Charotar University of Science and Technology
Faculty of Humanities
Charotar Institute of Languages, Arts and Social Studies
Department of Library and Information Science
MLIS- Programme Structure

Framework:	**As per NEP-2020 & UGC**
Duration:	1 Year (2 Semesters)
Entry Qualification:	BLIS
Total Credits:	**40 Credits**

PROGRAMME OBJECTIVES (POBJ)

The Master of Library and Information Science (MLIS) programme aims to:

1. Develop advanced professional competence in the management of libraries and information centres in diverse environments.
2. Equip learners with in-depth knowledge of information organization, retrieval, and digital knowledge systems.
3. Build strong capabilities in the use of emerging technologies such as Artificial Intelligence, Data Analytics, and Cyber Security in library operations.
4. Promote research aptitude, critical thinking, and ethical practices in librarianship and information science.
5. Prepare graduates to support scholarly communication, open science initiatives, and research data management.
6. Foster leadership, innovation, and entrepreneurship among information professionals to meet global information challenges.

PROGRAMME UNIQUENESS

The MLIS programme is **distinctive and future-oriented**, characterized by the following features:

1. **NEP-2020 & UGC-LOCF aligned curriculum** with Outcome-Based Education and credit flexibility.
2. **Integration of emerging technologies** such as Artificial Intelligence, Machine Learning, Blockchain, and Data Science in LIS education.
3. **Strong research and open science orientation**, including scholarly communication, research data management, and bibliometrics.

4. **Skill-based and experiential learning** through internships, projects, and hands-on exposure to digital library platforms.
5. **Interdisciplinary approach**, enabling learners to engage with digital humanities, knowledge management, and information policy.
6. **Career-ready design**, addressing competencies required for academic, research, corporate, and special libraries in India and abroad.

PROGRAMME OUTCOMES (POs)

On successful completion of the MLIS programme, graduates will be able to:

1. Apply advanced principles of library and information centre management for efficient organizational functioning.
2. Organize, manage, and retrieve information resources using modern classification, metadata, and discovery tools.
3. Design, implement, and manage digital libraries, institutional repositories, and open access systems.
4. Use information and communication technologies, including AI and data analytics tools, to enhance library services.
5. Support scholarly communication, research impact assessment, and research data management practices.
6. Conduct independent research using appropriate methodologies, statistical tools, and ethical standards.
7. Address information security, privacy, and policy challenges in digital information environments.
8. Demonstrate professional ethics, leadership qualities, and lifelong learning skills as information professionals.

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MLIS- Programme Structure

Semester – 1

Sr. No.	Course Name	Course Code	Credit
1.	Advanced Library & Information Centre Management	LSUC201	4
2.	Advanced Organization of Knowledge & Metadata	LSUC202	4
3.	Scholarly Communication & Information Services	LSUC203	4
4.	Information Communication Technology for Libraries	LSUC204	4
5.	Statistics for Library Science	LSUC205	4
	Total		**20**

Semester – 2

Sr. No.	Course Name	Course Code	Credit
1.	Research Methodology & Research Ethics	LSUC206	4
2.	Digital Libraries, Repositories & Open Science	LSUC207	4
3.	Cyber Security, Privacy & Information Policy	LSUC208	4
4.	Artificial Intelligence & Machine Learning in Libraries	LSUC209	4
5.	Internship / Project Work / Dissertation & Viva	LSUA210	4
	Total		**20**

CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF HUMANITIES

Programme: MLIS - Semester 1

Advanced Library & Information Centre Management (LSUC201)

Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	04	--	--	60	04
Marks	100	--	--	100	

Course Pre-requisite:

- Basic knowledge of Library and Information Science acquired at BLIS level.

Course Objectives:

To facilitate the learners to:

- develop an advanced understanding of management principles and practices applicable to libraries and information centres.
- analyze administrative, human resource, and financial management functions in library organizations.
- apply strategic planning, leadership, and decision-making skills in library environments.
- understand quality management, evaluation, and accreditation frameworks in libraries.
- inculcate professional ethics and governance practices among future information professionals.

Course Outline:

Sr. No.	Title of the Unit	Minimum Number of Hours
1.	Fundamentals of Library & Information Centre Management	12
2.	Human Resource Management in Libraries	12
3.	Financial & Resource Management	12
4.	Strategic Planning, Quality Management & Evaluation	12
5.	Professional Ethics, Governance & Change Management	12

	Total hours (Theory):	60
	Total hours (Practical):	--
	Total hours:	60

Detailed Syllabus:

1.	Fundamentals of Library & Information Centre Management	**12 Hours**	**20%**
	• Concept, nature, and scope of management • Functions of management: planning, organizing, staffing, directing, and controlling • Classical, behavioral, and modern management theories • Library and information centre as a service organization • Role of librarians as managers in the digital environment		
2.	Human Resource Management in Libraries	**09 Hours**	**20%**
	• Human resource planning and staffing patterns in libraries • Recruitment, selection, training, and development of LIS professionals • Performance appraisal, motivation, and leadership styles • Team building, communication, and conflict management • Professional competencies and continuing education		
3.	Financial & Resource Management	**12 Hours**	**20%**
	• Principles of financial management in libraries • Library budgeting: types and techniques • Accounting, cost analysis, and financial control • Resource allocation and fund utilization • Audit, accountability, and financial reporting		
4.	Strategic Planning, Quality Management & Evaluation	**12 Hours**	**20%**
	• Strategic planning process and policy formulation • SWOT analysis and environmental scanning • Total Quality Management (TQM) in libraries • Library performance evaluation and assessment tools • NAAC, IQAC, accreditation, and quality assurance mechanisms		
5.	Professional Ethics, Governance & Change Management	**12 Hours**	**20%**
	• Professional ethics in librarianship • Codes of conduct and professional responsibilities • Library laws, governance, and institutional policies		

	• Change management and leadership in libraries • Emerging challenges and future trends in library management		

Course Outcome (COs):

At the end of the course, the students will be able to

CO1	Apply advanced management principles in library and information centre operations.
CO2	Analyze human resource and financial management practices in libraries.
CO3	Demonstrate leadership and strategic decision-making skills.
CO4	Evaluate quality standards and accreditation requirements in LIS institutions.
CO5	Practice professional ethics and governance in library organizations.

