Anekant Education Society's

Tuljaram Chaturchand College, Baramati

(Autonomous)

One Year Degree Program in Library and Information Science

(Faculty of Library and Information Science)

CBCS Syllabus

M.Lib.I.Sc. Semester –I&II
For Department of Library and Information Science
Tuljaram Chaturchand College, Baramati

Choice Based Credit System Syllabus (2019 Pattern)

To be implemented from Academic Year 2019-2020

Course and Credit Structure M.Lib.I.Sc. 2019 Pattern

Class	Pattern	Semester	Course Code	Course Title	Course Type	No. of Credits
Semester I						
M.Lib.I.Sc.	2019	I	MLIS 101	Information, Communication & Society	Theory	04
M.Lib.I.Sc.	2019	I	MLIS 102	Introduction to Research Methodology	Theory	04
M.Lib.I.Sc.	2019	I	MLIS 103	Information Retrieval	Theory	04
M.Lib.I.Sc.	2019	I	MLIS 104	Management of Libraries & Information Centres -A	Theory	04
M.Lib.I.Sc.	2019	I	MLIS 105	Information Technology: (Theory)	Theory	04
				Certificate Course		
Semester II						
M.Lib.I.Sc.	2019	II	MLIS 201	Management of Libraries & Information Centre's –B	Theory	04
M.Lib.I.Sc.	2019	II	MLIS 202	Statistical Techniques of Research Bibliometrics	Theory	04
M.Lib.I.Sc.	2019	II	MLIS 203	Bibliographic Control & Information Systems	Theory	04
M.Lib.I.Sc.	2019	II	MLIS 204	Project	Theory	04
M.Lib.I.Sc.	2019	II	MLIS 205	Information Technology Applications : Practical	Practical	04
				Certificate Course		

ONLINE COURSES (SWAYAM / MOOCS)

Sr. No.	Title of the SWAYAM	National Coordinator	Course Coordinator
1.	Koha Library Management System	SWAYAM	Prof. Kannan Moudgalya
2.	Library Automation & Digitization		
3.	Database and Content Organization		

Anekant Education Society's
Tuljaram Chaturchand College, Baramati.
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Board of Studies (BOS) in Library and Information Science

(From 2019-2020 to 2021-2022)

Sr. No.	Name of Member	Designation
1.	**Mr. D.V. Munguskar** Head & Assistant Professor, Department of Library and Information Science, T. C. College, Baramati.	Chairman
2.	**Mr. Amol Atole** Assistant Professor, Department of Library and Information Science, T. C. College, Baramati.	Internal Member
3.	**Ms. K.H. Kolekar** Assistant Professor, Department of Library and Information Science, T. C. College, Baramati.	Internal Member
4.	**Dr.Smt.Shalini Lihitkar** HOD & Professor, Department of Library and Information Science, Shivaji University Kolhapur	External Member Vice-Chancellor Nominee
5.	**Dr. J. Shivrama** Professor, Department of Library and Information Science, TISS, Mumbai	External Member from other University
6.	**Mr. Anant Wagh** Divisional Officer RRRLF, Mumbai	Industry Expert
7.	**Mrs. Vidya Jagtap – Pingale**	Meritorious Alumni
8.	**Miss. Wanave Shital Ashok**	UG Student
9.	**Miss. Salve Sonali Milind**	PG Student

Programme Specific Outcomes (POs)

On completing Master of Library and Information Science Programme, students shall be able to realize following outcomes:

PO1 Research-Related Skills and Scientific temper:

Infer scientific literature, build a sense of enquiry and be able to formulate, test, analyse, interpret and establish hypothesis and research questions; and to identify and consult relevant sources to find answers. Able to plan and write a research paper/project while emphasizing on academics and research ethics, scientific conduct and creating awareness about intellectual property rights and issues of plagiarism.

PO2 Effective Citizenship and Ethics:

Demonstrate empathetic social concern and equity centred national development and act with an informed awareness of moral and ethical issues and commit to professional ethics and responsibility

PO3 Social competence and communication skills:

Demonstrate ability to accommodate the views of others and present their own opinions and complex ideas, in written or oral form, in a clear and concise manner in group settings. Exhibit thoughts and ideas effectively in writing and orally; communicate with others using appropriate media, build effective interactive and presenting skills to meet global competencies. Elicit views of others, present complex information in a clear and concise and help reach conclusion in group settings.

