Information Retrieval Landscape Unit-5: Class Test/Project/ Seminar Presentation	40	10	50
LIS-DSC-553	Studies of Research Metrics	Unit-1: Research Evaluation Metrics and Related Indicators Unit-2: Performance Measurement Of R & D in S & T Unit-3: Article and Author-Level Measurements Unit-4: Measurement of Scientific Productivity Unit-5: Class Test/Project/Seminar Presentation	40	10	50
LIS-DSC-554	Quantitative Techniques in Research	Unit-1: Useful Mathematical Devices Unit-2: Descriptive Statistics for Collection and presentation of data Unit-3: Analytical methods for Collection and presentation of data Unit-4: Sampling and Statistical Inference Unit5: Class Test/Project/ Seminar Presentation			
LIS-DSC-555	Information and Communication Technology for LIS (Theory)-II	Unit1: Automated Library System Unit2: Digital Library System Unit3: Multilingual Library System And IR System Unit4 : Field Study	40	10	50

		Unit5: Class Test/Project/ Seminar Presentation			
LIS-DSC-556	Application of Information and Communication Technology in LIS (Practice) - II	Unit1: MySQL and/or PostGreSQL RDBMS	40	10	50
		Unit2:WWWISISand/orISIS3W for Web Accessibility of ISO-2709 Supported Bibliographic Databases			
		Unit3: Library Automation Software Managerial Level Tasks (SOUL / KOHA/ WEBLIS)			
		Unit4: Digital Library Software GSDL/ DSpace / E-Print Archive			
		Unit5: Unicode based Multilingual Automated and Digital Library System			
		Unit6: Class Test/Project/ Seminar Presentation/Viva-Voce			
LIS-SEC-557	557A: Digital Resource Management	Unit 1: Introduction to Digital Information Resources	40	10	50
		Unit 2: Web 2.0 and Library 2.0			
		Unit 3: Content Designation through MARC 21 – Advanced Level			
		Unit 4: Metadata Encoding – Generic and Domain-specific			
		Unit 5: Electronic Resource Management			
		Unit-6: Class Test/Project/Seminar Presentation			
	557B: Virtual Learning Management System	Unit-1: Introduction to Virtual Learning Environment (VLE)	40	10	50
		Unit-2: VLE – Models and Resources			
		Unit-3: Learning Content Management System (LCMS)			
		Unit-4: VLE Standards			
		Unit-5:ClassTest/Project/ Seminar Presentation/Viva-Voce			
LIS-SEC-558	558A: Data Carpentry	Unit-1: From Data Carpentry to Library Carpentry	40	10	50
		Unit-2: Introduction to OpenRefine			

		Unit-3: Data Wrangling Techniques			
		Unit-4: Data Extraction and Visualization			
		Unit-5: Class Test/Project/ Seminar Presentation/Viva-Voce			
	558B: Designing of Community Information System	Unit-1: Fundamentals of Community Information Services (CIS)	40	10	50
		Unit-2: Community Information Resources			
		Unit-3: Community Information Resources: Organization and Access			
		Unit-4: Digital Community Information Services			
		Unit-5:Class Test/Project/ Seminar Presentation/Viva-Voce			
LIS-OJT-559	Internship project				50
LIS-GRP-560	Guided research Project	Unit-1: Preparation of Dissertation (including Seminar Presentation)	80	20	100
		Unit-2: Viva-voce			

Graduate Attributes Mapping Table

Master of Library and Information Science (M.Lib.I.Sc.) – NEP 2020 Framework

Graduate Attributes	Course Code	Course Title
➢ Cultural Awareness ➢ Knowledge Management ➢ Heritage Literacy ➢ Civic and Social Responsibility ➢ Information Organization	LIS-IKS-501	Indian Knowledge Organization System
	LIS-DSC-503	Knowledge Organization (Theory)
➢ Communication Skills ➢ Cognitive Awareness ➢ Ethical Awareness ➢ Civic Responsibility	LIS-DSC-502	Information and Communication Theories
	LIS-DSC-551	Information Policy and Knowledge Economy
➢ Information Literacy ➢ Library Service Orientation	LIS-DSC-504	Information Sources, Products and Services

➢ Research and Enquiry		
➢ Information Retrieval Skills ➢ Technical Competence ➢ Information Seeking Study	LIS-DSC-505	Information Representation and Retrieval
	LIS-DSC-552	Intelligent Information Retrieval
➢ Leadership ➢ Teamwork ➢ Professional Ethics	LIS-DSC-506	Management of Information Systems and Services
o ➢ Digital Competence ➢ AI Literacy ➢ Information Technology ➢ Data Analytics Skills ➢ Virtual Reality	LIS-DSC-507	Information and Communication Technology for LIS (Theory)-I
	LIS-DSC-508	Application of ICT in LIS (Practice)-I
	LIS-DSC-555	Information and Communication Technology for LIS (Theory)-II
	LIS-DSC-556	Application of ICT in LIS (Practice)-II
	LIS-DSE-510B	AI/ML in Libraries
	LIS-DSE-510A	Library Service Platform
	LIS-SEC-557	Digital Resource Management / Virtual Learning Management System
	LIS-SEC-558	Data Carpentry / Designing of Community Information System
➢ Research Evaluation ➢ Measuring Research ➢ Data Literacy	LIS-DSC-553	Studies of Research Metrics
	LIS-DSC-554	Quantitative Techniques in Research
➢ Experiential Learning ➢ Communication Skills	LIS-OJT-559	Internship Project
➢ Academic Integrity ➢ Research Ethics	LIS-GRP-560	Guided Research Project

FIRST SEMESTER

Course Outcomes and Syllabus Content of each Course

Course Code: LIS-IKS-501
Course Title: Indian Knowledge Organization System
Full Marks–50
Examination Marks–40
Class Test/Project/Seminar Presentation-10

Learning Outcomes

After studying this course, students shall be able to:

1. To learn basic concepts related to Indian knowledge systems as reflected in Indian schools of philosophies.
2. To understand features, components, types and models of Colon Classification System.
3. To understand CCC as Indian cataloguing system.
4. To explore Chain Indexing and POPSI.

Course Content

Unit 1: Introduction to Indian Knowledge System

- Classification of Indian philosophical schools – Astika and Nastika schools.
- Vedanga based knowledge classification: Shiksha (phonetics), Kalpa (rituals), Vyakarana (grammar), Nirukta (etymology), Chhanda (metrics), and Jyotisha (astronomy).
- Darshana system of classification (Shad Darshanas): Nyaya (logic), Vaisheshika (natural philosophy), Samkhya (metaphysics), Yoga (spiritual practice), Mimamsa (rituals), and Vedanta (spirituality) – Advaita (non-dualism), Vishishtadvaita (qualified non-dualism), and Dvaita (dualism).
- Trivarga – grouping knowledge into Dharma (duty), Artha (wealth), and Kama (pleasure) — and Chaturvarga, which adds Moksha (liberation).
- Influence of schools of Indian philosophy on Colon Classification.

Unit 2: Colon Classification: Theory

- Colon Classification – Nature and Features.
- Colon Classification – Structure and Rules.
- Facet analysis – Process and Steps.
- Building of class number – Simple subjects.
- Colon Classification – Use of index.

Unit 3: Colon Classification: Practice

- Building of class number – Compound subjects.
- Building of class number – Complex subjects.
- Phase relations.
- Use of devices.
- Notational techniques and telescoping of array.

Unit 4: Classified Catalogue Code

- CCC 5th edition – Rules for description (Simple books, Multi-volume books, and Composite books).
- Government documents, Reports, Serials, and Conference proceedings.
- Rendering of access points – Personal authors, Corporate authors, Title.
- Conflict of authorship.
- Subject access through Chain Indexing.

Unit 5: Indian Indexing System

- Subject Indexing Language (SIL) – General Theory of Subject Indexing Language (GT-SIL).
- Deep Structure of Subject Indexing Languages (DS-SILs).
- Organising Classification and Associative Classification.
- Features of POPSI – Basic.
- Features of POPSI – Specific.

Unit 5: Class Test/Project/Seminar Presentation

Reading List

Bhattacharyya, G. (1978). *Information sciences: a unified view through a systems-approach.*Indian Association of Special Libraries and Information Centres (IASLIC).

Bhattacharyya, G. (1980). *A general theory of subject indexing language* [Dissertation].Karnatak University.

Bianchini, C., Giusti, L., &Gnoli, C. (2017). La courbe en cloche APUPA. Le modèlevisuel de Ranganathan pour l'organisation des connaissances.*Les Cahiers Du Numérique, 13*(1), 49–68. https://doi.org/10.3166/lcn.13.1.49-68

Chatterjee, D., Sethi, D., &Pati, S. P. (2022).*Globalizing Indian thought: insights from Indian knowledge systems.* SAGE Publications India Pvt Ltd. https://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&db=nlabk&AN=3120152

Gopinath, M. A., Bhattacharyya, G., & DRTC Seminar Bangalore. (1983). *Classification and indexing in science and technology: working document.* Documentation Research and Training Centre, Indian Statistical Institute.

Gupta, D. K., &Satija, M. P. (2024). Lights from the Ramayana in Ranganathan's philosophy.*Annals of Library and Information Studies, 71*(1), 44–53. https://doi.org/10.56042/alis.v71i1.8961

Gupta, A., Menon, V. A., & Sharma, S. (2025). *Essays on the Indian Knowledge System*.Cambridge Scholars Publishing. https://public.ebookcentral.proquest.com/choice/PublicFullRecord.aspx?p=32196975

Hjørland, B. (2013). Facet analysis: The logical approach to knowledge organization. *Information Processing & Management, 49*(2), 545–557. https://doi.org/10.1016/j.ipm.2012.10.001

Ranganathan, S. R. (1966). *Elements of library classification* (2nd ed.). Bombay: UBS.

Ranganathan, S. R. (1967). *Prolegomena to library classification* (3rd ed.). Bombay: UBS.

Ranganathan, S. R. (1987). *Colon classification.* Bangalore: SRELS.

Ranganathan, S. R. (2006). *Philosophy of library classification.* Bangalore: EssEss.

Rawat, R., Gupta, N., & Gaur, V. (2025).*Indian knowledge system for sustainable future* (First edition).AasthaPrakashan.

Roe, G. (2010).Challenging the control of knowledge in colonial India: Political ideas in the works of S. R. Ranganathan.*Library & Information History, 26*(1), 18–32. https://doi.org/10.1179/175834909X12593371068342

Sarkhel, Juran Krishna. (2005). *Evaluation of indexing systems.* In MLII-102; Unit 5, pp.177–208: Information Processing and Retrieval, Edited by S. B. Ghosh. New Delhi, Indira Gandhi National Open University.

Satija, M. P., & Singh, J. (2013). Colon Classification: A requiem. *DESIDOC Journal of Library & Information Technology, 33*(4).

Sayers, W. C. B. (1915). *Canons of Classification.* London: Grafton.

Sayers, W. C. B. (1964). *A Manual of Library Classification* (3rd ed.). London: Andre Deutsch. Chapters 9 and 17–19.

Sharma, A. K. (2015). S. R. Ranganathan: Combining library science with Indian values. *Library Herald, 53*(3), 301. https://doi.org/10.5958/0976-2469.2015.00032.9

Sharma, C. D., &Ranganathan, S. R. (1972).*Practical cataloguing, classified catalogue.* Metropolitan Book Co.

Sharma, C. D., Dave, M., &Ranganathan, S. R. (1990).*Classified catalogue code in theory and practice* (Rev. and enl. ed.). Scientific Publishers.

Smiraglia, R. (2015). *Domain analysis for knowledge organization: tools for ontology extraction.*Chandos Publishing.
Svenonius, E. (1989). *The conceptual foundations of descriptive cataloguing.* San Diego: Academic Press.
Svenonius, E. (2000). *The intellectual foundations of information organization.* Cambridge, Mass: MIT Press.
Vickery, B. C. (1968). *Faceted classification: a guide to construction and use of special schemes.* London: Aslib.
Wynar, B. S. (1985). *Introduction to cataloguing and classification* (7th ed.). New York: Libraries Unlimited.

Course Code: LIS-DSC-502
Course Title: Information and Communication Theories
Full Marks–50
Examination Marks–40
Class Test/Project/SeminarPresentation-10

Course Outcomes (CO)

After studying this course, students shall be able to:

1. Identify the Information Life Cycle and its relation to Cognition, Knowledge, and Wisdom.
2. Understand the relationship of Information Science with other disciplines.
3. Comprehend how information is communicated and recognize barriers to communication.
4. Understand the processes and methods of communication.
5. Improve skills in understanding the basic elements of the receiver, sender, and channels that are essential for effective communication.
6. Develop the ability to make future communications error-free, thereby improving the speed and quality of communication processes.

Course Content

Unit – 1: Information – Nature, Characteristics, and Scope

- Information: Attributes, kinds, uses, nature, and characteristics
- Knowledge: Nature and characteristics, categories, sources, growth and development
- Process of cognition: Different views and methodologies, including the Spiral of Scientific Method
- Conceptual relationship between data, information, knowledge, and wisdom, and related concepts
- Information Explosion – concept, causes, and effects

Unit – 2: Information Science – Evolution and Development

- Information and knowledge as objects of study in various subjects and disciplines
- Information Science: Origin, development, scope, and relationship with other disciplines and professions
- Information Science from a system perspective: Introduction to Systems Theory, Churchman's Systems Model, Debons' EATPUT Model, and Component-Oriented Models
- Domain Analysis as a theoretical framework for Information Science

Unit – 3: Communication of Information

- Historical development of communication
- Types of communication: Verbal and Non-verbal, Formal and Informal
- Communication channels and models of communication
- Barriers to communication and remedial measures

- Role of libraries in the communication process
- Trends in Information Communication: Weblogs, Wikis, and other emerging tools

Unit – 4: Information Generation and Transfer

- Information transfer process: From generation to utilization (Information Ecosystem)
- Information Theory: Average information content of symbols in long independent and dependent sequences
- Entropy and measurement of information
- Social media as a tool for information transfer

Unit – 5: Class Test / Project / Seminar Presentation

Reading List

1. Bawden,D. & Robinson, L.(2012).*Foundations of information science*. London: Facet Publishing.
2. Benjamine, J.B. (1986). *Communication: concept and contexts*. New York: Harper & Row.
3. Bhattacharyya, G. (1978). *Information science: A unified view through a systems approach*. Kolkata: IASLIC.
4. Debons, A. & Larson, Arvid G.,Ed.(1983). *Information science in action: system design*. 2 vols. Boston: Martinus Nijh off Publishers.
5. Gilchrist,A.Ed.(2009).*Informationscienceintransition*.London:Facet Publishing.
6. IFLA(2006).Guidelinesoninformationliteracyforlifelonglearning.Retrievedfrom https://www.ifla.org › units › information-literacy
7. Kent, A., & HALL, C. M. (1998).*Encyclopedia of Library and Information Science*. CRC Press LLC, New York.
8. McGarry,K.J.(1981).*Thechangingconceptofinformation.*London:Bingley.
9. Mukherjee,B.(2012).*Information,CommunicationandSociety*.NewDelhi:EssEss Publications
10. Singh,A.P. and Yuvaraj,M(2013). *Information: Communication and Society.* New Delhi: EssEss Publications.
11. VickeryB.C.&VickeryA.(1987).*Informationscienceintheoryandpractice.* London:Butterworth.