Evaluation:

The evaluation scheme for the course will comprise the following components:

- Formative: Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks
- Summative: External / Semester End Evaluation (SEE) – 50 Marks

Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks	
Exam Pattern	**Marks**
Class Test (Best 2 out of 3)	15
Quiz (Best 3 out of 4)	15
Active Learning	05
Home Assignment	05
Class Assignment	05
Attendance	05
Total	**50**

External / Semester End Evaluation (SEE) – 50 Marks	
Exam Pattern	**Marks**
Semester End Theory Exam	50

*Note: The duration of External/SEE is of 2 hours.

Recommended Study Material:

- **Textbook:**

1. Stueart, R. D. & Moran, B. B. Library and Information Center Management. Libraries Unlimited.

- **Reference Books:**

1. Evans, G. E. & Ward, J. D. Management Basics for Information Professionals.
2. Ranganathan, S. R. Library Administration.
3. Koontz, H. & Weihrich, H. Essentials of Management.

- **Web material:**

1. NPTEL – Library Management Courses
2. Swayam – Management for Information Professionals

CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF HUMANITIES

Programme: MLIS - Semester 1

Advanced Organization of Knowledge & Metadata (LSUC202)

Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	04	--	--	60	04
Marks	100	--	--	100	

Course Pre-requisite:

- Knowledge of basic classification, cataloguing, and indexing techniques acquired at BLIS level.

Course Objectives:

To facilitate the learners to:

- develop advanced understanding of knowledge organization principles and systems.
- analyze traditional and modern approaches to classification and cataloguing.
- apply metadata standards and schemas in digital information environments.
- understand semantic web technologies and linked data concepts.
- design and evaluate knowledge organization systems for effective information retrieval.

Course Outline:

Sr. No.	Title of the Unit	Minimum Number of Hours
1.	Advanced Classification Systems & Knowledge Organization	12
2.	Advanced Cataloguing Concepts & Standards	12
3.	Metadata Standards & Schemas	12
4.	Semantic Web, Ontologies & Linked Data	12
5.	Knowledge Organization Systems & Future Trends	12
	Total hours (Theory):	60
	Total hours (Practical):	--
	Total hours:	60

Detailed Syllabus:

1.	**Advanced Classification Systems & Knowledge Organization**	**12 Hours**	**20%**
	• Concept, scope, and objectives of knowledge organization • Faceted classification principles and theory • Depth classification and subject ontogeny • Detailed study of DDC, UDC, and Colon Classification • Evaluation of classification systems in digital environments		
2.	**Advanced Cataloguing Concepts & Standards**	**12 Hours**	**20%**
	• Evolution of cataloguing codes and principles • Functional Requirements for Bibliographic Records (FRBR) and LRM model • Resource Description and Access (RDA): objectives and structure • Authority control and access points • Cataloguing of electronic and digital resources		
3.	**Metadata Standards & Schemas**	**12 Hours**	**20%**
	• Concept, purpose, and functions of metadata • Types of metadata: descriptive, structural, administrative • Metadata standards: MARC21, Dublin Core, MODS, METS • Metadata interoperability and crosswalks • Role of metadata in digital libraries and repositories		
4.	**Semantic Web, Ontologies & Linked Data**	**12 Hours**	**20%**
	• Concept and evolution of the Semantic Web • Ontologies: definition, components, and development • Semantic Web standards: RDF, OWL, SKOS • Linked Data principles and applications • Role of semantic technologies in information retrieval		
5.	**Knowledge Organization Systems & Future Trends**	**12 Hours**	**20%**
	• Knowledge Organization Systems (KOS): taxonomies, thesauri, folksonomies • Controlled vocabularies and subject heading systems • Evaluation and design of KOS • Artificial Intelligence and automation in knowledge organization • Emerging trends and future directions in metadata and knowledge organization		

Course Outcome (COs):

At the end of the course, the students will be able to

CO1	apply advanced principles of classification and knowledge organization.
CO2	analyze and implement modern cataloguing standards.
CO3	use metadata standards for organizing digital resources.
CO4	apply semantic web and linked data technologies in LIS systems.
CO5	design and evaluate effective knowledge organization systems.

Evaluation:

The evaluation scheme for the course will comprise the following components:

- Formative: Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks
- Summative: External / Semester End Evaluation (SEE) – 50 Marks

Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks	
Exam Pattern	**Marks**
Class Test (Best 2 out of 3)	15
Quiz (Best 3 out of 4)	15
Active Learning	05
Home Assignment	05
Class Assignment	05
Attendance	05
Total	**50**

External / Semester End Evaluation (SEE) – 50 Marks	
Exam Pattern	**Marks**
Semester End Theory Exam	50

*Note: The duration of External/SEE is of 2 hours.