PO4 Disciplinary Knowledge: Demonstrate comprehensive knowledge and a strong theoretical grounding in their area of work.

PO5 Personal and professional competence:

Perform independently and also collaboratively as a part of a team to meet defined objectives and carry out work across interdisciplinary fields. Execute interpersonal relationships, self-motivation and adaptability skills and commit to professional ethics.

PO6 Self-directed and Life-long learning:

Demonstrate attitudes of being a life-long learner who passionately pursues self determined goals in the broadest context of socio-technological changes. Acquire the ability to engage in independent and life-long learning in the broadest context of socio technological changes.

PO7 Environment and Sustainability:

Understand the impact of the scientific solutions in societal and environmental contexts and demonstrate the knowledge of and need for sustainable development.

PO8 Critical Thinking and Problem solving:

Identify problems by closely examining the situations around them and think holistically about the phenomena and generate viable solutions to these problems. Exhibit the skill of critical thinking and understand scientific texts and place scientific statements and themes in contexts and also evaluate them in terms of generic conventions. Identify the problem by observing the situation closely, take actions and apply lateral thinking and analytical skills to design the solutions.

Class   : M.Lib.I.Sc.
Paper Code: MLIS 101   **Title of Paper :** Information, Communication and Society
Credits   : 4   **No. of Lectures   :** 60

Course Objectives (COs):

 1 .To introduce to the students the concept of Information & its Communication in Knowledge Society.
 2. To familiarize the students with professionalism & LIS Education
 3. To introduce students with the concept of Economics of Information and Information Industry &
    Knowledge Management.
 4. Gain knowledge of generators, providers and intermediaries of Information industry.
 5. Understand the features of knowledge society.
 6. Know about prominent national and international digital initiatives.
 7. Understand the methods and techniques of digital preservation.

Course Outcomes (COs):

1. Can manage information resources and the information life-cycle through the processes of collection
   development, organization, preservation, conservation, access, and dissemination in accordance with
   physical, virtual, and technical infrastructure and needs.
 2. Should be able to understand the concepts of data communication and networks.
 3. Should be able to provide information services, information exchange and knowledge sharing activities.
 4. Should be able to explore data communication benefits and networking applications within
    organizations as well as other networked organizations
5. Understand the theories, model and components of communication.
6. Comprehend the significance and means of Open Access.
7. Know crisis in scholarly communication

TOPICS / CONTENTS:

	Total No Of Credits = 04
UNIT 1	**Information , Communication & Knowledge Society** (15L) 1.1 Information: Characteristics & Properties of Information, Use of Information in R & D, Business and Industry, Planning & Policy making, Management and Decision Making 1.2 Information & its communication: meaning, forms and channels of communication, formal and Informal communication, models of communication, scientific communication, barriers of communication, library as a channel of communication. 1.3 Knowledge Society and the Library : Knowledge Society: Genesis, Characteristics and Implication & Changing Role of LIC& professionals in Knowledge Society
UNIT2	**Library and Information Science Education & Professionalism** (15L) 2.1 Library and Information Science Education: definition of professional education, components of professional education, LIS as a discipline, levels & curriculum of LIS Education in UK, USA and India, methods of teaching and evaluation in LIS Education, Accreditation of LIS Education in India, UK,& USA 2.2 Professionalism: definition of profession & its characteristics, definition of Librarianship & changing role of library profession, role of professional associations in promoting librarianship, professional ethics (definition, concept, need & purpose)
UNIT 3	**Information and Knowledge Management** (15L) 3.1 Information Management : concept & methods 3.2 Knowledge Management : definition, objectives, methods & tools
UNIT 4	**Economics of Information** (15L) 4.1 Concept, and Substance of Economics, Economics of information 4.2 Economic Characteristics of Information as a commodity 4.3 Information & Knowledge Industry -definition & kinds of knowledge industry (to be listed only) Information Industry Components: Generators, providers & intermediaries of Information

Mapping of Program Outcomes with Course Outcomes

Class : M.Lib.I.Sc.   **Subject** : Library and Information Science
Course : Information, Communication and Society   **Course Code** : MLIS-101

Weight age : 1= weak or relation, 2= moderate or partial relation, 3= strong or direct relation

Programme Outcomes (POs)								
Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1	3	2						
CO 2			3					
CO 3			2					
CO 4	3	2			2			
CO 5	3			2	2	2		
CO 6	3	2				2		
CO 7								
CO8								

PO1 Research-Related Skills and Scientific temper:

CO1. Research Skills Justification: For effective research collaboration, understanding how data communication benefits and networking applications work is essential. This skill enables researchers to leverage technological tools for collaborative projects.