Course Code: LIS-DSC-503
Course Title: Knowledge Organization (Theory)
Full Marks: **50**
Examination Marks: **40**
Class Test/Project/Seminar Presentation: **10**

Course Outcomes (CO)

After studying this course, students shall be able to:

1. Understand the theoretical foundations required to become a classificationist and enhance employability as information and library professionals.
2. Conduct an analytical study of classification schemes.
3. Apply classification schemes for computer-aided information retrieval.
4. Gain familiarity with ontological mapping and distributed networks addressing social issues such as gender sensitivity, social justice, and egalitarianism to improve employability.

Course Content

Unit 1: Theories of Library Classification

- Principles and postulates: Aristotle, Bacon, Harris, Richardson, Sayers, Brown, Hulme, Bliss, Ranganathan, and Vickery
- Absolute syntax
- Theory of Integrative Levels
- Systems approach to knowledge organization
- Normative principles: Laws, canons, principles, and postulates

Unit 2: Classification of Subjects

- Classification in an information system: complexity of subjects; comparison of hierarchical and faceted classification schemes
- Features of classification schemes: literary warrant, main class order, generalia class, social science class (with emphasis on gender justice and social equality), citation order, and schedule order
- General vs. special classification schemes
- Design and construction of depth classification schedules
- Comparative study of components and features of DDC, UDC, and CC

Unit 3: Classification and the Internet

- Use of classification by search engines
- Application of conventional classification schemes
- Use of thesauri and authority lists
- Classification of electronic documents
- Taxonomies and folksonomies

Unit 4: Classification as a Navigating Tool in Distributed Knowledge Networks

- Controlled vs. uncontrolled vocabulary
- Changing trends in subject access tools
- Social classification: concept of folksonomy and tagging
- Concept of domain ontology
- Birger Hjørl and's theory based on four basic approaches to classification: rationalism, empiricism, historicism, and pragmaticism
- Concept of the semantic web

Unit 5: Class Test / Project / Seminar Presentation

Reading List

1. Broughton, V. (2004). *Essential Classification.* London: Facet Publishing.
2. Batty, C. D. (1966). *An Introduction to Colon Classification.* London: Bingley.
3. Chan, L. M. (1985). *Cataloguing and Classification: An Introduction.* New York: McGraw Hill.
4. Dhyani, P. (1983). *Classification Schemes and Indian Libraries.* New Delhi: Metropolitan.
5. Dhyani, P. (1998). *Library Classification: Theory and Principles.* New Delhi: WishwaPrakashan.
6. F.I.D. (1993). *Universal Decimal Classification.* London: BSI.
    - Forest Press. (2002). *WebDewey.* Dublin, Ohio: OCLC Forest Press.
7. Foskett, D. J. (1974). *Classification and Indexing in Social Sciences.* London: Aslib.
8. Foskett, A. C. (1996). *The Subject Approach to Information* (5th ed.). London: Clive Bingley.
9. Halgamuge, S. K., & Wang, L. (2005). *Classification and Clustering for Knowledge Discovery.* Berlin: Springer.
10. Husain, S. (2004). *Library Classification: Facets and Analysis.* Delhi: B.R. Publishing.
11. Kaula, P. N. (1985). *A Treatise on Colon Classification.* New Delhi: Sterling.
12. Krishan Kumar. (1980). *Theory of Classification.* New Delhi: Vikas.
13. Kumbhar, R. (2011). *Library Classification Trends in the 21st Century.* Burlington: Elsevier Science.

14. Lim, E. H. Y., Liu, J. N. K., & Lee, R. S. T. (2011). *Knowledge Seeker: Ontology Modelling for Information Search and Management.* Berlin: Springer.
15. Maltby, A. (1975). *Sayers' Manual of Classification for Librarians* (5th ed.). London: Andre Deutsch.
16. Navalani, K., & Gidwani, N. N. (1981). *A Practical Guide to Colon Classification.* New Delhi: Oxford & IBH.
17. Needham, C. D. (1971). *Organizing Knowledge in Libraries* (2nd ed.). London: Andre Deutsch.
18. Ranganathan, S. R. (1966). *Elements of Library Classification* (2nd ed.). Bombay: UBS.
19. Ranganathan, S. R. (1967). *Prolegomena to Library Classification* (3rd ed.). Bombay: UBS.
20. Ranganathan, S. R. (1967). *A Descriptive Account of the Colon Classification.* Bombay: Asia Publishing.
21. Ranganathan, S. R. (1987). *Colon Classification.* Bangalore: SRELS.
22. Ranganathan, S. R. (2006). *Philosophy of Library Classification.* Bangalore: EssEss.
23. Rowley, J. E., & Farrow, J. (2000). *Organizing Knowledge: An Introduction to Managing Access to Information* (3rd ed.). Aldershot: Gower.
24. Satija, M. P. (2011). *A Guide to the Theory and Practice of Colon Classification.* New Delhi: EssEss Publications.
25. Sood, S. P. (1998). *Universe of Knowledge and Universe of Subjects.* Jaipur: G. Star Printers.
26. Taylor, A. G. (2007). *Introduction to Cataloguing and Classification* (10th ed.). New Delhi: Atlantic.

Online Resources:

- https://limbd.org/knowledge-classification-different-opinions-of-philosophers-about-knowledge-classification/
- https://www.isko.org/cyclo/knowledge_organization
- https://www.librarianshipstudies.com/2015/08/library-classification.html
- https://www.libraryscience.in/2020/06/library-classification.html
- https://www.clir.org/pubs/reports/pub91/1knowledge/

Course Code: LIS-DSC-504
Course Title: Information Sources, Products and Services
Full Marks: **50**
Examination Marks: **40**
Class Test/Project/Seminar Presentation: **10**

Course Outcomes (CO)
After studying this course, students will be able to:
1. Comprehend electronic information resources.
2. Understand the theoretical foundations and design issues of information products.
3. Explain the concept of Consortia and their importance in improving the quality of information resources.
4. Gain knowledge of library networking.

Course Content

Unit – 1: Electronic Information Sources
- Traditional and classical vs. electronic information sources.
- Categories, characteristics, and utility of electronic information sources.

- Online and offline bibliographic databases (Reference, Referral, and Source databases).
- E-journals, e-journal gateways, and electronic reference tools.
- Discussion forums, Listservs, bulletin boards, subject directories, subject gateways, institutional repositories, and digital libraries.

Unit – 2: Information Products and Services

- Information analysis and consolidation products: types and characteristics.
- IAC methodology.
- Utility and design of e-alerting services (e-CAS and e-SDI).
- ICT-enabled information services (user services, MIS support services, web-based services, etc.).
- Information products and services related to special libraries and information systems (corporate, media and communication, industrial and medical library systems).

Unit – 3: Information Institutions and Systems

- Libraries and information centers: types and organization.
- Data centers and referral centers.
- Overview of science data networking systems in India.
- Information systems: structure, functions, objectives, features, and system design.
- Global information systems (INIS, AGRIS, MEDLARS, etc.): structure and services.
- Indian information systems in science & technology, biotechnology, medical science, agricultural science, environmental science, statistics, humanities, and social science.
- Designing of an information system.

Unit – 4: Library Networks and Consortia

- Resource sharing and library networking: need, structure, and management.
- Global library networks (OCLC, RLIN, WLN, BLAISE, etc.): structure and services.
- Indian library networks and their services (INFLIBNET, DELNET, etc.).
- Library consortia: scope, need, objectives, functions, features, and services.
- Global and Indian library consortia initiatives (ICOLC, SPARC, INDEST, UGC-Infonet, FORSA, etc.): structure and services.
- Social networking (Facebook, Twitter, LinkedIn, etc.) and its applications in library and information systems and services.
- Collaborative and international librarianship: an overview.

Unit – 5: Class Test / Project / Seminar Presentation

Reading List

1. Cassell, K. A., &Hiremath, U. (2013). *Reference and information services: An introduction.* London: Facet Publishing.
2. Chatterjee, A. (2013). *Elements of information analysis, consolidation and repackaging (IACR).* Kolkata: ProvaPrakashani.
3. Chatterjee, A. (2017). *Elements of Information Organization and Dissemination.* Oxford: Chandos Publishing.
4. Cheney, F. N. (1975). *Fundamental reference sources.* Chicago: American Library Association.
5. Crawford, J. (2006). *The culture of evaluation in library and information services.* Burlington: Elsevier Science.
6. Crawford, J., &Aslib. (2000). *Evaluation of library and information services.* London: Aslib.
7. Farmer, L. S. J. (2007). *The human side of reference and information services in academic libraries: Adding value in the digital world.* Oxford: Chandos.
8. Foskett, D. J. (1994). *Information service in libraries.* New Delhi: Anmol Publications.
9. Guha, B. (1983). *Documentation and information: Services, techniques and systems.* Calcutta: World Press.

10. Katz, B. (2002). *Introduction to reference work.* Boston: McGraw-Hill.
11. Kumar, K. (1996). *Reference service.* New Delhi: Vikas Publishing House.
12. Lankes, R. D., & Nast, P. (2008). *Virtual reference service: From competencies to assessment.* New York: Neal-Schuman Publishers.
13. Lester, R. (Ed.). (2005–2007). *New Walford: Guide to reference sources.* Vol. 1–2. London: Facet Publishing.
14. Lipow, A. G. (2003). *The virtual reference librarian's handbook.* Berkeley, CA: Library Solutions Press.
15. Lipson, C. (2006). *Cite right: A quick guide to citation styles—MLA, APA, Chicago, the sciences, professions, and more.* Chicago: University of Chicago Press.
16. Ranganathan, S. R. (2006). *Reference service.* Bangalore: SaradaRanganathan Endowment for Library Science.
17. Ross, C. S., Nilsen, K., & Dewdney, P. (2002). *Conducting the reference interview: A how-to-do manual for librarians.* London: Facet Publishing.
18. Stevens, R. E., & Smith, L. C. (1986). *Reference work in the university library.* Littleton, CO: Libraries Unlimited.

Course Code: LIS-DSC-505
Course Title: Information Representation and Retrieval
Full Marks: 50
Semester Examination Marks: 40
Internal Assessment / Project: 10

Course Outcomes (CO)

After studying this course, students will be able to:

1. Gain knowledge of the different evolutionary phases of information retrieval.
2. Use tools and techniques for information description.
3. Design and apply indexing languages and understand their uses.

Course Content

Unit – 1: Information Storage and Retrieval Systems

- Definition, objectives, scope, components, and purpose of information retrieval systems; information transfer and assimilation.
- Scholarly information, information communication, and the information transfer cycle.
- Information Retrieval vs. Information Mining: objectives, scope, and purpose.
- Design of information retrieval systems: points of view, factors for consideration, and phases in designing.

Unit-2: Indexing Languages, Controlled Vocabularies, and Indexing Systems

- Philosophy, contributions, and evolution of concepts by Cutter, Kaiser, Ranganathan, Farradane, Coates, etc.
- Natural language indexing.
- Vocabulary control devices: design, and development
- Automated indexing

Unit-3: Web Information Retrieval

- Search engines: design, components, and functions.
- Metadata: major initiatives. NDLI
- Web indexing: critical analysis.
- Meta search engines: definition, types, and functions.

Unit-4: Users and Information Retrieval

- Users: definition, types, needs, and information behavior.
- User study: objectives, methodology, and need analysis.
- Models of information behavior:
    - HIB Models – Wilson's Model, Dervin's Model, Ellis's Model, Bates's Model, Kulthau's Model.
    - Information Search Models – Belkin's Model, Saracevic's Model.
- Trends in information behavior: action research and fake news awareness.

Unit-5: Class Test / Project / Seminar Presentation

Reading List

1. Aitchison, J., Gilchrist, A., &Bawden, D. (2000). *Thesaurus construction and use: A practical manual* (4th ed.). London: Aslib.
2. Anderson, J. D. (1997). *Guidelines for indexes and related information retrieval devices: A technical report.* Bethesda, MD: National Information Standards Organization.
3. Bawden, D. (2007). Information seeking and information retrieval: The core of the information curriculum. *Journal of Education for Library and Information Science, 48*(2), 125–138.
4. Chatterjee, A. (2017). *Elements of Information Organization and Dissemination.* Oxford: Chandos Publishing.
5. Chowdhury, G. G. (2010). *Introduction to modern information retrieval* (3rd ed.). London: Facet Publishing.
6. Chu, H. (2003). *Information representation and retrieval in the digital age.* Medford, NJ: Information Today.
7. Foskett, A. C. (1996). *Subject approach to information* (5th ed.). London: The Library Association.
8. Ghosh, S. B., &Satpathi, J. N. (Eds.). (1998). *Subject indexing systems: Concepts, methods and techniques.* Calcutta: IASLIC.
9. Guha, B. (1983). *Documentation and information: Services, techniques and systems.* Delhi: World Press.
10. Lancaster, F. W. (1979). *Information retrieval systems: Characteristics, testing, and evaluation* (2nd ed.). New York: John Wiley.
11. Lancaster, F. W. (1998). *Indexing and abstracting in theory and practice* (2nd ed.). Champaign, IL: University of Illinois.
12. Lancaster, F. W. (1986). *Vocabulary control for information retrieval* (2nd ed.). Arlington, VA: Information Resources Press.
13. Madge, O. L. (Ed.). (2021). *New trends and challenges in information science and information seeking behaviour* (Lecture Notes in Networks and Systems, Vol. 193). Switzerland: Springer Cham.
14. Peters, C., Braschler, M., & Clough, P. (2012). *Multilingual information retrieval: From research to practice.* Heidelberg: Springer.
15. Sarkhel, J. K. (2001). *Information analysis in theory and practice.* Kolkata: Classique Books.
16. Vickery, B. C. (1986). Knowledge representation: A brief review. *Journal of Documentation, 42*(3), 145–159.