Recommended Study Material:

- **Textbook:**

1. Zeng, M. L. & Qin, J. Metadata. ALA Neal-Schuman / Facet Publishing.
2. Taylor, A. G. & Joudrey, D. N. The Organization of Information. Libraries Unlimited.

- **Reference Books:**

1. Chan, L. M. Cataloging and Classification.
2. Hjørland, B. Knowledge Organization and Information Retrieval.
3. Svenonius, E. The Intellectual Foundation of Information Organization.

- **Web material:**

1. Dublin Core Metadata Initiative (DCMI)
2. RDA Toolkit
3. Library of Congress Metadata Standards

CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF HUMANITIES

Programme: MLIS - Semester 1

Scholarly Communication & Information Services (LSUC203)

Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	04	--	--	60	04
Marks	100	--	--	100	

Course Pre-requisite:

- Basic understanding of information sources, reference services, and library operations acquired at BLIS level.

Course Objectives:

To facilitate the learners to:

- understand the scholarly communication system and its evolution in the digital age.
- analyze scholarly publishing models, peer review processes, and research dissemination.
- develop competencies in providing advanced information and research support services.
- understand open access, open science, and institutional repository initiatives.
- apply research evaluation metrics and information literacy concepts in academic environments.

Course Outline:

Sr. No.	Title of the Unit	Minimum Number of Hours
1.	Scholarly Communication: Concepts & Publishing Ecosystem	12
2.	Open Access, Open Science & Institutional Repositories	12
3.	Research Impact, Metrics & Scholarly Visibility	12
4.	Advanced Information Services & User Support	12
5.	Research Support Services & Emerging Trends	12
	Total hours (Theory):	60
	Total hours (Practical):	--
	Total hours:	60

Detailed Syllabus:

1.	**Scholarly Communication: Concepts & Publishing Ecosystem**	**12 Hours**	**20%**
	• Concept, scope, and evolution of scholarly communication • Scholarly publishing ecosystem: authors, publishers, libraries, and users • Types of scholarly publications: journals, books, conference proceedings • Peer review process: models, significance, and challenges • Role of libraries in scholarly communication		
2.	**Open Access, Open Science & Institutional Repositories**	**12 Hours**	**20%**
	• Concept and principles of Open Access • Open Access models: Gold, Green, Hybrid • Open Science initiatives: open data, open peer review, citizen science • Institutional repositories: objectives, components, and workflows • Policies and mandates related to open access		
3.	**Research Impact, Metrics & Scholarly Visibility**	**12 Hours**	**20%**
	• Concept of research impact and visibility • Bibliometrics, scientometrics, and informetrics • Citation analysis, impact factor, h-index • Altmetrics and social media metrics • Author identifiers and research profiles (ORCID, Google Scholar, ResearchGate)		
4.	**Advanced Information Services & User Support**	**12 Hours**	**20%**
	• Evolution of information and reference services • Advanced reference services: digital reference, virtual help desks • Current Awareness Service (CAS) and Selective Dissemination of Information (SDI) • Information literacy programmes and user education • Assessment and evaluation of information services		
5.	**Research Support Services & Emerging Trends**	**12 Hours**	**20%**
	• Research data management services • Plagiarism detection and academic integrity support • Copyright support and scholarly publishing guidance • Library support for research lifecycle management • Emerging trends in scholarly communication and information services		

Course Outcome (COs):

At the end of the course, the students will be able to

CO1	Explain the structure and functioning of the scholarly communication system.
CO2	Apply open access and open science principles in academic libraries.
CO3	Use research metrics and tools to assess scholarly impact.
CO4	Design and deliver advanced information and research support services.
CO5	Support researchers across the entire research lifecycle.

Evaluation:

The evaluation scheme for the course will comprise the following components:

- Formative: Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks
- Summative: External / Semester End Evaluation (SEE) – 50 Marks

Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks	
Exam Pattern	**Marks**
Class Test (Best 2 out of 3)	15
Quiz (Best 3 out of 4)	15
Active Learning	05
Home Assignment	05
Class Assignment	05
Attendance	05
Total	**50**

External / Semester End Evaluation (SEE) – 50 Marks	
Exam Pattern	**Marks**
Semester End Theory Exam	50

*Note: The duration of External/SEE is of 2 hours.

Recommended Study Material:

- **Textbook:**

1. Borgman, C. L. Scholarship in the Digital Age. MIT Press.
2. Suber, P. Open Access. MIT Press.

- **Reference Books:**

1. Rowlands, I. et al. Scholarly Communication in the Digital Environment.
2. Tenopir, C. & King, D. W. Communication Patterns of Engineers.
3. De Bellis, N. Bibliometrics and Citation Analysis.

- **Web material:**

1. SPARC – Scholarly Publishing and Academic Resources Coalition
2. Directory of Open Access Journals (DOAJ)
3. SHERPA/RoMEO
4. COAR – Confederation of Open Access Repositories

CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF HUMANITIES

Programme: MLIS - Semester 1

Information Communication Technology for Libraries (LSUC204)

Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	04	--	--	60	04
Marks	100	--	--	100	

Course Pre-requisite:

- Basic knowledge of computers, office applications, and library automation acquired at BLIS level.

Course Objectives:

To facilitate the learners to:

- develop a comprehensive understanding of ICT tools used in libraries.
- apply MS Office applications for library administration, data management, and reporting.
- analyze library automation systems and networking technologies.
- use web, cloud, and digital technologies for effective library services.
- evaluate open-source software and emerging ICT trends in library environments.