CO2 Research often involves the use of data communication and networks for data exchange and collaboration. Understanding these concepts is crucial for conducting research in a digitally connected world.

PO2 Effective Citizenship and Ethics:

CO2 In the digital age, understanding data communication and networks is essential for effective participation in an interconnected world. Citizens need to comprehend how information flows, is transmitted, and is secured in various networked environments.

CO3 Communication ethics are critical in ensuring that information is conveyed truthfully, respectfully, and without harm. Understanding communication models also helps individuals recognize and navigate potential ethical challenges in communication.

PO3 Social competence and communication skills:

CO3 Information professionals need to communicate effectively to provide services and facilitate knowledge sharing. This involves interpersonal skills, active listening, and the ability to convey information in a clear and understandable manner. Social competence is crucial in understanding the information needs of users and tailoring services accordingly.

PO4 Disciplinary Knowledge:

CO6 Open Access is a critical aspect of scholarly communication. Professionals need to comprehend its significance in fostering accessibility to scholarly information. This PO ensures awareness and understanding of the means to promote Open Access.

PO5 Personal and professional competence:

CO4. Understanding the benefits of data communication and networking applications within organizations demonstrates a proactive approach to leveraging technology for professional growth. This competence allows individuals to identify and implement innovative solutions, contributing to the efficiency and effectiveness of organizational processes.

PO6 Self-directed and Life-long learning:

CO5. Communication theories and models evolve, and staying informed about these changes is essential for effective communication. This aligns with the self-directed learning aspect as individuals need to update their knowledge to communicate effectively in different contexts.

CO6. The concept of Open Access is dynamic, and understanding its significance requires ongoing learning. This skill promotes self-directed learning by encouraging individuals to stay informed about the evolving landscape of scholarly communication.

Class : M.Lib.I.Sc.
Paper Code : MLIS 102   **Title of Paper** : Introduction To Research Methodology
Credits : 4   **No. of Lectures :** 60

Course Objectives (COs):

1. To introduce application of Research Methodology in LIS and inculcate research skills among the Students.
2. To familiarize the students with various research methods
3. To give exposure to current trends of Research in LIS.
4. The Student should be able to understand the basic theory and practice of research and be familiar with qualitative and quantitative methods.
5. Carry out a small research project under the guidance/supervision of a teacher.
6. Evaluate and use a wide range of research techniques and methods.
7. Analyze, present and interpret the qualitative and quantitative data with proper statistical tools.

Course Outcomes (COs):

1. Students will be able to learning the library and information science research
2. Should be able to understand the basic theory and practice of research and be familiar with qualitative and quantitative methods.
3. Should be able to carry out a small research project under the guidance/supervision of a teacher.
4. Should be able to evaluate and use of research techniques and methods.
5. Should be able to analyze, present and interpret the data.
6. Should be able to draw the appropriate findings and produce research report.
7. Draw the appropriate findings and produce research report and bring out the knowledge of ethical issues in research

TOPICS/CONTENTS:

	Total No Of Credits = 04
UNIT 1	**Research** (15L) 1.1 Research: definition, characteristics, objectives, 1.2 types of research-Pure, Applied 1.3 research including interdisciplinary and multidisciplinary research & ethical aspects of research
UNIT 2	**Research Design** (15L) 2.1 Research Design: definition, steps in research, identification of problem, Literature search, hypothesis 2.2 designing research proposal
UNIT 3	**Research Methods** (16L) 3.1 Research Methods: historical method, descriptive method, survey method, experimental method, case study method, future research, 3.2 Methods: content analysis, citation analysis evaluation research, comparative Librarianship, Introduction to Webometrics, Librametry
UNIT 4	**Library and Information Science Research** (14L) 4.1 History 4.2 Current trends in LIS research

Class : M.Lib.I.Sc. **Subject** : Library and Information Science
Course : Introduction To Research Methodology **Course Code** : MLIS-102

Weight age : 1= weak or relation, 2= moderate or partial relation, 3= strong or direct relation

Programme Outcomes (POs)								
Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1	2				2			
CO 2	2	3						
CO 3		2						
CO 4		2						
CO 5	2							
CO 6	3				3			
CO 7	2				2			
CO8						3		

Justification for the Mapping

PO1 Research-Related Skills and Scientific temper:

   All of the course outcomes (COs) contribute to the development of students' Research-Related Skills and Scientific temper. For example, CO2, CO5, and CO6 require students to TQM, Management of Libraries and Information Centers and develop skills in Marketing of Library.CO1 and CO5 require students to understand the various sections in library. CO7 community building in library marketing.

