Curriculum

of

Diploma Programme

in

Library and Information Science

State Board of Technical Education (SBTE)
Bihar

Semester – VI

Teaching & Learning Scheme

Course Codes	CourseTitles	Teaching & Learning Scheme (Hours/Week)					
		Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+SL)	Total Credits (C)
		L	T				
2441601	**Research Methodology**	02	01	04	02	09	06
2441602	**Advance Library System and Services**	02	01	04	02	09	06
2441603	**Advance library Cataloguing**	02	01	04	02	09	06
2441604	**Information Processing and Retrieval**	02	01	04	02	09	06
2441605	**Major Project**	-	-	08	04	12	06
Total		**08**	**04**	**24**	**12**	**48**	**30**

Legend:

CI: Classroom Instruction (Includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem-based learning etc. to deliver theoretical concepts)

LI: Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)

Notional Hours: Hours of engagement by learners, other than the contact hours for ensuring learning.

TW: Term work (includes assignments, seminars, micro-projects, industrial visits, any other student activities etc.)

SL: Self Learning, MOOCs, spoken tutorials, online educational resources etc.

C: Credits = (1 x CI hours) + (0.5 x LI hours) + (0.5 x Notional hours)

Note: TW and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of the teacher to ensure the outcome of learning.

Semester - VI

Assessment Scheme

Course Codes	Course Titles	Assessment Scheme (Marks)						Total Marks (TA+TWA+LA)
		Theory Assessment (TA)		Term work & Self-Learning Assessment (TWA)		Lab Assessment (LA)		
		Progressive Theory Assessment (PTA)	End Theory Assessment (ETA)	Internal	External	Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)	
2441601	**Research Methodology**	30	70	20	30	20	30	200
2441602	**Advance Library System and Services**	30	70	20	30	20	30	200
2441603	**Advance library Cataloguing**	30	70	20	30	20	30	200
2441604	**Information Processing and Retrieval**	30	70	20	30	20	30	200
2441605	**Major Project**	-	-	20	30	50	100	200
Total		**120**	**280**	**100**	**150**	**130**	**220**	**1000**

Legend:

PTA: Progressive Theory Assessment in class room (includes class test, mid-term test and quiz using online/offline modes)
PLA: Progressive Laboratory Assessment (includes process and product assessment using rating Scales and rubrics)
TWA: Term work & Self Learning Assessment (Includes assessment related to student performance in assignments, seminars, micro projects, industrial visits, self-learning, any other student activities etc.

Note:

- ETA & ELA are to be carried out at the end of the term/ semester.
- Term Work is to be done by the students under the guidance of internal faculty but its assessment will be done **internally (40%)** as well as **externally (60%)**. Assessment related to planning and execution of Term Work activities like assignment, micro project, seminar and self-learning is to be done by internal faculty (Internal Assessment) whereas assessment of output/product/ presentation related to these activities will be carried out by external faculty/expert (External Assessment). However, criteria of internal as well as external assessment may vary as per the requirement of respective course. For valid and reliable assessment, the internal faculty should prepare checklist & rubrics for these activities.

A) Course Code : 2441601(T2441601/P2441601/ S2441601)

B) Course Title : Research Methodology

C) Pre- requisite Course(s) :

D) Rationale :

Research Methodology is the demand of present era considering information and knowledge as social wealth; Their implications are studied in three different era of human history. Viz the agrarian, the industrial and postindustrial society . Therefore the course of Research Methodology is to after an understanding characteristics and kind of research policy.

E) After completion of the course, the students will be able to-

CO-1 Understand the basics of Research Methodology.
CO-2 Take up Research Project/Studies.
CO-3 Determine the Research Problem and select an appropriate research design.
CO-4 Collect data and analyze them pertaining to his/her research.
CO-5 Develop report writing Capability

F) Suggested Course Articulation Matrix (CAM):

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	**PO-2** Communication Skills	**PO-3** Professionalism	**PO-4** Problem-Solving	**PO-5** Digital working skills	**PO-6** Awareness about ethical practices	**PO-7** Life Long Learning	**PSO-1**	**PSO-2**
CO-1	3	1	-	-	1	1	-		
CO-2	3	2	-	-	1	1	-		
CO-3	3	2	1	-	-	1	-		
CO-4	2	3	1	1	1	1	-		
CO-5	2	3	2	2	-	1	1		

Legend: High(3),Medium (2),Low(1) and No mapping(-)

***** PSOs will be developed by the respective programme coordinator at the institute level. As per latest NBA guidelines, formulating PSOs is optional

G) Teaching & Learning Scheme:

Course Code	Course Title	Scheme of Study (Hours/Week)					
		Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+SL)	Total Credits (C)
		L	T				
2441601	Research Methodology	02	01	04	02	09	06

Legend:

CI: Classroom Instruction (includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem based learning etc. to deliver theoretical concepts)

LI: Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)

Notional Hours: Hours of engagement by learners, other than the contact hours for ensuring learning.

TW: Term Work (includes assignments, seminars, micro projects, industrial visits, any other student activities etc.)