Course Code: LIS-DSC-506
Course Title: Management of Information Systems and Services
Full Marks: **50**
Examination Marks: **40**
Class Test / Project / Seminar Presentation: **10**

Course Outcomes (CO)
After studying this course, students will be able to:

1. Manage libraries and information centres effectively.
2. Acquaint themselves with different schools of management thought.
3. Apply management techniques in libraries and information services.
4. Understand management processes in a liberalized society.

Course Content

Unit – 1: Management Thought and Planning of Information Systems

- Management approaches and management philosophy.
- Management theory: concepts and historical perspectives.
- Schools of management thought: Classical, Neo-classical, and Modern management theories – their applications in library and information centres.
- Monitoring and controlling techniques: OR, MIS, MBO, SWOT, Network Analysis, PERT / CPM.
- Performance evaluation of libraries and information centres.

Unit – 2: System Analysis and its Application in LIS

- System: concept and classification; library as a system.
- System analysis: concept, background, design, and process.
- Application of system theory to libraries and information centres.
- Planning local and national information systems.

Unit – 3: Management Techniques

- Interpersonal relations, group dynamics, and the Johari Window model.
- Leadership: theories, styles, approaches, and models.
- Communication: methods, types, and models of communication.
- Motivation: theories and sources of motivation.
- Total Quality Management (TQM): elements, objectives, benefits, and quality indicators in the LIS domain.
- Application of TQM in libraries and information centres.

Unit – 4: Recent Trends in Management

- Change management: changes in procedures and methods; problems in incorporating change; techniques in managing change.
- Globalization and its impact on management practices in Indian libraries and information centres.
- Marketing and customer relationship management (CRM) in libraries and information centres.
- Stress and conflict management in libraries and information centres.

Unit – 5: Class Test / Project / Seminar Presentation

Reading List

1. Bakewell, K. G. B. (1997). *Managing user-centred libraries and information services* (2nd ed.). London: Maxwell.
2. Cook, C. (2002). *The maturation of assessment in academic libraries: The role of LibQUAL+™*. Bradford: Emerald Group Publishing.

3. Coote, H., &Batchelor, B. (1997). *How to market your library services effectively* (2nd ed.). London: Aslib.
4. Crawford, J. (1997). *Evaluation of library and information services effectively* (2nd ed.). London: Aslib.
5. Dunham, J. (2001). *Stress in the workplace: Past, present and future.* London: Whurr Publishers.
6. Evans, G. E. (1983). *Management techniques for librarians* (2nd ed.). New York: Academic Press.
7. Evans, G. E., &Layzell, P. (2007). *Management basics for information professionals* (2nd ed.). London: Libraries Unlimited.
8. Gautam, J. N. (1991). *Library and information management.* New Delhi: Prentice-Hall India.
9. Hayes, R. M. (2001). *Models for library management, decision-making, and planning.* San Diego: Academic Press.
10. Heath, F. M., Kyrillidou, M., & Askew, C. A. (2004). *Libraries act on their LibQUAL+ findings: From data to action.* Binghamton, NY: Haworth Information Press.
11. Katz, W. A. (1980). *Collection development: The selection of materials for libraries.* New York: Holt, Rinehart & Winston.
12. Krishan Kumar. (1985). *Library manual.* New Delhi: Vikas Publishing.
13. Lancaster, F. W., &Sandore, B. (1997). *Technology and management in library and information services.* Champaign, IL: University of Illinois Graduate School of Library and Information Science.
14. Laughlin, S., & Wilson, R. W. (2008). *The quality library: A guide to staff-driven improvement, better efficiency, and happier customers.* Chicago: American Library Association.
15. Martin, J. (2009). *Human resource management.* Los Angeles: SAGE Publications.
16. Mittal, R. L. (1984). *Library administration: Theory and practice* (5th ed.). Delhi: Metropolitan.
17. Mukherjee, K. (2007). *Customer relationship management.* New Delhi: Prentice-Hall.
18. Ranganathan, S. R. (1959). *Library administration* (2nd ed.). Bombay: Asia Publishing House.
19. Spiller, D. (1974). *Book selection: An introduction to principles and practice* (Rev. 2nd ed.). London: Clive Bingley.
20. Sutherland, V. J., & Cooper, C. L. (2000). *Strategic stress management: An organizational approach.* London: Macmillan.

Course Code: LIS-DSC-507
Course Title: Information and Communication Technology for LIS (Theory) – I
Full Marks: **50**
Examination Marks: **40**
Class Test / Project / Seminar Presentation: **10**

Course Outcomes (CO)

After studying this course, students shall be able to:

1. Distinguish multi-user operating systems from single-user operating systems and describe the various tasks associated with the use and administration of multi-user systems.
2. Recognize various features of multi-user operating systems as open-source systems.
3. Explore different kinds of high-level programming languages, their features, areas of application, strengths, and weaknesses.
4. Understand different file structures and file organization methods, including hashing algorithms for indexing.
5. Appreciate the merits of open-source RDBMS for various library applications.

6. Distinguish between peer-to-peer and client/server architectures, including their features and relationships in networking.
7. Conceptualize the addressing system and the Domain Name System (DNS).
8. Evaluate the use of Internet and Intranet applications in Library and Information Science (LIS) activities.
9. Explain various networking models such as ISO-OSI and TCP/IP reference models.

Course Content

Unit – 1: Computer Operating Systems

- Operating systems: fundamentals, roles, and features.
- Multi-user (Unix-like) operating systems (user level and administrative level).
- Operating systems and library automation software.
- Open-source operating systems.

Unit – 2: High-level Programming Languages

- Overview of high-level programming languages and their use in problem-solving.
- Overview of algorithmic high-level programming languages (any one of C, PASCAL, or FORTRAN).
- Overview of scripting high-level programming languages (any one of PHP, ASP, PERL, or Java).

Unit – 3: Database Management System (DBMS)

- File organization and file structures; indexing and hashing.
- Bibliographic database management systems: special features and handling problems.
- Database architecture and data modeling.
- Open-source RDBMS (MySQL and PostgreSQL).

Unit – 4: Computer Communication Systems

- Network features and relationships (peer-to-peer and client/server).
- IP addressing system and DNS.
- OSI networking model.
- TCP/IP reference model.
- Internet and Intranet.

Unit – 5: Class Test / Project / Seminar Presentation

Reading List

1. Botto, F. (1993). *Multimedia, CD-ROM and Compact Disc: A Guide for Users and Developers.* New Delhi: Galgotia.
2. Bradley, P. (1999). *Internet Power Searching: The Advanced Manual.* New York: Neal-Schuman Publishers.
3. Bradley, P. (2007). *How to Use Web 2.0 in Your Library.* London: Facet.
4. Deenadayalu, R. (1990). *Computer Science* (Vol. 2). New Delhi: TMH.
5. Engard, N. C. (2009). *Library Mashups: Exploring New Ways to Deliver Library Data.* Medford, N.J.: Information Today, Inc.
6. Engard, N. C. (2010). *Practical Open Source Software for Libraries.* Oxford: Chandos Publishing.
7. Gorman, M. (2003). *The Enduring Library: Technology, Tradition, and the Quest for Balance.* Chicago: American Library Association.
8. Hagler, R. (1997). *The Bibliographic Record and Information Technology.* Chicago: American Library Association.
9. Jacsó, P., & Lancaster, F. W. (1999). *Build Your Own Database.* Chicago: American Library Association.
10. Jean, G. (2011). *Digital Library.* New Delhi: World Technologies.

11. *Introduction to the Semantic Web*. Cambridge Semantics. https://cambridgesemantics.com/blog/semantic-university/intro-semantic-web/semantic-web-misconceptions/
12. *Artificial Intelligence and Intellectual Freedom.*https://repository.ifla.org/bitstream/123456789/1646/2/annex_1_artificial_intelligence_and_intellectual_freedom.pdf
13. *IFLA Statement on Libraries and Artificial Intelligence.*https://repository.ifla.org/handle/123456789/1646
14. *Shaping a Community Research Agenda in Data Science.* OCLC. https://www.oclc.org/research/events/2020/011420-shaping-a-community-research-agenda-for-data-science.html
15. *Responsible Operations: Data Science, Machine Learning, and AI in Libraries.* OCLC. https://www.oclc.org/research/publications/2019/oclcresearch-responsible-operations-data-science-machine-learning-ai.html

Course Code: LIS-DSC-508
Course Title: Application of Information and Communication Technology in LIS (Practice) – I
Full Marks: 50
Examination Marks: 40
Class Test / Project / Seminar Presentation: 10

Course Outcomes (CO)

After studying this course, students shall be able to:

1. Identify different user-level and administrative tasks for maintaining any multi-user operating system.
2. Execute operations essential for working in a UNIX environment, including both user-level and administrative-level tasks.
3. Develop dynamic web pages incorporating forms, frames, and style sheets.
4. Develop programs in high-level languages specifically designed for library operations.
5. Connect backend databases with web interfaces using scripting languages.

Course Content

Unit – 1: Linux User-Level Tasks; Linux System Administration Tasks
Unit – 2: Advanced Markup Languages and Dynamic Web Pages
Unit – 3: High-Level Programming Languages Suitable for Library Operations
Unit – 4: Basics of Scripting Languages
Unit – 5: Class Test / Project / Seminar Presentation / Viva-Voce

Reading List

1. Kam, D. (2009). *Role and Policy Implications of ICT in India.* New Delhi: Shree Publishers & Distributors.
2. Kernighan, B. W., & Ritchie, D. M. (1988). *The C Programming Language.* Englewood Cliffs, N.J.: Prentice Hall.

3. Leon, A., & Mathews, L. (2004). *Fundamentals of Information Technology* (Latest ed.). Chennai: Leon Tech World.
4. Library of Congress. (1988). *Advances in Library Information Technology.* Washington, D.C.: Cataloging Distribution Service, Library of Congress.
5. Matthews, J. R. (1980). *Choosing an Automated Library System: A Planning Guide.* Chicago: American Library Association.
6. Mukhopadhyay, P. (2013). *Course of Action: Library Information Technology.* Kolkata: ProvaPrakashani.
7. Mukhopadhyay, P. (2014). *Course of Action: Automated Library System.* Kolkata: ProvaPrakashani.
8. Satyanarayana, N. R. (1995). *A Manual of Computerisation in Libraries.* New Delhi: WishwaPrakashan.
9. Rajaraman, V. (1995). *Fundamentals of Computers.* New Delhi: PHI.
10. Rajasekharan, K., &Nafala, K. M. (2007). *Creation of Digital Document Archives with Winisis.* Kerala: Kerala Institute of Local Administration.
11. Scott, M. L. (2006). *Programming Language Pragmatics.* San Francisco, CA: Morgan Kaufmann Publishers.
12. Sinha, P. K. (1992). *Computer Fundamentals: Concept, Systems and Applications* (2nd ed.). Delhi: BPB Publications.
13. Tanenbaum, A. S. (1996). *Computer Networks.* Upper Saddle River, N.J.: Prentice Hall PTR.
14. Tanenbaum, A. S. (1984). *Structured Computer Organization.* Englewood Cliffs, N.J.: Prentice Hall.
15. Vaughan, J., & ALA TechSource. (2011). *Web Scale Discovery Services.* Chicago, IL: ALA TechSource.
16. Viswanathan, T. (1992). *Telecommunication Switching Systems and Networks.* New Delhi: Prentice Hall of India Pvt. Ltd.
17. Walsh, T. (2005). *Introducing ICT: Basic to Intermediate.* Dublin: Gill & Macmillan.

Course Code: LIS-DSC-509
Course Title: Research Methodology
Full Marks: **50**
Examination Marks: **40**
Class Test / Project / Seminar Presentation: **10**

Course Outcomes (CO)

After studying this course, students shall be able to:

1. Understand subject-domain specific research activities.
2. Comprehend overall research methodologies to enhance employability in this subject field.
3. Develop a clear conception of the research process in libraries.
4. Gain familiarity with subject-specific phenomena and achieve new insights into various subject domains.
5. Accurately portray the characteristics of a particular individual, situation, or group related to any subject domain.
6. Determine various parameters with which any phenomenon occurs or is associated with other variables.

Course Content

Unit – 1: Basic Concepts

- Research: Meaning, scope, objectives, and characteristics; kinds – fundamental/basic and applied; research methods.
- Developing a research project and writing a research proposal.
- Concept of research in the context of various broad disciplines (Physical Sciences, Chemical Sciences, Earth Sciences, Space Sciences, Medical Sciences, Engineering Sciences, Mathematical and Computer Sciences, Agricultural Sciences, Life Sciences, Social Sciences, etc.).
- Research in Science and Humanities: Basic differences.
- R&D systems in India: DST, DBT, DAE, CSIR, ICMR, ICAR, ISRO, ICSSR, INSA, etc.

Unit – 2: Research Methods

- Historical research: Nature, scope, and sources of historical data including methods of ascertainment of authenticity.
- Experimental research: Nature and types; experimental design and steps in research design.
- Descriptive/Survey research: Nature and types, data collection tools and techniques, sampling – types and techniques, scope of experiment in social research.
- Introduction to ethnographic and action research; integrated research for studying culture, subalterns, gender sensitivity, tribal culture, and social justice.
- Planning an ethnographic research.
- Collection and documentation of data.
- Different methods: Participant observation, field notes, in-depth and group interviews, diaries, and self-documentation.
- Sampling: Concepts of statistical population, sample, sampling frame, sampling error, sample size, and non-response; characteristics of a good sample; probability sampling – simple random, systematic, stratified random, and multistage sampling; determining sample size; practical considerations in sampling.
- Case study and Delphi method.
- Organization, analysis, and interpretation of data.
- Writing the research report.