PO2 Effective Citizenship and Ethics:

   All of the COs also contributes to Effective Citizenship and Ethics. For example, CO2, and CO3
The students will be understand TQM, Management, change management ethics CO4 students to use their Effective management system in library.

PO5 Personal and professional competence:

CO1, CO6, CO7 contribute to the development of students' Personal and professional competence. For example, CO5 requires students to understand the various section in Library.

PO6 Self-directed and Life-long learning:

 CO8, also contributes Self-directed and Life-long learning For example, main approaches to the study of the management of an organization.

 Class : M.Lib.I.Sc.

Paper Code : MLIS 103   **Title of Paper   :**   Information Retrieval

Credits   : 4   **No. of Lectures:** 60

Course Objectives (COs):

1. To understand use of indexing techniques, vocabulary control & search strategies for Information Storage & Retrieval.
2. To familiarize students with Information retrieval models and develop skills in designing thesaurus.
3. To introduce Consolidation & Repackaging of Information into Information   Products.
4. To familiarize the students about the principles and practices of information consolidation, subject indexing, abstracting and information retrieval system.
5. Understand the concept of information analysis, consolidation and repackaging.
6. Understand the Indexing systems and techniques.
7. Understand the qualities of good abstracts and process of abstracting.

Course Outcomes (COs):

1. Students will be able to construct a keyword search statement in order to find relevant information
2. Should be able to develop abstract using standard guidelines.
3. Should be able to produce/generate manual and computerized indexes by applying different indexing techniques and methods.
4. Should be able to know IR Systems and trends.
5. Should be able to create information products and marketing as per requirement.
6. Understand the various information retrieval models
7. Should be able to the techniques and strategies of online searching.

TOPICS/CONTENTS

	Total No Of Credits = 04	
UNIT 1	**Information Storage and Retrieval** 1.1 definition, purpose, components and types of information retrieval system 1.2 Role of Indexing in Information Retrieval Types of Indexing- pre-coordinate (Dr.S.R.Ranganathan's Chain indexing, POPSI, PRECIS, SLIC), Post coordinate (UNITERM) and automatic Indexing (KWIC, KWAC, KWOC) 1.3 Indexing languages and vocabulary control: definition, purpose & tools Thesaurus Structure , thesaurus relationships & construction	**(16L)**
UNIT 2	**Retrieval of Information** 2.1 Models for information retrieval: Input- Output Models and Theoretical Models. 2.2 Information search and search strategy : type of search- keyword search, Phrase search, keyword and subject search, truncation search, range search , Boolean logic and V Diagram. 2.3 Searching the web	**(15L)**
UNIT 3	**Evaluation of Information Storage and retrieval system**. 3.1 Evaluation- need, types and criteria with example e.g. Cranfield Study and MEDLARS Test. 3.2 Current Trends in Information Retrieval: searching the web, open access repository and its creation, Portal- vortal, Data mining, Automatic text summarizing, Information standards and protocols.	**(12L)**
UNIT 4	**Information Repackaging and Products**. 4.1 Information analysis, repackaging and consolidation: Concept, definition, packaging and repackaging. Information consolidation activities, need, steps in information consolidation and repackaging process and advantages. 4.2 Information Products: concept , types, design and development of information products. 4.3 Marketing of information products and services: concept, need, market research, price, marketing mix, factors influencing the market. 4.4 Trends in Information Analysis, Repackaging & Consolidation including electronic content creation & document delivery	**(17L)**

Class : M.Lib.I.Sc.   **Subject** : Library and Information Science
Course : Information Retrieval   **Course Code** : MLIS-103

Weight age : 1= weak or relation, 2= moderate or partial relation, 3= strong or direct relation

Programme Outcomes (POs)								
Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1		2						
CO 2		3						
CO 3		2						
CO 4	3				2			
CO 5					2			
CO 6								
CO 7					2			
CO8						3		

Justification for the Mapping

PO1 Research-Related Skills and Scientific temper:

All of the course outcomes (COs) contribute to the development of students' Research-Related Skills and Scientific temper. For example, CO4 require students to TQM, Management of Libraries and Information Centers and develop skills in Marketing of Library.CO4 and CO5 require students to understand the various sections in library. CO6 community building in library marketing.