Course Outline:

Sr. No.	Title of the Unit	Minimum Number of Hours
1.	ICT Foundations, Library Automation & MS Office Applications	12
2.	Networking Technologies & Library Networking	12
3.	Web Technologies & Digital Library Systems	12
4.	Cloud Computing & Emerging ICT Applications	12
5.	Open Source Software, Standards & Future Trends	12
	Total hours (Theory):	60
	Total hours (Practical):	--
	Total hours:	60

Detailed Syllabus:

1.	**ICT Foundations, Library Automation & MS Office Applications**	**12 Hours**	**20%**
	• Concept and scope of Information and Communication Technology • ICT infrastructure in libraries: hardware, software, and peripherals • Library automation: objectives, components, and modules of ILMS • MS Word: official documentation, reports, notices, circulars, formatting standards • MS Excel: library statistics, data analysis, charts, pivot tables, attendance and acquisition records • MS PowerPoint: presentations for orientation, training programmes, academic activities • Role of MS Office in library administration and decision-making		
2.	**Networking Technologies & Library Networking**	**12 Hours**	**20%**
	• Basics of computer networking: LAN, WAN, MAN • Internet, intranet, and extranet • Network devices, topology, and protocols • Network security basics and data protection • Library networking initiatives and resource sharing		
3.	**Web Technologies & Digital Library Systems**	**12 Hours**	**20%**
	• Web technologies and web-based library services • Web 2.0 and social media applications in libraries • Content Management Systems (CMS) • Digital library concepts, architecture, and components • User interface design and access tools for digital libraries		
4.	**Cloud Computing & Emerging ICT Applications**	**12 Hours**	**20%**
	• Concept and characteristics of cloud computing • Cloud service models: IaaS, PaaS, SaaS		

	• Cloud-based library services and platforms • Advantages, limitations, and security issues of cloud computing • Emerging ICT applications in libraries		
5.	**Open Source Software, Standards & Future Trends**	**12 Hours**	**20%**
	• Concept and philosophy of Open Source Software (OSS) • Open source library software: Koha, DSpace, Greenstone • Installation concepts, customization, and sustainability of OSS • Library standards and interoperability • Future trends in ICT applications for libraries		

Course Outcome (COs):

At the end of the course, the students will be able to

CO1	Apply ICT tools, including MS Office applications, in library administration.
CO2	Analyze and implement library automation and networking systems.
CO3	Use web and digital technologies to enhance library services.
CO4	Evaluate cloud computing and emerging ICT applications for libraries.
CO5	Select and apply appropriate open-source software and standards in LIS environments.

Evaluation:

The evaluation scheme for the course will comprise the following components:

- Formative: Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks
- Summative: External / Semester End Evaluation (SEE) – 50 Marks

Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks	
Exam Pattern	**Marks**
Class Test (Best 2 out of 3)	15
Quiz (Best 3 out of 4)	15
Practical Assignment (MS Office / ICT based)	10
Home Assignment	05
Attendance	05
Total	**50**

External / Semester End Evaluation (SEE) – 50 Marks	
Exam Pattern	**Marks**
Semester End Theory Exam	50

*Note: The duration of External/SEE is of 2 hours.

Recommended Study Material:

- **Textbook:**

1. Witten, I. H., Bainbridge, D., & Nichols, D. M. How to Build a Digital Library.
2. Chowdhury, G. G. Introduction to Modern Information Retrieval.

- **Reference Books:**

1. Lambert, J. Microsoft Office Step by Step. Microsoft Press.
2. Tanenbaum, A. S. Computer Networks.
3. Arms, W. Y. Digital Libraries.

CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF HUMANITIES

Programme: MLIS - Semester 1

Statistics for Library Science (LSUC205)

Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	04	--	--	60	04
Marks	100	--	--	100	

Course Pre-requisite:

- Basic knowledge of mathematics and research methods acquired at undergraduate level.

Course Objectives:

To facilitate the learners to:

- understand fundamental statistical concepts relevant to library and information science.
- apply descriptive statistical techniques to library data.
- analyze and interpret quantitative data for library management and research.
- understand probability, sampling, and correlation techniques.
- develop the ability to use statistics for decision-making and evaluation in libraries.

Course Outline:

Sr. No.	Title of the Unit	Minimum Number of Hours
1.	Introduction to Statistics & Data Representation	12
2.	Measures of Central Tendency & Dispersion	12
3.	Probability, Sampling & Statistical Inference	12
4.	Correlation, Regression & Hypothesis Testing	12
5.	Application of Statistics in Library Science	12
	Total hours (Theory):	60
	Total hours (Practical):	--
	Total hours:	60

Detailed Syllabus:

1.	**Introduction to Statistics & Data Representation**	**12 Hours**	**20%**
	• Meaning, scope, and importance of statistics • Types of data: qualitative and quantitative • Scales of measurement • Collection of statistical data • Tabulation and classification • Graphical representation: bar diagrams, histograms, pie charts		
2.	**Measures of Central Tendency & Dispersion**	**12 Hours**	**20%**
	• Measures of central tendency: mean, median, mode • Measures of dispersion: range, quartile deviation, mean deviation • Standard deviation and variance • Applications of central tendency and dispersion in library data		
3.	**Probability, Sampling & Statistical Inference**	**12 Hours**	**20%**
	• Concept and laws of probability • Probability distributions (basic concepts) • Sampling: meaning, need, and types • Sampling techniques used in LIS research • Introduction to statistical inference		
4.	**Correlation, Regression & Hypothesis Testing**	**12 Hours**	**20%**
	• Correlation: meaning, types, and methods • Regression analysis: simple linear regression • Hypothesis: formulation and testing • Levels of significance and confidence intervals • Application of hypothesis testing in LIS studies		
5.	**Application of Statistics in Library Science**	**12 Hours**	**20%**
	• Use of statistics in library management • Library performance measurement and evaluation • Collection analysis and usage statistics • User studies and service evaluation • Role of statistics in evidence-based librarianship		