SL: Self Learning, MOOCs, spoken tutorials, online educational resources etc.

C: Credits= (1x CI hours) + (0.5x LI hours) + (0.5 x Notional hours)

Note: TW and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of teacher to ensure outcome of learning.

H) Assessment Scheme:

Course Code	Course Title	Assessment Scheme(Marks)						Total Marks(TA+TWA+LA)
		Theory Assessment(TA)		Term Work& Self-Learning Assessment(TWA)		LabAssessment (LA)		
		Progressive Theory Assessment (PTA)	End Theory Assessment (ETA)	Internal	External	Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)	
2441601	Research Methodology	30	70	20	30	20	30	200

Legend:

PTA: Progressive Theory Assessment in class room (includes class test, mid-term test and quiz using online/offline modes)

PLA: Progressive Laboratory Assessment (includes process and product assessment using rating Scales and rubrics)

TWA: Teamwork & Self Learning Assessment (Includes assessment related to student performance in assignments, seminars, micro projects, industrial visits, self-learning, any other student activities etc.

Note:

- ETA & ELA are to be carried out at the end of the term/ semester.
- Term Work is to be done by the students under the guidance of internal faculty but its assessment will be done **internally (40%)** as well as **externally (60%)**. Assessment related to planning and execution of Term Work activities like assignment, micro project, and seminar and self-learning is to be done by internal faculty (Internal Assessment) whereas assessment of output/product/ presentation related to these activities will be carried out by external faculty/expert (External Assessment). However, criteria of internal as well as external assessment may vary as per the requirement of respective course. For valid and reliable assessment, the internal faculty should prepare checklist & rubrics for these activities.

I) Course Curriculum Detailing: This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Term Work (TW) and Self Learning (SL). Students are expected to demonstrate the attainment of Theory Session Outcomes (TSOs) and Lab Session Outcomes (LSOs) leading to attainment of Course Outcomes (COs) upon the completion of the course. While curriculum detailing, NEP 2020 related reforms like Green skills, Sustainability, Multidisciplinary aspects, Society connect, Indian Knowledge System (IKS) and others must be integrated appropriately.

J) Theory Session Outcomes (TSOs) and Units: T2441601

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 1a. Write in detail about concept, meaning, need and process of Research. *TSO 1b.* Enumerate the various kinds of Research with its advantages and disadvantages. *TSO 1c.* Enumerate the Interdisciplinary research and its need. *TSO 1d.* Explain Research design and is types in detail. *TSO 1e.* Describe the design research proposal. Write in detail about print, non-print and electronic source of literature search.	**Unit-1.0 Research Methodology** 1.1 Concept, meaning, need, and process of research. 1.2 Concept, meaning, need, and process of Research. 1.3 Research Design, Types of Research Design. 1.4 Design Research Proposal 1.5 Literature search- Print, non-print and electronic source..	**1&2**
TSO 2a. Describe the scientific method and explain merits and demerits of documentary sources applied in Scientific method for data collection. *TSO 2b.* Describe Historical method and explain merits and demerits of documentary sources applied in historical method for data collection *TSO 2c.* Explain the concept of survey Research. How do you conduct a research survey. *TSO 2d.* Explain the concept of descriptive method *TSO 2e.* Explain case study method Describe in detail about experimental method and Delfi Method.	**Unit-2.0 Methods of Research** 2.1 Scientific method 2.2 Historical method 2.3 Descriptive method 2.4 Survey method and case study method 2.5 Experimental method and Delphi method. 2.6 Library in religion and spiritual activity	**1&3**
TSO 3a. Evaluate questionnaire as a technique of data collection. *TSO 3b.* Evaluate interview as a technique of data collection *TSO 3c.* Evaluate observation as a technique of data collection. *TSO 3d.* Describe in detail about sampling *TSO 3e.* Explain in detail about presentation of Data, Table, Chart and Graph. *TSO 3f.* Explain in brief the nature, Scope and limitation of statistical method in the process of resources. *TSO 3g.* Explain in detail about use of statistical package.	**Unit-3.0 Data Analysis and Interpretation.** 3.1 Collection of Data by questionnaire, Interview, Observation, and Sampling 3.2 Presentation of Data- Table chart and graph 3.3 Interpretation of Data: Frequency distribution, measures of central Tendency, Analysis of Time series, co-relation studies and Analysis of Variance. 3.4 Use of statistical package.	**2&4**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 4a. Explain in detail about meaning, scope and parameters. *TSO 4b.* Describe Bibliometrics Law and their application. *TSO 4c.* Explain in detail about citation analysis and obsolescence studies. Describe the trends in Bibliometric and Webometrics.	**Unit-4.0 Bibliometric studies** 4.1 Meaning, scope and Parameters 4.2 Bibliometric laws and their application 4.3 Citation analysis and obsolescence studies Trends in Bibliometric and Webometrics	**1&3**
TSO 5a. Write an essay on the process of the writing a research report *TSO 5b.* Describe the precautions in preparing the research report. *TSO 5c.* Describe some fundamental Rules of style of writing research report. Describe guide line for research reporting.	**Unit-5.0 Report writing** 5.1 Preparation and writing of research and Technical report. 5.2 Preparation of thesis and dissertation 5.3 Tools for technical writing style manual 5.4 Guide line for research reporting**.**	**1&5**

Note: One major TSO may require more than one Theory session/Period.