Unit – 3: Research in the Context of LIS

- Theory and empirics in LIS research: Basic concepts.
- Concept of research in social sciences.
- Role of libraries and information centres in research.
- Trends of research in Library and Information Science.
- Ethics of research.
- New frontiers of multidisciplinary domains such as big data, data analytics, and social justice (gender neutrality, societal egalitarianism) and their implications in the context of LIS research.

Unit – 4: Research Publications: Ethics and Integrity

- Reasons and scope of Plagiarism and Publication Misconduct;
- Methods of detection; plagiarism checking software;
- Sources of plagiarism;
- Predatory Publications;
- Role of plagiarism in the growth of predatory publications.

Unit – 5: Class Test / Project / Seminar Presentation

Reading List

1. Das, N. G. (2009). *Statistical Methods.* Calcutta: Tata McGraw-Hill.
2. Donald, H. K., & Boyce, B. R. (1991). *Operations Research for Libraries and Information Agencies: Techniques for the Evaluation of Management Decision Alternatives.* San Diego: Academic Press.
3. Glazier, J. D., & Hall, P. M. (1992). *Qualitative Research in Information Management.* Englewood, CO: Libraries Unlimited.
4. Goon, A. M., Gupta, M. K., &Dasgupta, B. (1978). *Basic Statistics.* Calcutta: World Press.
5. Gorman, G. E., & Clayton, P. (2004). *Qualitative Research for the Information Professional: A Practical Handbook.* 2nd ed. London: Facet Publishing.
6. Hafner, A. W. (1997). *Descriptive Statistical Techniques for Librarians* (2nd ed.). Chicago: American Library Association.
7. Hernon, P. (1989). *Handbook of Statistics for Library Decision Making.* Norwood, NJ: Ablex.
8. Khan, M. A. (2002). *Research Methods in Library and Information Science.* New Delhi: Cosmo Publications.
9. Krishan Kumar. (1992). *Research Methods in Library and Social Science.* New Delhi: Vikas.
10. Lawal, I. O. (2009). *Library and Information Science Research in the 21st Century: A Guide for Practicing Librarians and Students.* Oxford: Chandos Publishing.
11. Losee, R. M., Jr., & Worley, K. A. (1993). *Research and Evaluation for Information Professionals.* San Diego: Academic Press.
12. McClure, C. R., &Hernon, P. (Eds.). (1991). *Library and Information Science Research: Perspectives and Strategies for Improvement.* Norwood, NJ: Ablex Publishing Corporation.
13. Moore, N. (2006). *How to Do Research* (3rd ed.). London: Facet Publishing.
14. Pickard, A. J. (2012). *Research Methods in Information* (2nd ed.). London: Facet.
15. Prytherch, R. (1994). *Information Management and Library Science: A Guide to the Literature.* Brookfield, VT: Gower.
16. Simpson, I. S. (1990). *How to Interpret Statistical Data: A Guide for Librarians and Information Scientists.* London: Library Association.
17. Slater, M. (Ed.). (1990). *Research Methods in Library and Information Studies.* London: Library Association.
18. Stephens, P., & Hornby, S. (1995). *Simple Statistics for Library and Information Professionals.* London: Library Association.
19. Sutherland, V. J., & Cooper, C. L. (2000). *Strategic Stress Management: An Organizational Approach.* London: Macmillan.
20. Online resources:

- Types of Research Methodology – EDUCBA
- Bridge Library – CCS University
- LibGuides – Wits University

Course Code: LIS-DSE-510A
Course Title: Library Service Platform
Full Marks–50
Examination Marks –40
Class Test/Project/Seminar Presentation-10

Course Outcomes (CO)

After studying this course, students shall be able to:

1. To provide concepts, features, scopes, and advantages of LSP over traditional ILS;
2. To explore open-source library discovery tools; and
3. To understand the processes related to LSP and library discovery.

Course Content

Unit 1: Library Service Platform – Concepts and Components

- Library Service Platform (LSP) – what and why;
- ILS transition – social and technical factors;
- LSP vs ILS;
- LSP – global recommendations (OLE and ILSDI);
- LSP components.

Unit-2: Library Software Ecosystem

- Components of library ecosystem;
- LSP prerequisites – standards and software;
- LSP providers and LSP products;
- LSP technologies and LSP gold standards;
- LSP projects: OLE and FOLIO.

Unit-3: Library Discovery

- Library discovery – what and why;
- Library discovery – mechanisms and standards;
- Library discovery – software and tools;
- Open source discovery systems;
- Library discovery and full-text indexing.

Unit-4: Library Workflow Integration

- SoA architecture;
- Multi-tenancy and cloud hosting;
- FOLIO guidelines for workflow integration;
- ILS and ERMS integration;
- Trends and future.

Unit-5: Class Test/Project/ Seminar Presentation

Reading List

Bowers, Steven K., and Elliot J. Polak.“The Future of Cloud-Based Library Systems.”*In The Top Technologies Every Librarian Needs to Know: A LITA Guide*, edited by Kenneth J. Varnum, 43–55. Chicago: ALA TechSource, 2014.
Breeding, M. “Discovery Product Functionality.”*Library Technology Reports* 50(1), 5–32 (2015).
Breeding, Marshall.*The Future of Library Resource Discovery: A White Paper Commissioned by the NISO Discovery to Delivery (D2D) Topic Committee.*Council of Undergraduate Research, 2015. Available at: http://www.cur.org/about_cur/frequently_asked_questions/#2 (Accessed on August 14, 2016).
Breeding, Marshall. “APIs Unify Library Services.” *Computers in Libraries* 34, no. 3 (April 2014): 22–24.
Chad, K. “The Library Management System is Dead—Long Live the Library Ecosystem.” *CILIP Update Magazine* (2013): 18–20. Available at: http://www.kenchadconsulting.com/wp-content/uploads/2013/09/LMS_is_dead_long_live_ecosystem_CILIP-Update_Sept2013.pdf (Accessed on October 21, 2016).
Chad, Ken. (2012). “Specification for a Unified (Next Generation) Library Resource Management System,” version 2.Ken Chad Consulting, August 2012. Available at: https://libtechrfp.wikispaces.com/Unified+library+resource+management+specification.
De Smet, Egbert, and Sangeeta N. Dhamdhere.*E-Discovery Tools and Applications in Modern Libraries.*IGI Global, 2016.
Dempsey, Lorcan. “Untangling the Library Systems Environment.”*In OCLC Book of the Blog, Lorcan Dempsey’s Weblog* (2009). Available at: http://orweblog.oclc.org/untangling-the-library-systems-environment/ (Accessed on August 14, 2016).
UKSG.*Impact of Library Discovery Technologies: A Report for UK (2013).* Available at: http://www.uksg.org/sites/uksg.org/files/UKSG_final_report_16_12_13_by_LISU.pdf (Accessed on September 25, 2016).

Additional Reading List

Fu, Ping. “Supporting the Next-Generation ILS: The Changing Roles of Systems Librarians.” *Journal of Library Innovation* 5, no. 1 (2014): 30–42.
Grant, C. (November 28, 2016). “FOLIO, Acronym for ‘Future of Libraries Is Open’? I’d Suggest: ‘Fantasy of Librarians Inflamed by Organizations.’” *Thoughts from Carl Grant*, 2016–11.
Grant, Carl. “The Future of Library Systems: Library Services Platforms.” *Information Standards Quarterly* 24, no. 4 (Fall 2012): 4–15.
Helmer, John F., Stephen Bosch, Chris Sugnet, and Cory Tucker. “Innovation and Leadership through Collaboration: The Orbis Cascade Alliance Experience: An Interview with John Helmer.” *Collaborative Librarianship* 4, no. 4 (2012): 183–85.
Levy, Richard. “Library in the Cloud with Diamonds: A Critical Evaluation of the Future of Library Management Systems.” *Library Hi Tech News* 30, no. 3 (2013): 9–13.
Manifold, Alan. “Integrated Library Systems and Dis-Integrative Pressures.”*International Trends in Library and Information Technology* 1, no. 2 (May–Sept 2014): 13–25.
NISO Open Discovery Initiative Working Group. *Open Discovery Initiative: Promoting Transparency in Discovery* (2014). Available at: http://www.niso.org/apps/group_public/download.php/14820/rp-19-2014_ODI.pdf (Accessed on August 22, 2016).
Popp, Mary Pagliero, ed. *Planning and Implementing Resource Discovery Tools in Academic Libraries.*IGI Global, 2012.
Wang, Yongming, and Trevor A. Dawes. “The Next Generation Integrated Library System: A Promise Fulfilled?” *Information Technology and Libraries* 31, no. 3 (2012): 76–84.
Yeh, J., Sie, S., & Chen, C. (January 01, 2009). *Extensible Digital Library Service Platform.*

Course Code: LIS-DSE-510B
Course Title: AI/ML in Libraries
Full Marks–50
Examination Marks –40
Class Test/Project/Seminar Presentation-10

Course Outcomes (CO)

After studying this course, students shall be able to:

1. To learn concepts related to AI/ML;
2. To understand use of AI/ML in knowledge organization; and
3. To apply generative AI tools and techniques for library workflow management.

Course Content

Unit 1: AI/ML Basics: Technical and Social

- Fundamentals of Artificial Intelligence and Machine Learning: concepts and terminology;
- Types of machine learning (supervised, unsupervised, reinforcement) with examples from library services;
- Data in libraries: bibliographic, textual, multimedia, and usage data;
- Ethical, legal, and social implications of AI/ML in libraries;
- AI literacy for library professionals.

Unit 2: Tools based on Generative AI

- Introduction to Generative AI (text, image, audio, and multimodal);
- Chatbots and virtual reference services powered by LLMs;
- Generative AI in information discovery and summarization;
- Applications in content creation: metadata generation, translation, and accessibility;
- Evaluation of generative AI tools: accuracy, bias, transparency, and limitations.

Unit 3: Large Language Models

- Concept and architecture of LLMs (transformers, training, fine-tuning);
- Prominent LLMs in use (GPT, LLaMA, Claude, etc.) and open-source vs proprietary approaches;
- Retrieval-Augmented Generation (RAG) for library retrieval systems;
- Challenges of hallucination, bias, and explainability in LLMs;
- Policy, licensing, and responsible use of LLMs in academic and library contexts.

Unit 4: Machine Learning based Knowledge Organization

- Automatic subject indexing and classification using ML;
- Semantic enrichment: entity recognition, topic modeling, and ontologies;
- Recommender systems in digital libraries and OPACs;
- ML in citation analysis, bibliometrics, and altmetrics;
- Case studies of AI/ML applications in cataloging, discovery layers, and knowledge graphs.

Unit 5: Class Test/Project/Seminar Presentation

Reading List

Bowen, J. A., & Watson, C. E. (2024).*Teaching with AI: A practical guide to a new era of human learning.*Johns Hopkins University Press.
Carlson, J., & Johnston, L. (2015).*Data information literacy: Librarians, data, and the education of a new generation of researchers.*Purdue University Press.
Daugherty, A., & Russo, M. F. (2007).*Information literacy programs in the digital age: Educating college and university students online.* Chicago: Association of College and Research Libraries.
Fitch, K. (2023). Searching for meaning rather than keywords and returning answers rather than links.*The Code4Lib Journal*, 57.https://journal.code4lib.org/articles/17443
Gavin, C. (2008). *Teaching information literacy: A conceptual approach.* Lanham, Md: Scarecrow Press.
Godwin, P., & Parker, J. (Eds.). (2008). *Information literacy meets library 2.0.*Facet Publishing.
Grassian, E. S., &Kaplowitz, J. R. (2005).*Learning to lead and manage information literacy instruction.* New York: Neal-Schuman Publishers.
Hanegan, M., & Rosser, C. (2025).*Generative AI and libraries: Claiming our place in the center of a shared future.* ALA Editions in collaboration with Core.
Hervieux, S., & Wheatley, A. (2022). The rise of AI: Implications and applications of artificial intelligence in academic libraries. *Association of College and Research Libraries.*
Jones, B. (2024). *AI literacy fundamentals: Helping you join the AI conversation.* Data Literacy Press.
Kasprzik, A. (2024). The automation of subject indexing at ZBW and the role of metadata in times of large language models.*Procedia Computer Science, 249,* 160–166. https://doi.org/10.1016/j.procs.2024.11.059
Mukhopadhyay, P. (2025). Designing conversational search for libraries: Retrieval augmented generation through open source large language models. *DESIDOC Journal of Library & Information Technology, 45*(2), 109–115. https://doi.org/10.14429/djlit.2024.20.206
O'Dea, K., & Ng, D. T. K. (2025).*Effective practices in AI literacy education: Case studies and reflections.* Emerald Publishing Limited.
Sacco, K. L., Norton, A., & Arms, K. (2025).*Navigating AI in academic libraries: Implications for academic research.*IGI Global Scientific Publishing. https://doi.org/10.4018/979-8-3693-3053-1

Additional Reading List

Adetayo, A. J. (2023). Artificial intelligence chatbots in academic libraries: The rise of ChatGPT. *Library Hi Tech News, 40*(3), 18–21. https://doi.org/10.1108/LHTN-01-2023-0007
Anderson, C. B., & Fisher, D. H. (2025).*Artificial intelligence for academic libraries.*Routledge, Taylor & Francis Group.
Barsha, S., &Munshi, S. A. (2024).Implementing artificial intelligence in library services: A review of current prospects and challenges of developing countries.*Library Hi Tech News, 41*(1), 7–10. https://doi.org/10.1108/LHTN-07-2023-0126
Cordell, Ryan. *Machine Learning + Libraries: A Report on the State of the Field.* Washington, DC: Library of Congress, 2020. https://tinyurl.com/ytn3tkhn
Cox, A. M., &Mazumdar, S. (2024). Defining artificial intelligence for librarians.*Journal of Librarianship and Information Science, 56*(2), 330–340. https://doi.org/10.1177/09610006221142029
Galina Russell, I., & Layne-Worthey, G. (2025).*The Routledge companion to libraries, archives, and the digital humanities.*Routledge, Taylor & Francis Group.
Gozalo-Brizuela, R., &Garrido-Merchan, E. C. (2023).*ChatGPT is not all you need: A state of the art review of large generative AI models.*arXiv. https://doi.org/10.48550/arXiv.2301.04655
Hanegan, M., & Rosser, C. (2025).*Generative AI and libraries: Claiming our place in the center of a shared future.* ALA Editions in collaboration with Core.
Malespina, E. (2025). *AI and the library: Strategies, tools, and ethics for today's schools.*Educational Equity Advisors.