Course Outcome (COs):

At the end of the course, the students will be able to

CO1	Understand and explain basic statistical concepts relevant to LIS.
CO2	Apply descriptive statistical techniques to library data.
CO3	Analyze and interpret quantitative data for library research.
CO4	Use correlation and hypothesis testing for LIS studies.
CO5	Apply statistical methods for decision-making and evaluation in libraries.

Evaluation:

The evaluation scheme for the course will comprise the following components:

- Formative: Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks
- Summative: External / Semester End Evaluation (SEE) – 50 Marks

Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks	
Exam Pattern	**Marks**
Class Test (Best 2 out of 3)	15
Quiz (Best 3 out of 4)	15
Statistical Problem Solving Assignment	10
Home Assignment	05
Attendance	05
Total	**50**

External / Semester End Evaluation (SEE) – 50 Marks	
Exam Pattern	**Marks**
Semester End Theory Exam	50

*Note: The duration of External/SEE is of 2 hours.

Recommended Study Material:

❖ **Textbook:**

1. Rao, D. B. Statistical Methods in Library and Information Science.
2. Gupta, S. P. Statistical Methods.

❖ **Reference Books:**

1. Kothari, C. R. Research Methodology: Methods and Techniques.
2. Meyer, L. et al. Statistics for Social and Behavioral Sciences.

❖ **Web material:**

1. NPTEL – Statistics for Social Sciences
2. Khan Academy – Statistics & Probability

CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF HUMANITIES

Programme: MLIS - Semester 2

Research Methodology & Research Ethics (LSUC206)

Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	04	--	--	60	04
Marks	100	--	--	100	

Course Pre-requisite:

- Basic understanding of research methods and statistics acquired during undergraduate or Semester–I studies.

Course Objectives:

To facilitate the learners to:

- understand the nature, purpose, and process of research in Library and Information Science.
- develop competence in selecting appropriate research designs and methodologies.
- apply tools and techniques for data collection and analysis.
- understand ethical principles governing research practices.
- prepare students for independent research, project work, and dissertation writing.

Course Outline:

Sr. No.	Title of the Unit	Minimum Number of Hours
1.	Fundamentals of Research & Research Process	12
2.	Research Design & Methods in LIS	12
3.	Data Collection, Sampling & Analysis	12
4.	Research Ethics, Integrity & Plagiarism	12
5.	Research Report Writing & Publication Ethics	12
	Total hours (Theory):	60
	Total hours (Practical):	--
	Total hours:	60

Detailed Syllabus:

1.	**Fundamentals of Research & Research Process**	**12 Hours**	**20%**
	• Meaning, nature, and scope of research • Types of research: basic, applied, descriptive, analytical • Research process and steps involved • Identification and formulation of research problem • Review of literature: purpose, sources, and methods		
2.	**Research Design & Methods in LIS**	**12 Hours**	**20%**
	• Concept and types of research design • Qualitative, quantitative, and mixed methods research • Survey, case study, historical, and experimental methods • Hypothesis: formulation and testing • Variables and measurement		
3.	**Data Collection, Sampling & Analysis**	**12 Hours**	**20%**
	• Data: types and sources • Tools of data collection: questionnaire, interview, observation • Sampling: concept, need, and techniques • Data processing, coding, and tabulation • Introduction to data analysis and interpretation		
4.	**Research Ethics, Integrity & Plagiarism**	**12 Hours**	**20%**
	• Concept and importance of research ethics • Ethical issues in social science and LIS research • Academic integrity and responsible research conduct • Plagiarism: types, detection tools, and prevention • National and international ethical guidelines		
5.	**Research Report Writing & Publication Ethics**	**12 Hours**	**20%**
	• Structure and components of research report • Thesis and dissertation writing format • Citation styles and referencing (APA, MLA) • Scholarly publishing ethics and predatory journals • Research dissemination and visibility		

Course Outcome (COs):

At the end of the course, the students will be able to

CO1	explain research concepts and processes relevant to LIS.
CO2	design appropriate research methodologies for LIS studies.
CO3	apply data collection and analysis techniques in research.
CO4	follow ethical principles and avoid malpractice in research.
CO5	prepare and present structured research reports and publications.

Evaluation:

The evaluation scheme for the course will comprise the following components:

- Formative: Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks
- Summative: External / Semester End Evaluation (SEE) – 50 Marks

Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks	
Exam Pattern	**Marks**
Class Test (Best 2 out of 3)	15
Quiz (Best 3 out of 4)	15
Research Proposal / Ethics Assignment	10
Home Assignment	05
Attendance	05
Total	**50**

External / Semester End Evaluation (SEE) – 50 Marks	
Exam Pattern	**Marks**
Semester End Theory Exam	50

*Note: The duration of External/SEE is of 2 hours.

Recommended Study Material:

❖ **Textbook:**

1. Kothari, C. R. Research Methodology: Methods and Techniques.
2. Creswell, J. W. & Creswell, J. D. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches.