K) Suggested Laboratory (Practical) / Tutorials and Outcomes: P2441601

Outcomes	S. No.	Laboratory (Practical)/ Tutorials Titles	Relevant COs Number(s)
LSO 1.1. Design a research *LSO 1.2.* Make a list of types of research design *LSO 1.3.* Prepare the process of research with an example	1.	**Unit -1: Research design** • Process of research • Type of research design • Research design proposal	**2&3**
LSO 2.1. Do a literature search using print source *LSO 2.2.* Do a literature search using non-print source *LSO 2.3.* Do a literature search using an electronic source	2.	**Unit-2: Literature Search** • Print • Non-print • Electronic source.	**1&4**
LSO 3.1. Prepare a list of research methods *LSO 3.2.* Prepare a research report using survey method *LSO 3.3.* Prepare a research report using case study method *LSO 3.4.* Prepare a research report using experimental method *LSO 3.5.* Prepare a research report using Delphi method	3.	**Unit -3: Research method** • Survey method • Case study method • Experimental method • Delphi method	**1&3**

Outcomes	S. No.	Laboratory (Practical)/ Tutorials Titles	Relevant COs Number(s)
LSO 4.1. Collection of data by questionnaire ,interview observation and sampling *LSO 4.2.* Present a sample data using table,chart and graph	4.	**Unit -4: Data analysis** • Questionnaire and interview, observation and sampling • Presentation of data • Table chart and graph	**4**
LSO 5.1. Prepare and write research and technical report *LSO 5.2.* Prepare sample thesis and dissertation *LSO 5.3.* Make a list of tools for technical writing style *LSO 5.4.* Prepare a guideline for research reporting	5.	**Unit -5: Report writing** • Research and technical report • Thesis and dissertation • Tools for technical writing style • Guideline for research reporting	**5**

L) Suggested Term Work and Self-Learning: S2441601

a. Prepare a project on Survey method
b. Prepare a project on Case study method
c. Prepare a project on Observation method
d. Prepare a project on Sampling method
e. Make a Project on research design proposal
f. Make a project on bibliometric studies
g. Prepare a project on interpretation of data
h. Conduct interpretation of data using measures of Central tendency
i. Make a project on Sampling method
j. Prepare a project on hypothesis
k. Prepare a project on variable
l. Prepare a project on trends in bibliometric and Webometrics.

M) Suggested Course Evaluation Matrix: The course teacher has to decide and use appropriate assessment strategy and its weightage in theory, laboratory and Term Work for ensuring CO attainment. The response/performance of each student in each of these designed activities is to be used to calculate **CO attainment**.

COs	Course Evaluation Matrix						
	Theory Assessment (TA)**		Term Work Assessment (TWA)			Lab Assessment (LA)#	
	Progressive Theory Assessment (PTA) Class/Mid Sem Test	End Theory Assessment (ETA)	Term Work& Self Learning Assessment			Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)
			Assignments	Micro Projects	Other Activities*		
CO-1	15%	15%	15%	20%	15%	10%	15%
CO-2	25%	25%	25%	20%	25%	15%	15%

CO-3	10%	10%	10%	20%	10%	20%	20%
CO-4	20%	20%	20%	20%	20%	15%	10%
CO-5	30%	30%	30%	20%	30%	25%	15%
Total Marks	**30**	**70**	**20**	**20**	**10**	**20**	**30**
			50				

Legend:

*: Other Activities include self- learning, seminar, visits, surveys, product development, software development etc.

**: Mentioned under point- (N)

#: Mentioned under point-(O)

Note:

- The percentage given are approximate
- In case of Micro Projects and End Laboratory Assessment (ELA), the achieved marks will be equally divided in all those COs mapped with total experiments.
- For CO attainment calculation indirect assessment tools like course exit survey need to be used which comprises of questions related to achievement of each COs.

N) Suggested Specification Table for End Semester Theory Assessment: Specification table represents the reflection of sample representation of assessment of cognitive domain of full course.

Unit Title and Number	Total Classroom Instruction (Cl) Hours	Relevant COs Number(s)	Total Marks	ETA (Marks)		
				Remember (R)	Understanding (U)	Application & above (A)
Unit-1.0 Research Methodology	10	1&2	11	4	4	3
Unit-2.0 Method of Research	12	1&3	16	4	6	6
Unit-3.0 Data Analysis and Interpretation.	8	2&4	10	3	4	3
Unit-4.0 Bibliometric studies	10	1&3	12	4	6	2
Unit-5.0 Report writing	10	1&5	21	5	8	8
Total	**50**	**-**	**70**	**20**	**28**	**22**

Note: Similar table can also be used to design class/mid-term/ internal question paper for progressive assessment.