PO2 Effective Citizenship and Ethics:

The entire COs also contributes to Effective Citizenship and Ethics. For example, CO1, CO2, and CO3 The students will be understand TQM, Management, change management ethics

PO5 Personal and professional competence:

CO4, CO5, CO7 contribute to the development of students' Personal and professional competence. For example, CO5 requires students to understand the various section in Library.

PO6 Self-directed and Life-long learning:

CO8, also contributes Self-directed and Life-long learning For example, main approaches to the study of the management of an organization.

Class : M.Lib.I.Sc.
Paper Code: MLIS 104   **Title of Paper** : Management of Libraries and Information

Credits   : 4   **No. of Lectures: 60**

Course Objectives (COs):

1. To study the functions of management & their application to librarianship.
2. To familiarize students with the concept HRD, planning and systems of financial management and control.
3. Able to draw up and apply the concept of management theories and principles to library .
4. To provide basic knowledge of different sections of the library including the functions and activities.
5. Should be capable of understanding the collection development policy.
6. To acquaint the students with the present set up of public library system in India.
7. To the academic library management system and its functions.

Course Outcomes (COs):

1. The students are able to identify & describe the characteristic of library management systems.
2. Should be able to draw up and apply the techniques of planning and implementation of policies and procedures.
3. Should comprehend the basic knowledge and skills of handling the library finances.
4. Should be capable of managing the human resources beneficially.
5. Should be able to understand the principle of TQM.
6. Able to understand the functioning of Management system.
7. Acquire hands – on – experience in operating any Management system.

TOPICS/CONTENTS

	Total No Of Credits = 04	
UNIT 1	**Management** 1.1 History, Concept, Functions and scope 1.2 styles, approaches 1.3 Schools of management 1.4 Qualities of a good manager 1.5 Principles of Urquhart	**(15L)**
UNIT 2	**Planning** 2.1 Planning: definition, need, types, principles, steps, 2.2 policies & procedures, MBO, decision making 2.3 Building and Space management in LICs, Risk & Contingency management	**(14L)**

UNIT 3	**Human Resource Management**
	3.1 Organization structures, authority & its characteristics, delegation of Authority:
	    modes, principles
	3.2 Human Resource Management : concept, job analysis, job description & job
	    specification, recruitment & hiring procedures, training & development, discipline
	    & grievances, performance appraisal, motivation & leadership theories
		(16L)

UNIT 4	**Financial Management** 4.1 Budgeting techniques & methods -PPBS, ZBB 4.2 Budgetary control systems: cost-effectiveness & cost- benefit analysis 4.3 Outsourcing-concept, need, benefits, limitations, library services to be outsourced	**(15L)**

Class   : M.Lib.I.Sc.   **Subject :** Library and Information Science

Course : Management of Libraries & Information Centres –B   **Course Code** : MLIS-104

Weight age : 1= weak or relation, 2= moderate or partial relation, 3= strong or direct relation

Programme Outcomes (POs)								
Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1	3	2						
CO 2		3						
CO 3		2						
CO 4	3	2			2			
CO 5	3				2			
CO 6	3	2						
CO 7					2			
CO8						3		

Justification for the Mapping

PO1 Research-Related Skills and Scientific temper:

   All of the course outcomes (COs) contribute to the development of students' Research-Related Skills and Scientific temper. For example, CO1, and CO4 require students to Schools of management CO4 and CO5 require students to understand the various sections in library. CO6 Human Resource Management

PO2 Effective Citizenship and Ethics:

   All of the COs also contributes to Effective Citizenship and Ethics. For example, CO1, CO2, and CO3
The students will be understand TQM, Management, change management ethics CO4 students to use their Effective management system in library.

PO5 Personal and professional competence:

CO4, CO5, CO7 contribute to the development of students' Personal and professional competence. For example, CO5 requires students to understand the various section in Library.

PO6 Self-directed and Life-long learning:

 CO8, also contributes Self-directed and Life-long learning For example, main approaches to the study of the management of an organization.

Class   : M.Lib.I.Sc.