Course Code: LIS-DSE-511A
Course Title: Health Information System
Full Marks–50
Examination Marks –40
Class Test/Project/Seminar Presentation-10

Course Outcomes (CO)

After studying this course, students shall be able to:

1. Students will understand the rich culture of traditional Indian knowledge system on Health and Nutrition.
2. The completion of this course will enable the students to identify relevant information sources as per the need of information seekers.
3. The Library and information Professionals will be able to manage libraries of Health Information Seekers efficiently after completion of this course.

Course content

Unit-1: Basic Concepts

- Indian Traditional Knowledge
- Modern Healing Systems
- Contemporary Treatment Systems to Diseases

Unit-2: Indian Health Knowledge Systems

- ICMR
- NML
- State Health Information Infrastructure

Unit-3: Indian Health Information Systems

- Ministry of Health and Family Welfare
- Ministry of Health
- HMIS

Unit-4: Health Information Institutions: Global Scenario

- PubMed
- MEDLERS
- *Index Medicus*
- *BioMed*

Unit-5: Class Test/Project/ Seminar Presentation

Reading List

1. **Devarajan, G. (2010).** *Health Information System: Concepts, Design, Development and Data Analysis.* New Delhi: Ess Ess Publications.
2. **Ramesh Babu, B., & Gopalkrishnan, S. (2003).** *Information Management in Health Science Libraries.* New Delhi: Allied Publishers.
3. **Bhatt, R.K. (2011).** *Knowledge Management in Health Sciences: Issues and Practices.* New Delhi: Kanishka Publishers.
4. **Rao, I.K.R. (2014).** *Information Systems and Services in Health Sciences.* New Delhi: B.R. Publishing.

5. **World Health Organization (WHO).** *Health Information Systems: Toolkit on Monitoring Health Systems Strengthening.* Geneva: WHO Press.
[Available at: https://www.who.int/publications]
6. **Ministry of Health and Family Welfare, Government of India.** *National Health Policy and Health Management Information System (HMIS) Reports.*
[Available at: https://main.mohfw.gov.in/]
7. **Indian Council of Medical Research (ICMR).** *Annual Reports and Publications.*
[Available at: https://main.icmr.nic.in/]
8. **National Medical Library (NML), New Delhi.** *Resources and Services for Medical and Health Professionals.*
[Available at: https://www.nml-ermed.in/]
9. **Lindberg, D.A.B., & Humphreys, B.L. (2008).** *Medical Informatics and the Internet in Medicine.* New York: Springer.
10. **Shortliffe, E.H., & Cimino, J.J. (2014).** *Biomedical Informatics: Computer Applications in Health Care and Biomedicine.* New York: Springer.

Course Code: LIS-DSE-511B
Course Title: Legal Information System
Full Marks–50
Examination Marks –40
Class Test/Project/Seminar Presentation-10

Course Outcomes (CO)

After studying this course, students shall be able to:

1. Students will understand the Judicial System and its' hierarchies.
2. The completion of this course will enable the students to identify relevant legal information sources as per the need of information seekers.
3. The Library and information Professionals will be able to manage law libraries efficiently after completion of this course.

Course Content

Unit-1: Concepts of Information in Legal System

- Indian Judiciary
- Legal Profession and its' information sources

Unit-2: Sources of Legal Information

- Civil
- Criminal
- Environmental
- International

Unit-3: Indian Judiciary and Information Support

- Supreme Court
- High Court
- Lower Court

Unit-4: Legal Information Databases: Global Scenario

- LexisNexis
- Manupatra

Unit-5: Class Test/Project/ Seminar Presentation

Reading List

1. **Ramesh Babu, B., & Gopal krishnan, S. (2008).** *Information Management in Law Libraries.* New Delhi: Allied Publishers.
2. **Bhatt, R.K. (2012).** *Law Librarianship in India: Challenges and Opportunities.* New Delhi: Kanishka Publishers.
3. **Kumar, P.S.G. (2004).** *Information Sources, Services and Systems.* New Delhi: B.R. Publishing — (Chapters on Legal Information Sources).
4. **Parida, B. (2013).** *Law Libraries and Information Services.* New Delhi: Ess Ess Publications.
5. **Rao, I.K.R. (2014).** *Information Systems and Services.* New Delhi: B.R. Publishing — (Relevant sections on legal information systems).
6. **Sinha, R.K. (2003).** *Law and Information: A Study of Legal Information Systems in India.* New Delhi: Deep & Deep Publications.
7. **Tripathi, S. (2011).** *Legal Information Systems and Services in Digital Era.* New Delhi: Kanishka Publishers.
8. **Bainbridge, D. (2018).** *Introduction to Information Technology Law* (8th ed.). London: Pearson.
9. **Garner, B.A. (Ed.). (2019).** *Black's Law Dictionary* (11th ed.). St. Paul: Thomson Reuters.
10. **Raghavan, R. (2015).** *Access to Legal Information: Issues and Challenges.* New Delhi: Ess Ess Publications.

SECOND SEMESTER

Course Code: LIS-DSC-551
Course Title: Information Policy and Knowledge Economy
Full Marks: **50**
Examination Marks: **40**
Class Test / Project / Seminar Presentation: **10**

Course Outcomes (CO)

After studying this course, students will be able to:

1. Comprehend and understand the concept of an information society and the information policies designed to promote societal growth.
2. Become familiar with economic concepts and the management of information and knowledge.
3. Understand the importance of marketing information products and services for libraries and information centres.

Course Content

Unit 1: Information Society

- Social implications of information.
- National and international plans, policies, and programmes related to information for development, with special reference to India and developing countries.
- Information technology policy of India.
- Politics of information: Global Information Order vs. Indigenous Knowledge System, Information explosion vs. Information dearth, Information divide and digital divide.
- Freedom, confidentiality, and privacy of information.
- Information Society and Knowledge Society: Characteristics, changing role of information organizations and professionals; the developing world perspective.

Unit 2: Knowledge Management

- Information and Knowledge Management.
- Knowledge management cycle: Knowledge creation, acquisition, capture, codification.
- Knowledge management tools: Selection and evaluation.
- Knowledge and organization: Knowledge workers, essential skills for knowledge workers; role of library professionals in knowledge management.

Unit 3: Economics of Information

- Economics of information: Scope and objectives.
- Information economics vs. economics of information.
- Information as a resource: Production, distribution, and consumption of information and knowledge.
- Economic analysis models, cost-benefit analysis, and cost-effectiveness.

Unit 4: Marketing of Library and Information Products and Services

- The marketing concept: Relevance and application in the information field.
- Planning and designing of marketing strategy.
- Marketing research: Objectives and strategies; market segmentation and targeting methods.
- Marketing mix: New product development, product lifecycle, pricing decisions, and promotion strategies.

Unit 5: Class Test / Project / Seminar Presentation

Reading List

1. Arrow, K. J. (1984). Collected papers. Vol. 4: The Economics of Information. Cambridge, MA: Harvard University Press.
2. Bell, D. (1980). The social framework of the information society. In Derrouzos, M. C., & Moses, L. (Eds.), The computer age: A twenty-year view. Cambridge: MIT Press.
3. Dearnley, J., & Feather, J. (2001). The wired world: An introduction to the theory and practice of the information society. London: Library Association.
4. Delanty, G. (2001). Challenging knowledge: The university in the knowledge society. Open University Press.
5. Dordick, H. S., & Wang, G. (1993). The information society: A retrospective view. Newbury Park, CA: Sage.
6. Drucker, P. (1998). From capitalism to knowledge society. The Knowledge Economy, 15–34.
7. Feather, J. (2008). The information society: A study of continuity and change (5th ed.). London: Facet Publishing.
8. Geneva Principles on the Information Society. (2003). Retrieved from https://www.itu.int/net/wsis/docs/geneva/official/dop.html
9. Khanna, J. K. (1987). Library and Society.Kurukshetra: Research Publications.
10. Levin, D. K., &Lippman, A. (Eds.). (1995). The Economics of Information (Vol. 2). Cheltenham: Edward Elgar Publishing.
11. Machlup, F. (1984). The economics of information and human capital. Princeton: Princeton University Press.
12. Martin, W. J. (1995). The global information society. Brookfield, VT: Gower.
13. Masuda, Y. (1980). The information society as post-industrial society. Washington, D.C.: World Future Society.
14. Mukherjee, B. (2012). Information, Communication and Society. New Delhi: EssEss Publications.
15. Singh, A. P., &Yuvaraj, M. (2013). Information, Communication and Society. New Delhi: EssEss Publications.
16. Singha Roy, D. K. (2014). Knowledge Society: New Identities in Emerging India. New York: Cambridge University Press.
17. Sharma, P., &Pandey, S. K. (1987). Library and Society. New Delhi: EssEss Publications.
18. UNESCO. (2005). Towards Knowledge Societies. Retrieved from http://www.unesco.org/en/worldreport
19. Webster, F. (2002). *Theories of the Information Society* (2nd ed.). London: Routledge.

Course Code: LIS-DSC-552
Course Title: Intelligent Information Retrieval
Full Marks: **50**
Semester Examination Marks: **40**
Internal Assessment / Project: **10**

Course Outcomes (CO)

After studying this course, students will be able to:

1. Identify the characteristics of information sources and databases.
2. Develop theoretical foundations and understand information searching mechanisms.
3. Gain knowledge of interface design.

4. Understand the purpose and process of evaluating information retrieval systems.

Course Content

Unit 1: Information Sources, Formats, and Retrieval

- Resource Description: Library Catalogue and OPAC.
- Information Content: CD-ROM IR; Text and Multimedia IR; Online IR.
- Digital Information: Institutional Repositories and access through institutions.
- Web Information: Web searching mechanisms.

Unit 2: Searching in Information Retrieval Systems

- Purpose, prerequisites, pre-search interview, and searching process.
- Retrieval Models: Boolean search model, probabilistic retrieval model and natural language processing model.
- Formulation of Search Strategy: Search techniques—Boolean, proximity, range, limiting, truncation, and string search.
- Use of classical library and information retrieval tools and techniques on the Internet.

Unit 3: Evaluation of Information Retrieval Systems

- Evaluation Fundamentals: Definition, philosophy, purpose, methodologies.
- Evaluation Process: Types, functions, levels of evaluation, and criteria.
- Evaluation Experiments: Parameters, methodologies, significance, and criticism.
- Evaluation of Scholarly Databases: Content, user interface, subject domains, and search facilities.

Unit 4: Intelligent Information Retrieval Landscape

- Vector Space Model
- Semantic Information retrieval, Semantic Similarity, Semantic Digital Library
- Cloud Computing: Information contents, formats, access, and retrieval.
- Geographic Information System (GIS): Definition, purpose, information retrieval, and ethical issues.

Unit 5: Class Test / Project / Seminar Presentation

Reading List

1. Aitchison, J., Gilchrist, A., & Bawden, D. (2000). *Thesaurus Construction and Use: A Practical Manual* (4th ed.). London: Aslib.
2. Anderson, J. D. (1997). *Guidelines for Indexes and Related Information Retrieval Devices: A Technical Report.* Bethesda, Maryland: National Information Standards Organization.
3. Baeza-Yates, R., & Ribeiro-Neto, B. (1999). *Modern Information Retrieval.* New York: ACM Press; Harlow, England: Addison-Wesley.
4. Bawden, D. (2007). Information seeking and information retrieval: The core of the information curriculum. *Journal of Education for Library and Information Science*, 48(2), 125–138.
5. Ceri, S., Bozzon, A., Brambilla, M., Della Valle, E., Fraternali, P., & Quarteroni, S. (2013). *Web Information Retrieval.* Heidelberg: Springer.
6. Chowdhury, G. G. (2010). *Introduction to Modern Information Retrieval* (3rd ed.). London: Facet Publishing.

7. Chu, H. (2003). *Information Representation and Retrieval in the Digital Age.* Medford, N.J.: Information Today for the American Society for Information Science and Technology.
8. Foskett, A. C. (1996). *Subject Approach to Information* (5th ed.). London: The Library Association.
9. Fugmann, R. (1983). *Subject Analysis and Indexing: Theoretical Foundation and Practical Advice.* Frankfurt: Verlag.
10. Ghosh, S. B., & Satpathi, J. N. (Eds.). (1998). *Subject Indexing Systems: Concepts, Methods and Techniques.* Calcutta: IASLIC.
11. Gilchrist, A. (1997). *From Classification to Knowledge Organization.*
12. Hyvönen, E. (2012). *Publishing and Using Cultural Heritage Linked Data on the Semantic Web.* San Rafael, Calif.: Morgan & Claypool Publishers.
13. International Organization for Standardization. (2013). *Information and Documentation: Thesauri and Interoperability with Other Vocabularies.* Geneva: ISO.
14. ISO 2788:1986. *Guidelines for the Establishment and Development of Monolingual Thesauri.* Geneva: International Organization for Standardization.
15. Lancaster, F. W. (1998). *Indexing and Abstracting in Theory and Practice* (2nd ed.). Champaign, Illinois: University of Illinois.

Course Code: LIS-DSC-553
Course Title: Studies of Research Metrics

Full Marks–50
Examination Marks –40
Class Test/Project/Seminar Presentation-10

Course Outcomes (CO)

After studying this course, students will be able to:

1. Explore metrics for the evaluation of scholarly communication.
2. Measure research performance and productivity of agents involved in research activities.
3. Enhance data analysis skills and competencies to improve employability in big data analytics and data science.
4. Measure the quality of journals and their articles.
5. Identify potential authors in any subject domain.
6. Identify potential research institutions and prolific research topics across subject domains.
7. Implement different methods for analyzing research impact using altmetric tools.