O) Suggested AssessmentTable for Laboratory (Practical): (Not Applicable)

P) Suggested Instructional/Implementation Strategies: Different Instructional/ Implementation Strategies may be appropriately selected, as per the requirement of the content/outcome. Some of them are Improved Lecture, Tutorial, Case Method, Group Discussions, Industrial visits, Industrial Training, Field Trips, Portfolio Based, Learning, Role Play, Live Demonstrations in Classrooms, Lab, Field Information and Communications Technology (ICT)Based Teaching Learning, Blended or flipped mode, Brainstorming, Expert Session, Video Clippings, Use of Open Educational Resources (OER), MOOCs etc.

Q) List of Major Laboratory Equipment, Tools and Software:

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/Practical Number
1.	High end computers	Processor Intel Core i7 with RAM 32 GB, DDR3/DDR4, HDD 500 GB, OS Windows 10.	All
2.	Tools and Publications	Research Periodicals, Old Research Thesis, Primary and Secondary Reference documents	1,2,3,4,5
3.	Printer and Scanner	High Speed Combo Printer and Hand Held Scanner	

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Research Methodology methods and Techniques	C R Kothari Gaurav garg	New Age International Publishers
2.	Research Methodology	Gr. Vijay Upagade Dr. Arvind Shende	S. Chand
3.	Research Methodology and Applied Statistics	DN Sansanwal	Shipra Publications
4.	Research Methodology Concept and Cases	Deepak Chawla Neena Sondhi	S. Chand

(b) Online Educational Resources:

- https://ignou.ac.in/
- https://www.inflibnet.ac.in/
- https://www.engranthalaya.nic.in/
- https://epgp.inflibnet.ac.in/
- https://nptel.ac.in/
- https://www.mooc.org/
- https://www.jstor.org/

Note: Teachers are requested to check the creative commons license status/ financial implications of the suggested, online educational recourses before use by the students.

(c) Others:

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A) Course Code : 2441602 (T2441602/P2441602/S2441602)

B) Course Title : Advanced Library Systems and Services

C) Pre- requisite Course(s) :

D) Rationale :

The objective of this course is to familiarize students with broad range of modern library systems and services. The students get acquainted with the internet tools modern ICT Application, Internet Based Information resources and services pertaining to the library. A Library professional must have the knowledge of working with the digital resources as well as know to preserve them effectively. Hence this course will get them familiarized with modern tools and software used in the modern-day libraries.

E) Course Outcomes (COs):

After completion of the course, the students will be able to:-

- **CO-1** Remember and understand the concepts of Modern-day Libraries.
- **CO-2** Use ICT and Internet tools pertaining to libraries service.
- **CO-3** Search & retrieve information from web resources and online databases.
- **CO-4** Answer the query of library users by utilizing these resources.
- **CO-5** Apply the knowledge in managing digital resources and their preservation.

F) Suggested Course Articulation Matrix (CAM):

Course Outcomes (COs)	Program Outcomes (POs)							Program Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	**PO-2** Communication Skills	**PO-3** Professionalism	**PO-4** Problem Solving	**PO-5** Digital working skills	**PO-6** Awareness about ethical practices	**PO-7** Life Long Learning	**PSO-1**	**PSO-2**
CO-1	3	2	2	1	1	1	1		
CO-2	2	2	2	2	1	1	1		
CO-3	2	2	2	2	2	1	1		
CO-4	2	3	2	1	1	1	1		
CO-5	2	3	2	2	2	1	1		

Legend: High(3),Medium (2),Low(1) and No mapping(-)

***** PSOs will be developed by respective programme coordinator at institute level. As per latest NBA guidelines, formulating PSOs is optional

G) Teaching & Learning Scheme:

Course Code	Course Title	Scheme of Study (Hours/Week)					
		Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+SL)	Total Credits (C)
		L	T				
2441602	Advanced Library Systems and Services	02	01	04	02	09	06

Legend:

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H) Assessment Scheme:

Course Code	Course Title	Assessment Scheme(Marks)						Total Marks(TA+TWA+LA)
		Theory Assessment(TA)		Term Work& Self-Learning Assessment(TWA)		LabAssessment (LA)		
		Progressive Theory Assessment (PTA)	End Theory Assessment (ETA)	Internal	External	Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)	
2441602	Advanced Library Systems and Services	30	70	20	30	20	30	200

Legend:

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J) Theory Session Outcomes (TSOs) and Units: T2441602