❖ Reference Books:

1. Leedy, P. D. & Ormrod, J. E. Practical Research.
2. Singh, Y. K. Fundamentals of Research Methodology and Statistics.

❖ Web material:

1. UGC – Research Ethics & Plagiarism Guidelines
2. COPE – Committee on Publication Ethics
3. NPTEL – Research Methodology

CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF HUMANITIES

Programme: MLIS - Semester 2

Digital Libraries, Repositories & Open Science (LSUC207)

Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	04	--	--	60	04
Marks	100	--	--	100	

Course Pre-requisite:

- Fundamental knowledge of ICT applications, metadata, and information systems acquired in BLIS or Semester I.

Course Objectives:

To facilitate the learners to:

- understand the concepts, components, and architecture of digital libraries.
- analyze repository systems and their role in scholarly communication.
- explore open access, open science, and related policies.
- apply metadata and interoperability standards in digital environments.
- evaluate emerging practices and sustainability models in digital knowledge environments.

Course Outline:

Sr. No.	Title of the Unit	Minimum Number of Hours
1.	Digital Libraries: Concepts & Architecture	12
2.	Digital Library Systems & Standards	12
3.	Institutional Repositories & Metadata	12
4.	Open Science & Open Access Repositories	12
5.	Sustainability, Evaluation & Future Trends	12
	Total hours (Theory):	60
	Total hours (Practical):	--
	Total hours:	60

Detailed Syllabus:

1.	**Digital Libraries: Concepts & Architecture**	**12 Hours**	**20%**
	• Concept, definition, and evolution of digital libraries • Goals, scope, and features of digital libraries • Digital library architecture: components and layers • Information retrieval in digital libraries • Users and services in digital environments		
2.	**Digital Library Systems & Standards**	**12 Hours**	**20%**
	• Digital library software systems (overview) • Standards for digital libraries: Z39.50, OAI-PMH, SRW/SRU • Interoperability protocols • Distributed digital library systems • User interfaces and search features		
3.	**Institutional Repositories & Metadata**	**12 Hours**	**20%**
	• Concept, objectives, and types of institutional repositories • Repository software: DSpace, EPrints, Fedora • Workflows and submission models • Metadata standards for repositories: Dublin Core, Qualified DC • Harvesting, indexing, and access control		
4.	**Open Science & Open Access Repositories**	**12 Hours**	**20%**
	• Open science: concept, principles, and practices • Open access models: Gold, Green, Hybrid, Diamond • Policies and mandates (Plan S, funder requirements) • Role of repositories in open science • Case studies of global open science initiatives		
5.	**Sustainability, Evaluation & Future Trends**	**12 Hours**	**20%**
	• Structure and components of research report • Thesis and dissertation writing format • Citation styles and referencing (APA, MLA) • Scholarly publishing ethics and predatory journals • Research dissemination and visibility		

Course Outcome (COs):

At the end of the course, the students will be able to

CO1	Explain key concepts and architecture of digital libraries.
CO2	Analyze digital library systems and interoperability standards.
CO3	Design and manage institutional repositories using appropriate metadata.
CO4	Apply open science and open access principles in academic repositories.
CO5	Evaluate sustainability models and emerging trends for digital environments.

Evaluation:

The evaluation scheme for the course will comprise the following components:

- Formative: Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks
- Summative: External / Semester End Evaluation (SEE) – 50 Marks

Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks	
Exam Pattern	**Marks**
Class Test (Best 2 out of 3)	15
Quiz (Best 3 out of 4)	15
Sessionals / Assignments (Repository demo & metadata task)	10
Active Learning / Participation	05
Attendance	05
Total	**50**

External / Semester End Evaluation (SEE) – 50 Marks	
Exam Pattern	**Marks**
Semester End Theory Exam	50

*Note: The duration of External/SEE is of 2 hours.

Recommended Study Material:

❖ **Textbook:**

1. Anderson, R. The Theory and Practice of Digital Libraries.

❖ Reference Books:

1. Lesk, M. Understanding Digital Libraries.
2. Suber, P. Open Access.
3. Lagoze, C. & Van de Sompel, H. Open Archives Initiative Handbook.
4. Arms, W. Y. Digital Libraries.

❖ Web material:

1. DSpace and EPrints official documentation
2. OpenAIRE – Open Science Portal
3. OAI-PMH Protocol documentation
4. DOAJ & ROAR registry of repositories

CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF HUMANITIES

Programme: MLIS - Semester 2

Cyber Security, Privacy & Information Policy (LSUC208)

Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	04	--	--	60	04
Marks	100	--	--	100	

Course Pre-requisite:

- Basic understanding of ICT applications, digital libraries, and information systems acquired during BLIS or Semester–I studies.

Course Objectives:

To facilitate the learners to:

- understand the fundamentals of cyber security in information environments.
- analyze cyber threats, vulnerabilities, and risk management in libraries.
- understand privacy, data protection, and information security principles.
- study national and international information policies and legal frameworks.
- develop awareness of ethical and policy issues related to digital information use.