Course Content

Unit-1: Research Evaluation Metrics and Related Indicators

- Use of citation-based indicators for research evaluation.
- Concepts of Librametrics, Bibliometrics, Scientometrics, Informetrics, Webometrics, etc.
- Common bibliometric indicators.
- Citation analysis.
- Classical bibliometric laws (Bradford's Law, Lotka's Law, Zipf's Law, Pareto's Law, Sengupta's Law, Benford's Law).
- Transition from citation-based indicators to author-level and article-level metrics for research evaluation.
- Non-citation indicators.
- Author-level indicators using public profiles (including normalized h-index and tapered h-index), g-index, e-index, R-index, a-index, etc.

- Article-level metrics using altmetric tools.
- Indexes for personal success of researchers.
- Indexes for characterization of research networks.
- Indexes for measuring the quality of scientific output.

Unit-2: Performance Measurement of R&D in Science and Technology

- Citation databases: Web of Science, Scopus, Indian Citation Index (ICI).
- CiteSeerX, Google Scholar, and Google Scholar Citations.
- Analytical products with journal performance metrics.
- Journal Citation Reports (JCR®).
- New platforms for evaluating scholarly communications.
- SCImago Journal & Country Rank (SJR), eigenfactor.org, Publish or Perish (PoP) software, JournalMetrics.com.
- Tools: OpenRefine, BibExcel, VOSviewer.
- Bibliometric and informetric measurements in emerging subject domains of science (e.g., amplituhedron, conformal bootstrap, black hole information paradox, holographic entanglement entropy) and social sciences (e.g., gender neutrality, feminism, social justice, actuarial science).

Unit-3: Article and Author-Level Measurements

- Unique identifiers for authors and researchers.
- Open Researcher and Contributor ID (ORCID).
- Article-level metrics (Altmetrics).
- Measuring Altmetrics using Altmetric.com and ImpactStory.org.
- Altmetrics for online journals.
- Academic social networks: ResearchGate, Academia.edu, GetCited.org, Social Science Research Network (SSRN).
- Other important social networks.
- Regional journal networks with bibliometric indicators: SciELO (Scientific Electronic Library Online), Redalyc.
- Online citation and reference management tools: Mendeley, CiteULike, Zotero, Google Scholar Library, EndNote Basic.

Unit-4: Measurement of Scientific Productivity

- Vickery's interpretation and Brooks' work.
- Characteristics of bibliometric distributions.
- Ageing and obsolescence study – half-life calculation.
- Validity of bibliometric measurement and application of bibliometric laws in libraries and information centres.
- Models of growth of literature: Derek de Solla Price Generalized Model (based on Little Science, Big Science), Power Model, Exponential Model, Logistic Model, Gompertz Model, etc.

Unit-5: Class Test / Project / Seminar Presentation

Reading List

1. Andres, A. (2009). *Measuring Academic Research: How to Undertake a Bibliometric Study.* Oxford: Chandos Publishing.
2. Andrews, P. (2013). *Amplifying Your Research and Academic Profile: A Researcher's Guide to Social Media and Altmetrics.* Leeds Metropolitan University.
3. Borgman, C. L. (1990). *Scholarly Communication and Bibliometrics.* Newbury Park: Sage Publications.

4. Braun, T. (2007). *The Impact Factor of Scientific and Scholarly Journals: Its Use and Misuse in Research Evaluation.* Budapest: AkadémiaiKiadó.
5. Cronin, B., & Sugimoto, C. R. (Eds.). (2014). *Beyond Bibliometrics: Harnessing Multidimensional Indicators of Scholarly Impact.* Cambridge, MA: MIT Press.
6. De Bellis, N. (2009). *Bibliometrics and Citation Analysis: From the Science Citation Index to Cybermetrics*. Lanham, MD: Scarecrow Press.
7. Tattersall, A. (2014). *Altmetrics: A Practical Guide for Librarians, Researchers and Academics.* London: Facet Publishing.
8. Thelwall, M. (2004). *Link Analysis: An Information Science Approach.* London: Elsevier Academic Press.
9. Thelwall, M. (2009). *Introduction to Webometrics: Quantitative Web Research for the Social Sciences.* San Rafael: Morgan & Claypool.
10. Garfield, E. (1979). *Citation Indexing: Its Theory and Application in Science, Technology, and Humanities.* New York: John Wiley.
11. Sen, B. K. (2005). *Growth of Scientific Periodicals in India (1901–1947).* Indian National Science Academy & Indian National Commission for History of Science.
12. Mukhopadhyay, P. (2002). The calculation of web impact factors for educational institutes of India: A webometric study. *Proceedings of the National Seminar on Information Management in Electronic Libraries (ImeL)*, IIT Kharagpur, 531–539.
13. Egghe, L. (2005). *Power Laws in the Information Production Process: LotkaianInformetrics.* Amsterdam: Elsevier Academic Press.
14. Egghe, L., & Rousseau, R. (1990). *Introduction to Informetrics: Quantitative Methods in Library, Documentation, and Information Science.* Amsterdam: Elsevier Science Publishers.
15. Egghe, L., Neelameghan, A., &SaradaRanganathan Endowment for Library Science. (2000). *Lectures on Informetrics and Scientometrics.* Bangalore: SaradaRanganathan Endowment for Library Science.
16. Egghe, L. (2009). *LotkaianInformetrics and Applications to Social Networks.* The Belgian Mathematical Society.

Online Resources:

17. https://emeunet.eular.org/scientometrics.cfm
18.https://www.oecd.org/sti/inno/scientometrics.htm
19.https://firstmonday.org/ojs/index.php/fm/article/view/2874/2570
20.https://scientometrics.hse.ru/en/instructions/
21.http://www.garfield.library.upenn.edu/essays.html
22.https://liu.cwp.libguides.com/c.php?g=225325&p=4966525
23.https://www.nihlibrary.nih.gov/services/bibliometrics/bibliometrics-training-series
24.https://subjectguides.york.ac.uk/bibliometrics
25.https://www.wrclib.noaa.gov/tools/bibliometrics.html
26.https://lib.guides.umd.edu/bibliometrics/bibliometrics
27.https://www.altmetric.com/products/free-tools/
28.https://altmetrics.org/tools/
29.https://uri.libguides.com/researchimpact/tools
30.https://libguides.lb.polyu.edu.hk/altmetrics/tools

Course Code: LIS-DSC-554
Course Title: Quantitative Techniques in Research
Full Marks–50
Examination Marks –40
Class Test/Project/Seminar Presentation-10

Course Outcomes (CO)

After studying this course, students will be able to:

1. Build a mathematical and statistical foundation for measuring information activities.
2. Explore methodologies for the analysis of data.
3. Understand sampling techniques in detail.
4. Comprehend hypotheses and learn the methods of hypothesis testing.
5. Develop capacity for collection, collation, and analysis of subject-specific data.

Course Content

Unit-1: Useful Mathematical Devices

• Concept of Function; Independent and Dependent Variables
• Graphical Presentation of Functions; Set Theory and Relations among Functions
• Concept of Errors (Absolute, Relative, and Percentage Errors)
• Concept of Common and Natural Logarithms
• A.P. Series and G.P. Series
• Concept of Permutation and Combination

Unit-2: Descriptive Statistics for Collection and Presentation of Data

• Concepts of Frequency Distribution and Relative Frequency Distribution
• Measures of Central Tendency (Mean, Median, Mode, other Averages)
• Measures of Dispersion (Range, Mean Deviation, Standard Deviation)
• Measures of Skewness and Kurtosis
• Curve Fitting and Method of Least Squares
• Measures of Relationship (Covariance, Correlation, Regression, Pearson's Correlation Coefficient, and Spearman's Rank Correlation Coefficient)

Unit-3: Analytical Methods for Collection and Presentation of Data

• Analysis of Variance (ANOVA Technique – One-Way and Two-Way ANOVA) and Analysis of Covariance (ANCOVA)
• Linear Regression Analysis (Least Squares Estimation, Standard Error, Coefficient of Determination)
• Interpolation: Finite Differences, Differences of a Polynomial Function, Newton's Formula
• Basic Concepts of Theoretical Distributions

Unit-4: Sampling and Statistical Inference

• Sampling Techniques
• Probability Theories
• Hypothesis Testing – Non-Parametric Tests (Chi-square Test, Sign Test), Parametric Tests, Variance Analysis
• Statistical Inference (Point Estimation, Interval Estimation, Sample Size Determination, Testing of Significance)

Unit-5: Class Test / Project / Seminar Presentation / Viva-Voce

Reading List

1. Agarwal, B. L. (2013). *Basic Statistics*. New Delhi: New Age.
2. Agresti, A., & Finlay, B. (1997). *Statistical Methods for the Social Sciences* (3rd ed.). New Jersey: Prentice Hall.
3. Cantu-Ortiz, F. J. (Ed.). (2018). *Research Analytics: Boosting University Productivity and Competitiveness through Scientometrics*. London: CRC Press.
4. Das, N. G. (2009). *Statistical Methods*. New Delhi: Tata McGraw Hill.
5. Diekhoff, G. M. (1996). *Basic Statistics for the Social and Behavioral Sciences*. New Jersey: Prentice Hall.
6. Elhance, D. N., Elhance, V., &Aggarwal, B. M. (2010). *Fundamentals of Statistics*. New Delhi: KitabMahal.
7. Gun, A. M., Gupta, M. K., &Dasgupta, B. (2011). *Basic Statistics*. Kolkata: World Press.
8. Levin, J., & Fox, J. A. (1997). *Elementary Statistics in Social Research* (7th ed.). New York: Longman.
9. Mohanty, B., &Misra, S. (2015). *Statistics for Behavioral and Social Sciences*. New Delhi: Sage.
10. Patten, M. L. (2017). *Understanding Research Methods: An Overview of the Essentials*. London: Routledge.
11. Rao, I. K. R. (2010). *Growth of Literature and Measures of Scientific Productivity*. New Delhi/Bangalore: EssEss Publications, SaradaRanganathan Endowment for Library Science.
12. Saxena, H. C., &Kapur, J. N. (2015). *Mathematical Statistics* (20th ed.). New Delhi: S. Chand.
13. Singh, Y. K. (2006). *Fundamentals of Research Methodology and Statistics*. New Delhi: New Age.
14. Sprinthall, R. C. (1997). *Basic Statistical Analysis* (5th ed.). Boston: Allyn and Bacon.
15. Taylor, B., Sinha, G., &Ghoshal, T. (2006). *Research Methodology: A Guide for Researchers in Management and Social Sciences*. New Delhi: Prentice Hall.
16. Vaughan, L. (2009). *Statistical Methods for the Information Professional*. New Jersey: Information Today.
17. Walsh, A. (1990). *Statistics for the Social Sciences: With Computer Applications*. New York: Harper & Row.
18. http://www.openintro.org/stat/
19. https://ocw.mit.edu/courses/18-650-statistics-for-applications-fall-2016/
20. https://ocw.mit.edu/courses/18-05-introduction-to-probability-and-statistics-spring-2014/
21. https://www.socscistatistics.com/

Course Code: LIS-DSC-555
Course Title: Information and Communication Technology for LIS (Theory) – II
Full Marks: **50**
Examination Marks: **40**
Class Test/Project/Seminar Presentation: **10**

Course Outcomes (CO)

After studying this course, students will be able to:

1. Design automated libraries using open-source library management software (LMS).
2. Gain knowledge on establishing digital libraries and institutional repositories.
3. Manage language complexities in information retrieval.

Course Content

Unit-1: Automated Library System

- Library Automation: Importance, evolution, functions, implementation, and evaluation.
- Library automation software in India; comparison of various software available in India.
- Open-source software for library automation (KOHA, WEBLIS, etc.).
- Trends in library automation software.

Unit-2: Digital Library System

- Automated, electronic, digital, and virtual library systems.
- Digital library architecture, user interface, and design issues; metadata – types, functions, and schemas.
- Open-source digital library software (GSDL, DSpace, E-Print Archive, Fedora) and their implementation.
- Institutional repositories, research archives, and electronic thesis and dissertation (ETD) management.
- Interoperability and crosswalk; OAI/PMH and metadata harvesting.

Unit – 3: Multilingual Library System and IR System

- Introduction to multilingual computing and its requirements.
- UNICODE (UTF-8 and UTF-16) and its applications.
- Design and development of multilingual automated and digital library systems (with special reference to the Bengali language).
- Expert System; Decision Support System; Knowledge Discovery/Data Mining; Data Analytics.
- NLP tools and techniques.

Unit-4: Field Study

Students are required to visit different types of libraries and/or information systems to understand the recent developments in ICT applications. Each student must submit an individual report within the date of formal dissolution of classes. The field for study will be decided by the Departmental Committee.

Unit-5: Class Test/Project/Seminar Presentation

Reading List

1. Bradley, P. (2007). *How to Use Web 2.0 in Your Library.* London: Facet.
2. Bradley, P., &Aslib. (2000). *World Wide Web: How to Design and Construct Web Pages.* London: ASLIB.
3. Chowdhury, G. G., &Chowdhury, S. (2001). *Searching CD-ROM and Online Information Sources.* London: Facet Publishing.
4. Engard, N. C. (2010). *Practical Open Source Software for Libraries.* Oxford: Chandos Publishing.
5. Gorman, M. (2003). *The Enduring Library: Technology, Tradition, and the Quest for Balance.* Chicago: American Library Association.
6. Hagler, R. (1997). *The Bibliographic Record and Information Technology.* Chicago: American Library Association.
7. Jacsó, P., & Lancaster, F. W. (1999). *Build Your Own Database.* Chicago: American Library Association.
8. Jean, G. (2011). *Digital Library.* New Delhi: World Technologies.
9. Kernighan, B. W., & Ritchie, D. M. (1988). *The C Programming Language.* Englewood Cliffs, NJ: Prentice Hall.
10. Leon, A., & Mathews, L. (2004). *Fundamentals of Information Technology* (Latest ed.). Chennai: Leon Tech World.