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 1a. Write the definition and need of modern-day library. *TSO 1b.* Briefly describe the various types of Libraries. *TSO 1c.* Make a comparison between Traditional and Modern-day Libraries. *TSO 1d.* Differentiate between digital and virtual Libraries. *TSO 1e.* Write the Hardware and software requirement of an advanced library. *TSO 1f.* Name the main digital libraries software and describe them.	**Unit-1.0 Advanced Library System** 1.1 Advanced/Modern Library: Concept, need Definition. 1.2 Types of modern Library: Digital Library, Virtual Library and Hybrid Library. 1.3 Modern Library vs Traditional Libraries: Advantages and disadvantages. 1.4 Hardware and software requirement of modern libraries: - Advance Computing System, Barcoding System- Scanner and printers, HI speed, Latest OS and AS, Suitable LMS and DLS.	**1&2**
TSO 2a. Describe RFID Technology in the context of library. *TSO 2b.* Name the important web search engines. *TSO 2c.* Describe multimedia technology and its application in libraries. *TSO 2d.* Write the features of web 2.0. *TSO 2e.* Briefly describe various 2.0 tools. *TSO 2f.* Write the application of web 2.0 in libraries.	**Unit-2.0 ICT Applications and Internet Tools** 2.1 RFID Technology and its application in Library. 2.2 Internet and Web technologies: TCP/IP, DNS, URL, FTP, Search Engines etc. 2.3 Multimedia Technologies and its application in Library. 2.4 Web 2.0: Concept, definition, features etc. 2.5 Web 2.0 Tools: Wiki, Blog, document sharing, social networking and R&S feed etc. 2.6 Application of web 2.0 in library- Lib 2.0	**2&3**
TSO 3a. Explain E-resources in brief. *TSO 3b.* Describe E-database. *TSO 3c.* Differentiate between DOAJ and DOAR. *TSO 3d.* Describe Library Consortia. *TSO 3e.* Differentiate between bibliographic and	**Unit-3.0 Internet based Information resources.** 3.1 E-resources in the web: E-books, E-journals, E-prints, E-database. 3.2 Open Access databases: DOAJ, DOAR	**2&3**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
full text databases. *TSO 3f.* Describe RCLIS as the online repository.	3.3 Library Consortia: Definition, need, function, Consortia in India. 3.4 Online Database: Concepts, definition and types- full Text, Bibliographic, Numeric etc 3.5 Online repository - RCLIS	
TSO 4a. Write the need of federated searching. *TSO 4b.* Describe primary and meta search engines. *TSO 4c.* Write the applications of semantic web technology in library. *TSO 4d.* Discuss the concept of Cloud Computing. *TSO 4e.* Define data mining and data warehouse. *TSO 4f.* Write the various technique of web mining.	**Unit-4.0 Web based Information Services** 4.1 Web Search Engines: Primary and meta search Engines 4.2 Federated and Centralized search services: Concept, Need and functions. 4.3 Federated searching: Advantages and Disadvantages. 4.4 Semantic web technology and its application its library. 4.5 Cloud Computing: Concept, nee and application in Library.	**1,3&4**
TSO 5a. Write the need of digital preservation. *TSO 5b.* Discuss the challenges of preserving digital contents. *TSO 5c.* Discuss the concepts of Archiving. *TSO 5d.* Write the methods of making archive. *TSO 5e.* Discuss the copywrite digital libraries.	**Unit-5.0 Digital Preservation and Legal Issues** 5.1 Digital Preservation: Concept, need and uses. 5.2 Challenges and strategies in preserving digital contents. 5.3 Archiving: concepts, methods and procedures 5.4 Legal issues with digital library – IPR, copyright, open libraries- GNU, Creative commons.	**1,3&5**

Note: One major TSO may require more than one Theory session/Period.

K) Suggested Laboratory (Practical) / Tutorials and Outcomes: P2441602

Outcomes	S. No.	Laboratory (Practical)/ Tutorials Titles	Relevant COs Number(s)
LSO 1.1. Describe the Structural components of Digital Library. *LSO 1.2.* Explain the process of digitalization. *LSO 1.3.* List out the hardware components of digital library. *LSO 1.4.* Write the configuration of advance computing system. *LSO 1.5.* List out various types of scanners.	1.	**Unit-1.0 Advanced Library: Structure, components etc.** 1.1-Familiarization with digital library and virtual library. 1.2-Familiarization with digital library components. 1.3-Identification of various Hardwares. 1.4- Familiarization with various LMS and	**1&4**