Paper Code : MLIS 105   **Title of Paper** : Information Technology: Basics
                                                                (Theory)

Credits   :   4   **No. of Lectures :**   60

Course Objectives (COs):

1. To introduce the concept & use of ICT and its application in Libraries and Information Centers.
2. Development of skills in planning and implementation of library automation
3. Study of digital library, use of e-documents & current trends in the use of ICT
4. To assist the users in searching and retrieval of information through the networks.
5. To understand the issues and technology involved in library automation.
6. to plan and design automated library systems.
7. To use of operating systems, file management, word processing, spreadsheets, presentation software, web browsers and e-mail.

Course Outcomes (COs):

1. Will be trained in Information Communication Technologies knowledge and Library automation Skills.
2. Students will be able to choose appropriate database in order to search for scholarly articles on Their topics
3. To examines basic concepts and theories of digital libraries (including Digital Museums, Institutional Repositories, etc.).
4. Should be able to acquire adequate hands-on experience in operating the PC.
5. Should be able to understand the issues and technology related to library automation.
6. Should be able to select appropriate hardware and library software packages.
7. Should be able to plan and implement on-line databases.

TOPICS/CONTENTS:

Total No Of Credits = 04	
UNIT 1	**Information & Communication Technology: Basics & Library Automation and Library Software** (14L) 1.1 Information & Communication Technology: Basics of Communication technology, Components, transmission media (bounded , unbounded), transmission Mode (Simplex, half – duplex, full duplex, Multiplex), bandwidth (voice band, medium band, broadband)
UNIT 2	**Networks & Internet** (16L) 2.1 Networks: concept, definition, media (Optical fiber, Ethernet, Network Interface Card, Hubs, Routers), switching techniques (Packet switching, circuit switching, cell switching),networks architecture (Peer to peer, client – server),OSI model 2.2 Internet : Brief History, Components ,connectivity (dial up, leased lines, ISDN – broadband, cable-internet, wireless , Internet over satellite), internet protocols(TCP/IP, HTTP, FTP),browsers, network based information services, Internet Security ,Intranet, Extranet
UNIT 3	**Digital Library & Electronic Documents** (17L) 3.1 Digital Library: definition, characteristics, objectives ,digitization devices (Scanners, Cameras) software, Data Warehousing & data mining :concept, Metadata-Brief history, standards-Dublin Core Virtual Library, hybrid library, electronic library concept, DOAJ-concept, Institutional repository-concept Content management-concept 3.2 Electronic Documents Multimedia-concept, E journals- concept 3.3 Databases-Definition, types (bibliographic, full text, statistical), e.g. Databanks-Evaluation criteria, e.g. 3.4 Introduction to open source software: KOHA.
UNIT 4	**Current Trends in ICT** (13L) 4.1 Blogs, Wi-Fi, RFID, Subject Gateways, Portals, RSS Feeds, Twitter, Face book, Web 2.0, Web 3.0, Biometric Technology for library security, Folksonomy, forums . Mobile-Based Library Services

Class : M.Lib.I.Sc.   **Subject** : Library and Information Science
Course : Information Communication Technology: Practical **Course Code** : MLIS-105

Weight age : 1= weak or relation, 2= moderate or partial relation, 3= strong or direct relation

Programme Outcomes (POs)								
Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1	3			3				
CO 2	3	3		3				
CO 3			2	3				
CO 4		3	2					
CO 5	2		3	2				
CO 6		2						2
CO 7	2			3				

Justification for the Mapping

PO1 Research-Related Skills and Scientific temper:

   All of the course outcomes (COs) contribute to the development of students' Research-Related Skills and Scientific temper. For example, CO1, CO2 require students to learning Information Communication technology skills and automation Skills CO4 and CO5 students understanding the library automation software and networking technologies to gain disciplinary knowledge. and CO7 understanding the critical thinking and problem solving skills in data structure and databases.

PO2 Effective Citizenship and Ethics:

   The entire COs also contributes to Effective Citizenship and Ethics. For example CO2 and CO4 students will be   understand implementation of library automation software. CO6 students to use their knowledge about the database management.

PO3 Social competence and communication skills:

   CO3, CO4, CO5 also contributes to Social competence and communication skills For example CO3, CO4, CO5 students will be use to communication technology.

PO4 Disciplinary Knowledge: All of the course outcomes (COs) contribute to the development of students' Research-Related Skills and Scientific temper. For example, CO1, CO2, and CO3 require students understand the research databases, awareness in ICT and presenting skills. CO5 and CO7 students comprehensive knowledge and strongly work in information technology

PO8 Critical Thinking and Problem solving:

 The entire COs also contributes to the development of students' critical thinking and problem-solving skills. For example, CO6 require students to about the knowledge management system.