11. Library Association & Library Information Technology Centre. (1996). *Library Technology.* London: Library Association and Library Information Technology Centre.
12. Matthews, J. R. (1980). *Choosing an Automated Library System: A Planning Guide.* Chicago: American Library Association.
13. Mukhopadhyay, P. (2013). *Course of Action: Library Information Technology.* Kolkata: ProvaPrakashani.
14. Mukhopadhyay, P. (2014). *Course of Action: Automated Library System.* Kolkata: ProvaPrakashani.
15. Rajasekharan, K., &Nafala, K. M. (2007). *Creation of Digital Document Archives with WINISIS.* Kerala Institute of Local Administration.
16. Scott, M. L. (2006). *Programming Language Pragmatics.* San Francisco, CA: Morgan Kaufmann.
17. Vaughan, J., & ALA Tech Source. (2011). *Web Scale Discovery Services.* Chicago, IL: ALA Tech Source.
18. Williams, H. E., & Lane, D. (2002). *Web Database Applications with PHP & MySQL.* Beijing: O'Reilly.

Course Code: LIS-DSC-556
Course Title: Application of Information and Communication Technology in LIS (Practice) – II
Full Marks: **50**
Examination Marks: **40**
Class Test/Project/Seminar Presentation: **10**

Course Outcomes (CO)

After studying this course, students will be able to:

1. Develop skills in RDBMS and MySQL.
2. Design ISO-2709 supported web-enabled bibliographic databases on the ISIS platform.
3. Establish automated libraries, digital libraries, and institutional repositories through open-source software.

Course Content

Unit-1: MySQL and/or PostGreSQL RDBMS

Unit-2: WWWISIS and/or ISIS 3W for Web Accessibility of ISO-2709 Supported Bibliographic Databases

Unit-3: Library Automation Software – Managerial Level Tasks (SOUL / KOHA / WEBLIS)

Unit-4: Digital Library Software – GSDL / DSpace / E-Print Archive; Unicode-based Multilingual Automated and Digital Library System

Unit-5: Class Test / Project / Seminar Presentation / Viva-Voce

Reading List

1. Anuradha, K. T., &Savanur, Kiran P. (2010). Installing NewGenLib: Open Source Library Automation Package.SRELS Journal of Information Management, 47, 621. SaradaRanganathan Endowment for Library Science.
2. Ayres, F. H., Ridley, M., Nielsen, L. P. S., & British Library. (1998). The Bradford OPAC 2: Managing and Displaying Retrievals from a Distributed Search in Z39.50. Boston Spa: British Library Research and Innovation Centre.
3. Breeding, M. (2009). Opening Up Library Systems through Web Service and SOA: Hype or Reality? Chicago: ALA TechSource.
4. Library and Information Technology Association (U.S.). (2002). Open Source Software for Libraries: An Open Source for Libraries Collaboration. Chicago: LITA.
5. Morris, A., & Dyer, H. (1998). Human Aspects of Library Automation. Brookfield, VT: Gower.
6. Mukhopadhyay, P. (2005). Library Automation – Software Packages. Unit 6 in MLIS – MLII-104 (ICT Applications – Part I). New Delhi: IGNOU.
7. Mukhopadhyay, P. (2005). Introduction to Library Automation. Unit 1 in CICTAL – BLII-003 (Library Automation and Digitization). New Delhi: IGNOU.
8. Mukhopadhyay, P. (2006). Five Laws and Ten Commandments: The Open Road of Library Automation in India. In Proceedings of the National Seminar on Open Source Movement – Asian Perspective, XXII, IIT Roorkee, 2006. Kolkata: IASLIC.
9. Mukhopadhyay, P. (2008). Library Automation through Koha. Kolkata: ProvaPrakashani.
10. Mukhopadhyay, P. (2014). Library Automation Processes. Unit 2 in BLIS – Course 9 (ICT in Libraries). New Delhi: IGNOU.
11. Murphy, F. J., Pollitt, A. S., & White, P. R. (1991). Matching OPAC User Interfaces to User Needs.Huddersfield: The Polytechnic of Huddersfield.
12. Pitkin, G. M. (1991). The Evolution of Library Automation: Management Issues and Future Perspectives. Westport, CT: Meckler.
13. Singh, M., &Sanaman, G. (2012, December 1). Open Source Integrated Library Management Systems: Comparative Analysis of Koha and NewGenLib.Electronic Library, 30(6), 809–832.
14. Sirohi, S., & Gupta, A. (2010). Koha 3 Library Management System. Birmingham: Packt Publishing.
15. Texas State Library. (1995). Library Automation Standards and Guidelines. Austin, TX: Texas State Library, Library Development Division.
16. Tramullas, J., &Garrido, P. (2013). Library Automation and OPAC 2.0: Information Access and Services in the 2.0 Landscape. Hershey, PA: Information Science Reference.
17. Winnebago Software Company. (1993). Guide to Library Automation: A Step-by-Step Introduction. Caledonia, MN: Winnebago Software Co.

Course Code: LIS-SEC-557A
Course Title: Digital Resource Management
Full Marks–50
Examination Marks –40
Class Test/Project/Seminar Presentation-10

Course Outcomes (CO)
After studying this course, students will be able to:

1. To impart skills necessary to handle digital information resources in a library of any type or size with focus on cutting-edge technologies.
2. To understand nature, features, scopes and limitations of digital information resources.
3. To know the use of text retrieval, CMS and AJAX.
4. To explore the advanced level bibliographic data management.

Course Content

Unit-1: Introduction to Digital Information Resources

- Definition, scope, features and advantages of digital information resources.
- Socio-legal aspects of digital information resources (copyright, DRM, other IPR issues, licensing issues).
- Electronic Resource Management (ERMS) – Basic concepts.
- Text retrieval engines – scope, features and utilities; Retrieval features of selected text retrieval engines – Apache-Solr, ElasticSearch, Lucene, MGPP and Zebra.
- Online thesaurus – development and integration.

Unit-2: Web 2.0 and Library 2.0

- Web 2.0 – what, why, components and use.
- Web 2.0 tools and technologies.
- Library 2.0 – application of Web 2.0 tools in library services.
- Information mashup.
- Trends and future.

Unit-3: Content Designation through MARC 21 – Advanced Level

- Designing MARC 21 based frameworks for different document types.
- Integration of authority lists and authority data in MARC 21 formats.
- Managing reference entries and analytic entries.
- Geospatial data management in MARC.
- Multi-script records management in MARC.

Unit-4: Metadata Encoding – Generic and Domain-specific

- Metadata – what, why, types and use.
- Metadata models and best practice guidelines.
- Generic metadata schema – Dublin Core (Simple and Qualified).
- Domain-specific metadata schema – Learning objects, ETD and other domains.
- RDF/XML and metadata interoperability.

Unit-5: Electronic Resource Management

- Commercial licenses for subscribing electronic resources.
- AI policies of publishers.
- ERMS through Coral.

- ERMS in Koha.
- Comparison of ERMS services.

Unit-6: Class Test/Project/Seminar Presentation

Reading List

Aleksander, I. (1985). Advanced digital information systems. Englewood Cliffs, NJ: Prentice-Hall International.
Arthur, M. H. (2006). Expanding a digital content management system: For the growing digital media enterprise. Amsterdam: Elsevier Focal Press.
Casey, M. E., &Savastinuk, L. C. (2007).Library 2.0: A guide to participatory library service. Medford, N.J.: Information Today.
Hjelm, J. (2001). Creating the semantic Web with RDF: Professional developer's guide. New York: Wiley.
Miller, S. J. (2011). Metadata for digital collections: A how-to-do-it manual. New York: Neal-Schuman Publishers.
Mukhopadhyay, A. (2007). Guide to MARC 21: For cataloging of books and serials with functional definitions, examples and working resources. Oxford: Chandos.
Zeng, M. L., & Qin, J. (2014).Metadata. 2nd rev. ed. Chicago: American Library Association.

Additional Reading List

Akerkar, R. (2009). Foundations of the Semantic Web: XML, RDF and ontology. Oxford, U.K.: Alpha Science International.
Berry, M. W., & Browne, M. (2005).Understanding search engines: Mathematical modeling and text retrieval. Philadelphia, PA: SIAM, Society for Industrial and Applied Mathematics.
Chamis, A. Y. (1991). Vocabulary control and search strategies in online searching. New York: Greenwood Press.
Chin, A. G. (2001). Text databases and document management: Theory and practice. Hershey, PA: Idea Group Pub.
Courtney, N. (2007). Library 2.0 and beyond: Innovative technologies and tomorrow's user. Westport, Conn.: Libraries Unlimited.
Croft, W. B., Metzler, D., & Strohman, T. (2010).Searching engines: Information retrieval in practice. Boston: Pearson Addison Wesley.
Eyen, B., &Prieto, E. (2008).Digital resource management. TN: Wrox/Wiley Pub.
Fiorillo, V. (2006). Digital resources management. Firenze: Università di Firenze Dipartimento di StoriadelleArti, Archeologia, Geografia, Arte e Spettacolo.
Goker, A., & Davies, J. (2009).Information retrieval: Searching in the 21st century.Chichester, U.K.: Wiley.
Harman, K. D. (2011). Information retrieval evaluation. San Rafael, Calif.: Morgan & Claypool.
Hitzler, P., Krötzsch, M., & Rudolph, S. (2010). Foundations of Semantic Web technologies. Boca Raton: CRC Press.
Hooland, S. V., &Verborgh, R. (2014).Linked data for libraries: How to clean, link and publish your metadata. Chicago, IL: Neal-Schuman.
Jones, K. M. L., & Farrington, P.-A.(2011). Using WordPress as a library content management system. Chicago, IL: ALA TechSource.
Langville, A. N., & Meyer, C. D. (2006).Google's PageRank and beyond: The science of search engine rankings. Princeton, N.J.: Princeton University Press.
Lazarinis, F. (2014).Cataloguing and Classification: An introduction to AACR2, RDA, DDC, LCC, LCSH and MARC 21 Standards. Burlington: Elsevier Science.
Lin, Q., Allebach, J. P., & Fan, Z. (2011).Imaging and printing in a web 2.0 world II. Bellingham, WA: SPIE.
Meadow, C. T., Boyce, B. R., & Kraft, D. H. (2000).Text information retrieval systems. San Diego: Academic Press.

Méndez Rodríguez, Eva María, & Greenberg, Jane. (2012). Linked data for open vocabularies and HIVE's global framework.EPI SCP.
Ndubisi, N. O. (2006). Content management systems. Bradford, England: Emerald Group Pub.
Rüger, S. M. (2010). Multimedia information retrieval. San Rafael, Calif.: Morgan & Claypool Publishers.
Vossen, G., &Hagemann, S. (2007). Unleashing Web 2.0: From concepts to creativity. Amsterdam: Elsevier/Morgan Kaufmann.
Warner, J. (2010). Human information retrieval. Cambridge, Mass.: MIT Press.
White, M. S. (2005). The content management handbook. Abingdon: Facet Pub.
Wong, W., Liu, W., Bennamoun, M., Wei Wang, PayamBarnaghi, &AndrzejBargiela.(2011). Learning SKOS relations for terminological ontologies from text.IGI Global.

Course Code: LIS-SEC-557B
Course Title: Virtual Learning Management System
Full Marks–50
Examination Marks –40
Class Test/Project/Seminar Presentation-10

Learning Outcomes

After studying this course, students will be able to:

1. To know concepts, features, scopes, and advantages of virtual learning environment (VLE);
2. To understand role of libraries in VLE; and
3. To explore the use of open source LCMS called Moodle with a focus on integration of library resources.

Course Content

Unit 1: Introduction to Virtual Learning Environment (VLE)

- VLE – what, why and how;
- VLE and Library – scope, advantages and limitations;
- VLE vs. Traditional Learning Environment;
- VLE in India: issues and challenges;
- VLE projects in India – MooCs, Swayam, Swayamprabha, e-PG Pathshala, Vidyamitra, Spoken Tutorial, NPTEL and so on.

Unit 2: VLE – Models and Resources

- VLE – social constructivist theory; VLE – Four Quadrant Model;
- Digital Learning Objects – content, license, metadata;
- VLE and Open Educational Resources (OER);
- OER and Courses – pathfinder services, directories;
- OER services – OERCommons, Teaching Commons, OER consortia.

Unit 3: Learning Content Management System (LCMS)

- LCMS – scope, features and technologies;
- LCMS vs LMS;
- LCMS – Open source and Open standards;
- Learning analytics, LTI – Learning Tools Interoperability;
- LCMS – Comparison of available tools.

Unit 4: VLE Standards

- Metadata standards – LRMI, CanCore, IEEE-LOM, GEMS and others;
- Carrier standards – SCORM;
- Learning Tools Interoperability (LTI);
- Experience standards – xAPI (Tin Can API);
- Content Packaging & Assessment standards – IMS CP & IMS QTI.