Outcomes	S. No.	Laboratory (Practical)/ Tutorials Titles	Relevant COs Number(s)
		DLS	
LSO 2.1. List out various ICTs Used in the library. *LSO 2.2.* Draw and describe the connection of RFID System. *LSO 2.3.* Describe various internet tools. *LSO 2.4.* Write the procedure to search information on the web public internet. *LSO 2.5.* Search and download 10 books on Advance library services from the internet. *LSO 2.6.* Make a library blog with the help of web 2.0 tools.	2.	**Unit-2.0 Advanced ICT application and Internet tools** 2.1 - Familiarization with RFID system. 2.2 Familiarization with various internet tools and their applications. 2.3 Working with internet and web technology. 2.4 Application of multimedia technology in the library. 2.5 Identification of various web 2.0 tools.	**1&3**
LSO 3.1. List out the main e-book reading software/gadgets. *LSO 3.2.* Name 10 e-journals of LIS. *LSO 3.3.* Write the procedure of search and retrieval in e-database. *LSO 3.4.* List out at least 5 library consortia of India. *LSO 3.5.* Write the procedure of retrieving information from online repository. *LSO 3.6.* Search and retrieve 5 books on library networking from NDLI repository.	3.	**Unit-3.0 Web based Information Resources** 3.1 Familiarization with E-resources in the library. 3.2 Identification of open access databases 3.3 Online repository: familiarization with RCLIS. 3.4 Searching on internet: Practice 3.5 Search and retrieval of information practice.	**1,2&5**
LSO 4.1. Describe the functioning of meta search engine. *LSO 4.2.* List out 5 web search engines. *LSO 4.3.* Write the advantage and disadvantages of federated search engine. *LSO 4.4.* Write the procedure to digital material. *LSO 4.5.* List out the materials used in the preservation of digital materials in the library.	4.	**Unit-4.0 Web based Information Services** 4.1 Familiarization with web search engine 4.2 Familiarization with various meta search engine. 4.3 Familiarization with federated and centralized searching. 4.4 Knowing to preserve digital storage device/materials. 4.5 Digital preservation: Practice	**1&5**
LSO 5.1. List out 5 main Digital Library Software (DLS). *LSO 5.2.* Write the procedure to install e-granthalaya in your library. *LSO 5.3.* Write the functioning of D Space. *LSO 5.4.* Write the procedure of installation	5.	**Unit-5.0 Hands on practice with DLS (D Space, Greenstone of any other available)** 5.1 Installation of DLS (Digital Library Software). 5.2 Working with DLS: Practice	**1,2&5**

Outcomes	S. No.	Laboratory (Practical)/ Tutorials Titles	Relevant COs Number(s)
of RFID system. *LSO 5.5.* Explain the process of Activation and Deactivation in RFID tags. *LSO 5.6.* Describe the procedure of data Mining. *LSO 5.7.* List out 5 clouds pertaining to library services.		5.3 Installation of RFID system 5.4 Activation and Deactivation of RFID tags 5.5 Search practice with meta search engine. 5.6 Cloud computing and data mining: Practice.	

L) Suggested Term Work and Self Learning: S2441602

Assignments: Questions/Problems/Numerical/Exercises to be provided by the course teacher in line with the targeted COs.

1. Calculate the flow rate of a fluid through a pipe with a given velocity profile using integration through open source software.

Micro Projects:

1. Write a dissertation on modern Library System.
2. Make a comparative study of virtual, Digital and Traditional Libraries.
3. Prepare a detailed list of Hardware and software required to establish a modern digital library.
4. Write a dissertation on digital library software.
5. Make a project on RFID system used in the library.
6. Prepare a list of Web 2.0 tools with their brief descriptions.
7. Write an essay on E-resources used by the Research scholars.
8. Write the procedure to establish an online repository.
9. Make a project on various web-based information service.
10. Write an essay on semantic web technology and its application in libraries.
11. Write a dissertation on digital preservation and issues and challenges involves in it.
12. Write the procedure to setup an Archive in your library.

M) Suggested Course Evaluation Matrix: The course teacher has to decide and use appropriate assessment strategy and its weightage in theory, laboratory and Term Work for ensuring CO attainment. The response/performance of each student in each of these designed activities is to be used to calculate **CO attainment**.

COs	Course Evaluation Matrix						
	Theory Assessment (TA)**		Term Work Assessment (TWA)			Lab Assessment (LA)#	
	Progressive Theory Assessment (PTA) Class/Mid Sem Test	End Theory Assessment (ETA)	Term Work& Self Learning Assessment			Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)
			Assignments	Micro Projects	Other Activities*		
CO-1	15%	15%	15%	20%	15%	10%	15%
CO-2	25%	25%	25%	20%	25%	15%	15%
CO-3	10%	10%	10%	20%	10%	20%	20%
CO-4	20%	20%	20%	20%	20%	15%	10%
CO-5	30%	30%	30%	20%	30%	25%	15%
Total Marks	30	70	20	20	10	20	30
			50				

Legend:

*: Other Activities include self- learning, seminar, visits, surveys, product development, software development etc.

**: Mentioned under point- (N)

#: Mentioned under point-(O)

Note:

- The percentage given are approximate
- In case of Micro Projects and End Laboratory Assessment (ELA), the achieved marks will be equally divided in all those COs mapped with total experiments.
- For CO attainment calculation indirect assessment tools like course exit survey need to be used which comprises of questions related to achievement of each COs?

N) Suggested Specification Table for End Semester Theory Assessment: Specification table represents the reflection of sample representation of assessment of cognitive domain of full course.

Unit Title and Number	Total Classroom Instruction (Cl) Hours	Relevant COs Number(s)	Total Marks	ETA (Marks)		
				Remember (R)	Understanding (U)	Application & above (A)
Unit-1.0 Advanced Library System	8	1&2	12	3	4	4
Unit-2.0 ICT Application and Internet Tools	12	2&3	16	5	6	5
Unit-3.0 Internet based Information resources.	12	2&3	16	5	6	5
Unit-4.0 Web based Information Services	10	1,3&4	12	4	6	2
Unit-5.0 Digital Preservation and Legal Issues	8	1,3&5	14	3	6	6
Total	50	-	70	20	28	22

Note: Similar table can also be used to design class/mid-term/ internal question paper for progressive assessment.