Course Outline:

Sr. No.	Title of the Unit	Minimum Number of Hours
1.	Fundamentals of Cyber Security	12
2.	Cyber Threats, Attacks & Security Measures	12
3.	Privacy, Data Protection & Ethical Issues	12
4.	Information Policy, Cyber Laws & Governance	12
5.	Cyber Security Management & Emerging Trends	12
	Total hours (Theory):	60
	Total hours (Practical):	--
	Total hours:	60

Detailed Syllabus:

1.	**Fundamentals of Cyber Security**	**12 Hours**	**20%**
	• Concept, scope, and importance of cyber security • Information security principles: confidentiality, integrity, availability • Cyber security in libraries and information centres • Information assets and risk assessment • Role of librarians in ensuring cyber security		
2.	**Cyber Threats, Attacks & Security Measures**	**12 Hours**	**20%**
	• Types of cyber threats: malware, phishing, ransomware • Cyber attacks on information systems • Network and application security basics • Authentication, authorization, and access control • Security tools and technologies for libraries		
3.	**Privacy, Data Protection & Ethical Issues**	**12 Hours**	**20%**
	• Concept of privacy and personal data • Data protection principles and practices • User data, surveillance, and confidentiality in libraries • Ethical issues in digital information use • Role of libraries in protecting user privacy		
4.	**Information Policy, Cyber Laws & Governance**	**12 Hours**	**20%**
	• Concept and scope of information policy • National information policy and cyber laws • International information policy frameworks • Intellectual property rights in digital environment • Governance and compliance in information institutions		
5.	**Cyber Security Management & Emerging Trends**	**12 Hours**	**20%**
	• Cyber security policies and best practices • Disaster recovery and business continuity planning • Security awareness and training programmes • Emerging trends: AI in cyber security, blockchain, zero trust • Future challenges for libraries and information centres		

Course Outcome (COs):

At the end of the course, the students will be able to

CO1	Explain cyber security concepts relevant to library and information environments.
CO2	Identify cyber threats and apply appropriate security measures.
CO3	Analyze privacy and data protection issues in libraries.
CO4	Interpret information policies and cyber laws affecting LIS institutions.
CO5	Design basic cyber security and privacy policies for libraries.

Evaluation:

The evaluation scheme for the course will comprise the following components:

- Formative: Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks
- Summative: External / Semester End Evaluation (SEE) – 50 Marks

Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks	
Exam Pattern	**Marks**
Class Test (Best 2 out of 3)	15
Quiz (Best 3 out of 4)	15
Case Study / Policy Analysis Assignment	10
Active Learning / Participation	05
Attendance	05
Total	**50**

External / Semester End Evaluation (SEE) – 50 Marks	
Exam Pattern	**Marks**
Semester End Theory Exam	50

*Note: The duration of External/SEE is of 2 hours.

Recommended Study Material:

❖ **Textbook:**

1. Stallings, W. Computer Security: Principles and Practice.
2. Solove, D. J. Understanding Privacy.

❖ Reference Books:

1. Schneier, B. Secrets and Lies: Digital Security in a Networked World.
2. Laudon, K. C. & Laudon, J. P. Management Information Systems.
3. Mansell, R. Information Society: Critical Concepts.

❖ Web material:

1. CERT-In (India) – Cyber Security Guidelines
2. IT Act, 2000 (India) & Amendments
3. GDPR & Global Data Protection Resources
4. UNESCO – Information Policy Documents

CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF HUMANITIES

Programme: MLIS - Semester 2

Artificial Intelligence & Machine Learning in Libraries (LSUC209)

Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	04	--	--	60	04
Marks	100	--	--	100	

Course Pre-requisite:

- Basic knowledge of ICT applications, digital libraries, and information systems acquired at BLIS level.

Course Objectives:

To facilitate the learners to:

- understand the fundamental concepts of Artificial Intelligence and Machine Learning.
- examine the application of AI and ML techniques in library and information services.
- apply AI-based tools for automation, discovery, and personalization of library services.
- analyze ethical, legal, and social implications of AI in libraries.
- explore emerging trends and future roles of library professionals in AI-driven environments.

Course Outline:

Sr. No.	Title of the Unit	Minimum Number of Hours
1.	Introduction to Artificial Intelligence & Machine Learning	12
2.	AI Applications in Library & Information Services	12
3.	Natural Language Processing & Text Analytics in Libraries	12
4.	Machine Learning Models & Data-driven Library Services	12
5.	Ethical Issues, Governance & Future Trends	12
	Total hours (Theory):	60
	Total hours (Practical):	--
	Total hours:	60

Detailed Syllabus:

1.	**Introduction to Artificial Intelligence & Machine Learning**	**12 Hours**	**20%**
	• Concept, definition, and scope of Artificial Intelligence • Evolution and types of AI: narrow AI, general AI • Fundamentals of Machine Learning • Types of machine learning: supervised, unsupervised, reinforcement learning • Role of AI and ML in information systems		
2.	**AI Applications in Library & Information Services**	**12 Hours**	**20%**
	• AI-based library automation and smart libraries • Intelligent OPACs and discovery systems • Chatbots and virtual reference services • Recommendation systems for information personalization • Automated indexing, abstracting, and classification		
3.	**Natural Language Processing & Text Analytics in Libraries**	**12 Hours**	**20%**
	• Introduction to Natural Language Processing (NLP) • Text mining and text analytics • Optical Character Recognition (OCR) and speech-to-text technologies • Sentiment analysis and topic modeling • Applications of NLP in digital libraries and repositories		
4.	**Machine Learning Models & Data-driven Library Services**	**12 Hours**	**20%**
	• Data preparation and training datasets • Common ML algorithms used in LIS applications • Predictive analytics for library decision-making • Usage analytics and user behavior analysis • Evaluation of ML models and system performance		
5.	**Ethical Issues, Governance & Future Trends**	**12 Hours**	**20%**
	• Ethical challenges in AI: bias, transparency, accountability • Privacy and data protection concerns • Responsible and trustworthy AI in libraries • Governance frameworks and policies for AI adoption		

	• Future trends and evolving roles of librarians in AI environments		

Course Outcome (COs):

At the end of the course, the students will be able to

CO1	Explain core concepts of AI and ML relevant to libraries.
CO2	Apply AI-based tools in library and information services.
CO3	Use NLP and text analytics techniques for information organization and retrieval.
CO4	Analyze data-driven approaches for improving library services.
CO5	Evaluate ethical and governance issues related to AI implementation in libraries.