Unit 5: Class Test / Project / Seminar Presentation / Viva-Voce

Reading List

Amhag, L. (Ed.). (2020). *Virtual and mobile learning activities in higher education.*IGI Global.
Barker, P., & Campbell, L. M. (2010). Metadata for learning materials: An overview of existing standards and current developments. *Technology, Instruction, Cognition and Learning, 7*(3–4), 225–243. http://www.icbl.hw.ac.uk/publicationFiles/2010/TICLMetadata/TICLpaper.MetadataForEducation_postref.pdf
Büchner, A. (2016). *Moodle 3 administration.*Packt Publishing Ltd.
Chatti, M. A., Dyckhoff, A. L., Schroeder, U., &Thüs, H. (2012).A reference model for learning analytics.*International Journal of Technology Enhanced Learning, 4*(5–6), 318–331.
Clow, D. (2013). An overview of learning analytics.*Teaching in Higher Education, 18*(6), 683–695.
D'Antoni, S., Savage, C., &Unesco. (2009). *Open educational resources: Conversations in cyberspace.* Paris: United Nations Educational, Scientific and Cultural Organization.
Dvorak, R. (2011). *Moodle for dummies.* Hoboken, N.J.: Wiley.
Elder, A. (2019).*The OER starter kit.* Ames: Iowa State University Digital Press.
Ferguson, R. (2012). Learning analytics: Drivers, developments and challenges. *International Journal of Technology Enhanced Learning, 4*(5–6), 304–317.
Flavin, M. (2020).*Re-imagining Technology Enhanced Learning: Critical Perspectives on Disruptive Innovation.*Springer Nature.
Hodgkinson-Williams, C., & Arinto, P. (2017).*Adoption and impact of OER in the Global South* (p. 610). African Minds.
Jacka, I. S. A. (2020).*Using virtual worlds in educational settings: making learning real.* St. L.: Routledge.
Kanjilal, U., &Kaul, P. (2018).*The journey of SWAYAM: India MOOCs initiative.* https://www.ugc.ac.in/pdfnews/11599/2592/PDF
Kerres, M. (2020).*Against all odds: Education in Germany coping with COVID-19.* (place of publication not identified): Springer-Verlag GmbH.
Okada, A., & Ferreira, G. (2012).*Open educational resources and collaborative learning 2.0: Open e-learning innovations in Europe.* Hershey, PA: Information Science Reference.
Paul, Pradip Kumar, Bhumika, A. H., & Ramesh, B. Tiwary and Aithal, P. S. (2018).*International Journal of Technology Enhanced Learning and Enhanced Online and Flexible Learning.* (Vol. 3, November 30, 2018). International Journal of Applied Science and Engineering, 6(2), pp. 149–155, December 2018, ISSN: 2321–0745. Available at SSRN: https://ssrn.com/abstract=3380513
Ramirez-Montoya, M. S. (2020). MOOCs and OER: Developments and contributions for open education and open science. https://library.oapen.org/bitstream/handle/20.500.12657/39552/2020_Book_RadicalSolutionsAndOpenScience.pdf?sequence=1#page=172
Severance, C., Hanss, T., & Hardin, J. (2010). IMS learning tools interoperability: Enabling a mash-up approach to teaching and learning tools. *Technology, Instruction, Cognition and Learning, 7*(3–4), 245–262.
Wesolek, A., Lashley, J., & Langley, A. (2018).*OER: A field guide for academic librarians.*Pacific University Press.
Zhang, K., Bonk, C. J., Reeves, T. C., & Reynolds, T. H. (Eds.). (2019). *MOOCs and open education in the Global South: Challenges, successes, and opportunities.*Routledge.

Additional Reading List

Abumandour, E.-S.T. (2021). Public libraries' role in supporting e-learning and spreading lifelong education: A case study. *Journal of Research in Innovative Teaching & Learning, 14*(2), 178–217. https://doi.org/10.1108/JRIT-06-2019-0063

Conghuan, Y., &Xiaowen, C. (2011, June).E-learning support service based on interaction among local campus clouds. In *ICSSSM11* (pp. 1–6). IEEE. https://ieeexplore.ieee.org/document/5959324

Gruca, A. N. (2010). E-Learning in Academic Libraries.*New Review of Information Networking, 15*(1), 16–28. https://doi.org/10.1080/13614571003741395

Koohang, A., & Harman, K. (2007).*Learning objects: Theory, praxis, issues, and trends.* Santa Rosa, Calif.: Informing Science Press.

Magnuson, L. (2019). Embracing Embeddedness with Learning Tools Interoperability (LTI).*New Top Technologies Every Librarian Needs to Know: A LITA Guide, 10*.

RezaeiSharifabadi, S. (2006). How digital libraries can support e-learning. *The Electronic Library, 24*(3), 389–401. https://doi.org/10.1108/02640470610671231

Varnum, K. J. (Ed.). (2019). *New top technologies every librarian needs to know: A LITA Guide.*American Library Association.

Yang, H. H., & Yuen, S. C. Y. (Eds.). (2009). *Handbook of Research on Practices and Outcomes in E-Learning: Issues and Trends.*IGI Global.

Course Code: LIS-SEC-558A
Course Title: Data Carpentry
Full Marks–50
Examination Marks –40
Class Test/Project/Seminar Presentation-10

Learning Outcomes

After studying this course, students will be able to:

1. To know concepts, features, scopes, and advantages of OpenRefine as data wrangling software;
2. To understand REST/API-based data fetching, reconciliation, and NER; and
3. To explore the use of open access data sources.

Course Content

Unit 1: From Data Carpentry to Library Carpentry

- Data carpentry and Software carpentry – what and why;
- Library carpentry – scopes and features;
- Library carpentry – concepts and prerequisites;
- Data carpentry – application areas;
- Data-intensive library services.

Unit 2: Introduction to OpenRefine

- OpenRefine – genesis and features;
- OpenRefine – installation and configuration;
- OpenRefine data formats – CSV, TSV, JSON, and MARC;
- OpenRefine – project creation and management;
- OpenRefine – project export/import, dataset export/import.

Unit 3: Data Wrangling Techniques

- Concept of REST/API-based data wrangling;
- Sources of dataset APIs in LIS domain;
- REST/API-based data fetching in OpenRefine;
- Named Entity Recognition – tools and techniques;
- Data reconciliation – tools and techniques.

Unit 4: Data Extraction and Visualization

- Introduction to General Refine Expression Language (GREL);
- GREL for strings management;
- GREL for numeric data and dates management;
- GREL for data extraction;
- OpenRefine plugins – applications and utilities.

Unit 5: Class Test / Project / Seminar Presentation / Viva-Voce

Reading List

Baker, J., Moore, C., Priego, E., Alegre, R., Cope, J., Price, L., ...& Wilson, Library Carpentry. (2016). *Library Carpentry: software skills training for library professionals.Liber Quarterly, 26*(3). PDF Link
Delpeuch, A. (2019). *A survey of OpenRefine reconciliation services.arXiv preprint arXiv:1906.08092.*
Delpeuch, A. (2021). *OpenRefine user manual.* https://docs.openrefine.org/
Guidry, T. (2021).*External Resources: OpenRefine/OpenRefine Wiki.*GitHub.https://github.com/OpenRefine/OpenRefine
Karsdorp, F., Kestemont, M., & Riddell, A. (2021).*Humanities Data Analysis: Case Studies with Python.*Princeton University Press.
Library Carpentry.(2019). *Past Workshops.*Library Carpentry. https://librarycarpentry.org/past_workshops/
Library Carpentry. (2020). *Our lessons.*Library Carpentry.https://librarycarpentry.org/lessons/
Mukhopadhyay, P., Mitra, R., &Mukhopadhyay, M. (2021).*Library Carpentry: Towards a New Professional Dimension (Part I–Concepts and Case Studies).SRELS Journal of Information Management, 58*(2), 67–80.
Muller, M., Lange, I., Wang, D., Piorkowski, D., Tsay, J., Liao, Q. V., ...& Erickson, T. (2019, May). *How data science workers work with data: Discovery, capture, curation, design.Proceedings of the 2019 CHI conference on human factors in computing systems* (pp. 1–15).
Pugachev, S. (2019).*What Are "The Carpentries" and What Are They Doing in the Library.portal: Libraries and the Academy, 19*(2), 209–214. https://muse.jhu.edu/article/721420
RefinePro,&BigData University. (2019). *Course: OpenRefine Foundation.* https://bigdatauniversity.com/courses/openrefine?tid=18
Roy, L., & Snow, J. (2019).*What librarians should know about data carpentry.The Reference Librarian, 60*(1), 109–116.
Verborgh, R., & De Wilde, M. (2013).*Using OpenRefine.*Packt Publishing Ltd.
White, B. (2019). *Data mining for data analysis.College & Research Libraries, 81*(1), 76.https://crl.acrl.org/index.php/crl/article/viewFile/16892/18538

Additional Reading List

Blum, A., Hopcroft, J., &Kannan, R. (2018).*Foundations of Data Science (2018).Draft available at*https://www.cs.cornell.edu/jeh/book.pdf

Bryl, V., Bizer, C., Isele, R., Verlic, M., Hong, S. G., Jang, S., ...& Choi, K. S. (2014). *Interlinking and knowledge fusion.*In *Linked Open Data—Creating Knowledge Out of Interlinked Data* (pp. 70–89).Springer, Cham.

Chambers, J. M. (2008). *Software for data analysis: Programming with R (Vol. 2).* New York: Springer.

Chen, C. H., Härdle, W. K., &Unwin, A. (Eds.). (2007). *Handbook of data visualization.*Springer Science & Business Media.

Foreman, J. W. (2014).*Data smart: Using data science to transform information into insight.*Wiley.

Kirk, A. (2012). *Data Visualization: A successful design process.*Packt Publishing LTD.

Kotu, V., &Deshpande, B. (2018).*Data science: Concepts and practice.* Morgan Kaufmann.

Magle, C. T. *Data cleaning using OpenRefine* (Doctoral dissertation, Colorado State University. Libraries). https://hdl.handle.net/10217/194888

Miller, J. D. (2017). *Big data visualization.*Packt Publishing Ltd.

Mitchell, R. (2018). *Web scraping with Python: Collecting more data from the modern web.* O'Reilly Media, Inc.

Saltz, J. S., & Stanton, J. M. (2018).*An introduction to data science.* Los Ángeles: SAGE.

Srinivasa, R. A. S. R., &Rao, C. R. (2021).*Data science: Theory and applications.* Amsterdam: North Holland.

Stuart, D. (2020). *Practical Data Science for Information Professionals.*Facet Publishing.

Van Rossum, G., & Drake Jr, F. L. (1995).*Python tutorial* (Vol. 620). Amsterdam: Centrum voorWiskunde en Informatica.

Course Code: LIS-SEC-558B

Course Title: Designing of Community Information System

Full Marks–50

Examination Marks –40

Class Test/Project/Seminar Presentation-10

Learning Outcomes

After studying this course, students will be able to:

1. To learn concepts related to community information resources, systems and services.
2. To know standards and software related to CISs.
3. To explore the applications of software and standards in developing digital CIS.

Course Content

Unit 1: Fundamentals of Community Information Services (CIS)

- Nature, scope, use and users of community information, Survival Information and Citizen Action Information, Community of place vs. community of interest.
- Community Information Services – Definition, Need, Features and objectives.
- Providers of Community Information Services – Systems, Agencies and Institutions.
- Libraries as CIS Providers: Global and Indian scenario.
- Role of public libraries – IFLA/UNESCO Public Library Manifesto, Library Outreach Programmes, Library Publicity and Public Relation, E-Governance: Meaning, scope and purposes, E-Governance institutions in India.

- Community Information Systems and Services: Global and National Scenario.

Unit 2: Community Information Resources

- Nature and Scope, Differences with bibliographical resources.
- Documentary Sources: area profiles, 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: Community Information Resources: Organization and Access

- Community Information Resources – data formats and metadata initiatives, bibliographic format vs. Community information format, CCO and other initiatives.
- Organization of Community Information Resources:
    - Need of organization and Requirements for organization.
    - Content designators – CCF/F and MARC 21 CIF.
    - Metadata – Schemas and Encoding.
- Integrated processing of Community Information Resources and Bibliographic Resources, Subject Access to Community Information Resources – Vocabulary control tools.
- Access to Community Information Resources – Media and Mechanisms.
- Projects and initiatives on community information organization.

Unit 4: Digital Community Information Services

- Digital Community Information Services – Need, Advantages, Tools and Techniques.
- Software Framework for Community Information Services: Models, Components, Clusters, and Integration.
- Community Communication and Interaction: Tools, Techniques and Processes.
- User Interface of Community Information Services: Models and Applications.
- Multilingual Community Information Services: Indic Script based interface, processing and retrieval.

Unit 5: Class Test / Project / Seminar Presentation / Viva-Voce

Reading List

Ainley, P. (1980). *Basics of community information: An action handbook for librarians.* London: Association of Assistant Librarians.

American Library Association.(1966). *Minimum standards for public library systems.* Chicago: ALA.

Bunch, A. (1982).*Community information services: The origin, scope and development.* London: Clive Bingley.

Bunch, A. (1993).*The basics of community information work.* London: Library Association.

Coleman, P. (1986). *Community information policy and provisions. ASLIB Proceedings, 38* (9), 305–316.

Croneberger, R., Kapecky, M., Luck, C., & Appalachian Adult Education Center (Morehead State University). (1975). *The library as a community information and referral center.* Morehead, Ky: Appalachian Adult Education Center, Morehead State University.

Durrance, J. C., & Fisher, K. E. (2002).*Online community information: Creating a nexus at your library.* Chicago, Ill: American Library Association.

Durrance, J. C., & Schneider, K. G. (1996).*Public library community information activities: Precursors of community networking partnerships. Ann Arbor: School of Information, University of Michigan.* Retrieved March 5, 1997. Available http://www.si.umich.edu

Durrance, J. C. (1986). *Community information services: An innovation at the beginning of its second decade.* In *Advances in librarianship* (Vol. V–13). Orlando: Academic Press.

Keehan, A. L. (1980). *Establishing a local community information service: Part 1.*Library Board of Western Australia.

LAWS Project Team: Integrated public sector vocabulary. (2005). Retrieved from http://www.esd.org.uk/standards/ipsv/1.00/ipsv.doc
Library Association. (1980). *Community information: What libraries can do: A consultative document.* London: Library Association.

Course Code: LIS-OJT-559
Course Title: Internship project
Full Marks–50
Report-30
Seminar Presentation / Viva-20

Course Outcomes (CO)

After studying this course, students will be able to:

- To complete on job training in different sections of a large academic library.
- To understand practical workflow of a library.
- To develop service skills and professional rigour.

Course Content

Unit–1: Preparation of Report (To be conducted by Central Library, Vidyasagar University)

Unit–2: Viva-Voce

Course Code: LIS-GRP-560
Course Title: Guided Research Project
Full Marks- 100
Dissertation- 80
Seminar Presentation/Viva- 20

Course Outcomes (CO)

After studying this course, students will be able to:

1. Understand and follow the complete research process.
2. Integrate assimilated knowledge with acquired technological skills.
3. Experience and exercise independence in conducting research.

Course Content

Unit–1: Preparation of Dissertation (including Seminar Presentation)

Unit–2: Viva-Voce