O) Suggested AssessmentTable for Laboratory (Practical):

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
1.	**Unit-1.0 Advanced Library: Structure, components etc.** 1.1-Familiarization with digital library and virtual library. 1.2-Familiarization with digital library components. 1.3-Identification of various Hardwares. 1.4-Familiarization with various LMS and DLS	**CO-1&4**	40	50	10
2.	**Unit-2.0 Advanced ICT application and Internet tools** 2.1 Familiarization with RFID system. 2.2 Familiarization with various internet tools and their applications. 2.3 Working with internet and web technology. 2.4 Application of multimedia technology in the library. 2.5 Identification of various web 2.0 tools.	**CO-1&3**	40	50	10
3.	**Unit-3.0 Web based Information Resources** 3.6 Familiarization with E-resources in the library. 3.1 Identification of open access databases 3.2 Online repository: familiarization with RCLIS. 3.3 Searching on internet: Practice 3.4 Search and retrieval of Information practice.	**CO-1,2&5**	40	50	10
4.	**Unit-4.0 Web based Information Services** 4.1 Familiarization with web search engine 4.2 Familiarization with various meta search engine. 4.3 Familiarization with federated and centralized searching. 4.4 Knowing to preserve digital storage device/materials. 4.5 Digital Preservation: Practice	**CO-1&5**	40	50	10
5.	**Unit-5.0 Hands on practice with DLS (D Space, Greenstone of any other available)** 5.1 Installation of DLS (Digital Library Software). 5.2 Working with DLS: Practice 5.3 Installation of RFID system	**CO-1,2&5**	40	50	10

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
	5.4 Activation and Deactivation of RFID tags 5.5 Search practice with meta search engine. 5.6 Cloud computing and data mining: Practice.				

P) Suggested Instructional/Implementation Strategies: Different Instructional/ Implementation Strategies may be appropriately selected, as per the requirement of the content/outcome. Some of them are Improved Lecture, Tutorial, Case Method, Group Discussion, Industrial visits, Industrial Training, Field Trips, Portfolio Based, Learning, Role Play, Live Demonstrations in Classrooms, Lab, Field Information and Communications Technology (ICT)Based Teaching Learning, Blended or flipped mode, Brainstorming, Expert Session, Video Clippings, Use of Open Educational Resources (OER), MOOCs etc.

Q) List of Major Laboratory Equipment, Tools and Software:

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/Practical Number
1.	High end computers	Processor Intel Core i7 with RAM 32 GB, DDR3/DDR4, HDD 500 GB, OS Windows 10 with internet connection	All
2.	Software	Library management Software – E-Granthalaya/Libsys/Soul, Digital Library Software – D Space/Greenstone, Barcoding Software, RFID System E-books Reading Software-Kindle/Libman,etc.	1,2,3,4,5
3.	Printer and Scanner	High Speed Combo Printer and Hand Held Scanner	

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Information Needs and use of E-resources in University Libraries.	Das, K. C.	S.K.Agency, Daryaganja, New Delhi.
2.	Searching CD- ROM and Online Information Sources	Choudhary, G.G and Choudhary S,	Library Association, London
3.	Information Source Services and Technology	Sharma B K, Thakur UM	Y K Publisher Agra
4.	Web Technologies in Library and Information Science	Dr. Kailash D. Tandel Et.Al	Write and Print Publications
5.	Introduction to Automation for Librarians.	Soffady, W.	American Library Association

(b) Online Educational Resources:

1. https://ignou.ac.in/
2. https://www.inflibnet.ac.in/
3. https://www.engranthalaya.nic.in/
4. https://epgp.inflibnet.ac.in/
5. https://nptel.ac.in/
6. https://www.mooc.org/
7. https://www.jstor.org/
8. https://ndl.iitkgp.ac.in/

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A) Course Code : 2441603 (T2441603 / P2441603 /S2041603)

B) Course Title : Advance Library Cataloguing

C) Pre- requisite Course(s) :

D) Rationale :

For any Library and information personnel it is necessary to know the holding of his own library. Similarly it is expected that every reader should be made aware of the available resources of the Library. For this purpose a clear-cat and up to date catalogue of the Library holding is necessary Stress has been given on preparation of catalogue according to accepted international code. History of cataloguing evolution of catalogue codes, suitable codes for an academic, special or Research Library and Public Library have been deal with and practical aspect taken in to Consideration.

E) Course Outcomes (COs): After completion of the course, the students will be able to-

- **CO-1** Understand the concept of Library Cataloguing.
- **CO-2** Describe the main and added entries of the Library catalogue.
- **CO-3** Understand the various approaches of deriving subject headings.
- **CO-4** Format the Bibliographic information in the Catalogue according to AACR-II and CCC.
- **CO-5** Do Cataloguing according to AACR-II and CCC.