Evaluation:

The evaluation scheme for the course will comprise the following components:

- Formative: Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks
- Summative: External / Semester End Evaluation (SEE) – 50 Marks

Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks	
Exam Pattern	**Marks**
Class Test (Best 2 out of 3)	15
Quiz (Best 3 out of 4)	15
AI/ML-based Case Study / Tool Demonstration	10
Active Learning / Participation	05
Attendance	05
Total	**50**

External / Semester End Evaluation (SEE) – 50 Marks	
Exam Pattern	**Marks**
Semester End Theory Exam	50

*Note: The duration of External/SEE is of 2 hours.

Recommended Study Material:

❖ Textbook:

1. Russell, S. & Norvig, P. Artificial Intelligence: A Modern Approach.
2. Das, R. K. & Islam, M. S. (Eds.). Applications of Artificial Intelligence and Machine Learning in Libraries.

❖ Reference Books:

1. Jurafsky, D. & Martin, J. H. Speech and Language Processing.
2. Provost, F. & Fawcett, T. Data Science for Business.
3. IGI Global (Ed.). Advanced Methodologies and Technologies in Library Science.

❖ Web material:

1. NPTEL – Artificial Intelligence
2. IBM AI for Libraries Case Studies
3. Google AI & NLP Resources

CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF HUMANITIES

Programme: MLIS - Semester 2

Internship / Project Work / Dissertation & Viva (LSUA210)

Credits and Hours:

Teaching Scheme	Theory	Practical	Tutorial	Total	Credit
Hours/week	--	04	--	60	04
Marks	--	100	--	100	

Course Pre-requisite:

- Successful completion of all Semester–I courses of MLIS.

Course Objectives:

To facilitate the learners to:

- integrate theoretical knowledge with practical and research-based learning.
- identify and analyze a research or professional problem in Library and Information Science.
- develop basic research skills including literature review and data collection.
- prepare a concise project/dissertation report following academic standards.
- enhance analytical, documentation, and presentation skills through viva-voce.

Course Outline:

Sr. No.	Title of the Unit	Minimum Number of Hours
1.	Research Problem Identification & Proposal	10
2.	Review of Literature & Research Design	12
3.	Internship / Field Work / Data Collection	18
4.	Data Analysis & Report Writing	12
5.	Submission, Presentation & Viva-Voce	08
	Total hours (Theory):	--
	Total hours (Practical):	60
	Total hours:	60

Detailed Syllabus:

1.	**Research Problem Identification & Proposal**	**10 Hours**	**17%**
	• Identification of research / project / internship area in LIS • Formulation of research problem, objectives, and scope • Preparation and approval of research/project proposal • Research ethics and plagiarism awareness		
2.	**AI Applications in Library & Information Services**	**12 Hours**	**20%**
	• Identification of relevant primary and secondary sources • Review and synthesis of related literature • Identification of research gap • Selection of appropriate research methodology • Tools and techniques for data collection		
3.	**Natural Language Processing & Text Analytics in Libraries**	**18 Hours**	**30%**
	• Internship or field work in library / information centre • Data collection using questionnaires, interviews, and observation • Documentation of professional practices • Maintenance of internship diary / field notes		
4.	**Machine Learning Models & Data-driven Library Services**	**12 Hours**	**13%**
	• Data coding, classification, and basic analysis • Interpretation of findings • Preparation of project/dissertation report • Referencing style and formatting guidelines		
5.	**Ethical Issues, Governance & Future Trends**	**08 Hours**	**20%**
	• Ethical challenges in AI: bias, transparency, accountability • Privacy and data protection concerns • Responsible and trustworthy AI in libraries • Governance frameworks and policies for AI adoption • Future trends and evolving roles of librarians in AI environments		

Course Outcome (COs):

At the end of the course, the students will be able to

CO1	Identify and define a research or professional problem in LIS.
CO2	Conduct a basic review of literature and design a study.
CO3	Apply research or professional skills during internship/field work.
CO4	Prepare a concise and structured project/dissertation report.
CO5	Present and defend findings effectively through viva-voce.

Evaluation:

The evaluation scheme for the course will comprise the following components:

- Formative: Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks
- Summative: External / Semester End Evaluation (SEE) – 50 Marks

Internal / Continuous and Comprehensive Evaluation (CCE) – 50 Marks	
Exam Pattern	**Marks**
Research Proposal & Literature Review	15
Internship / Field Work Performance	15
Progress Report & Documentation	10
Supervisor's Assessment	10
Total	**50**

External / Semester End Evaluation (SEE) – 50 Marks	
Exam Pattern	**Marks**
Project / Dissertation Report	30
Presentation & Viva-Voce	20

*Note: The duration of External/SEE is of 2 hours.

Recommended Study Material:

❖ **Textbook:**

1. Russell, S. & Norvig, P. Artificial Intelligence: A Modern Approach.
2. Kothari, C. R. Research Methodology: Methods and Techniques.
3. Creswell, J. W. & Creswell, J. D. Research Design.
4. APA Publication Manual.
5. University Guidelines for Project / Dissertation Work.