F) Suggested Course Articulation Matrix (CAM):

Course Outcomes(COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	**PO-2** Communication Skills	**PO-3** Professionalism	**PO-4** Problem Solving	**PO-5** Digital working skills	**PO-6** Awareness about ethical practices	**PO-7** Life Long Learning	**PSO-1**	**PSO-2**
CO-1	3	1	-	-	-	-	-		
CO-2	3	2	-	-	-	-	-		
CO-3	3	2	1	-	-	-	-		
CO-4	2	2	1	1	-	-	-		
CO-5	2	2	1	2	-	-	1		

Legend: High (3), Medium (2), Low (1) and No mapping (-)

***** PSOs will be developed by respective programme coordinator at institute level. As per latest NBA guidelines, formulating PSOs is optional

G) Teaching & Learning Scheme:

Course Code	Course Title	Scheme of Study (Hours/Week)					
		Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+SL)	Total Credits (C)
		L	T				
2441603	**Advance Library Cataloguing**	02	01	04	02	09	06

Legend:

Cl: Classroom Instruction (includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem based learning etc. to deliver theoretical concepts)

LI: Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)

Notional Hours: Hours of engagement by learners, other than the contact hours for ensuring learning.

TW: Term Work (includes assignments, seminars, micro projects, industrial visits, any other student activities etc.)

SL: Self Learning, MOOCs, spoken tutorials, online educational resources etc.

C: Credits= (1x Cl hours) + (0.5x LI hours) + (0.5 x Notional hours)

Note: TW and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of teacher to ensure outcome of learning.

H) Assessment Scheme:

Course Code	Course Title	Assessment Scheme(Marks)						Total Marks(TA+TWA+LA)
		Theory Assessment(TA)		Term Work& Self-Learning Assessment(TWA)		LabAssessment (LA)		
		Progressive Theory Assessment (PTA)	End Theory Assessment (ETA)	Internal	External	Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)	
2441603	**Advance Library Cataloguing**	30	70	20	30	20	30	200

Legend:

PTA: Progressive Theory Assessment in class room (includes class test, mid-term test and quiz using online/offline modes)

PLA: Progressive Laboratory Assessment (includes process and product assessment using rating Scales and rubrics)

TWA: Teamwork &Self Learning Assessment (Includes as assessment related to student performance in assignments, seminars, micro projects, industrial visits, self-learning, another student activities etc.

Note:

- ETA & ELA are to be carried out at the end of the term/ semester.
- Term Work is to be done by the students under the guidance of internal faculty but its assessment will be done **internally (40%)** as well as **externally (60%)**. Assessment related to planning and execution of Term Work activities like assignment, micro project, and seminar and self-learning is to be done by internal faculty (Internal Assessment) whereas assessment of output/product/ presentation related to these activities will be carried out by external faculty/expert (External Assessment). However, criteria of internal as well as external assessment may vary as per the requirement of respective course. For valid and reliable assessment, the internal faculty should prepare checklist & rubrics for these activities.

I) Course Curriculum Detailing: This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Term Work (TW) and Self Learning (SL). Students are expected to demonstrate the attainment of Theory Session Outcomes (TSOs) and Lab Session Outcomes (LSOs) leading to attainment of Course Outcomes (COs) upon the completion of the course. While curriculum detailing, NEP 2020 related reforms like Green skills, Sustainability, Multidisciplinary aspects, Society connect, Indian Knowledge System (IKS) and others must be integrated appropriately.

J) Theory Session Outcomes (TSOs) and Units: T2441603

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 1a. Write in detail about subject cataloguing *TSO 1b.* Explain the subject Cataloging *TSO 1c.* Explain problem related to subject Cataloguing *TSO 1d.* Explain the "Forms of Heading" of sear's list *TSO 1e.* Write an essay on subject heading *TSO 1f.* Write an essay on chain procedure	**Unit-1.0 Subject cataloguing** 1.1 Subject cataloguing evolution and purpose 1.2 Form of subject catalogue 1.3 Subject heading problem 1.4 Study of sear's list of subject headings 1.5 Chain procedure	**1&3**
TSO 2a. Write in detail about catalogue codes *TSO 2b.* Trace in brief the history and development of catalogue codes up to 20th century *TSO 2c.* Describe structure and basic features of CCC. *TSO 2d.* Differences between Anglo American Cataloguing Code-II and Classified Catalogue codes. Describe the kinds of entries in detail. *TSO 2e.* Mention the different entries of classified catalogue Describe the kinds of entries in detail *TSO 2f.* Mention the different entries of classified catalogue	**Unit-2.0 Catalogue Codes : :AACR-II and CCC** 2.1 Catalogue Codes 2.2 Interdiction to Classified Catalogue codes 2.3 Structure and Basic features of CCC 2.4 Basic differences between AACR-II and CCC. 2.5 Entries in classified catalogue 2.6 Part of entries according to CCC	**1&4**
TSO 3.a Explain meaning and definition of centralized cataloguing and cooperative cataloguing TSO 3.b Explain the concept of centralized cataloging and co-operative cataloguing TSO 3.c Explain Pre-requisite of Centralized cataloguing and operative cataloguing TSO 3.d Describe its merits TSO 3.e Describe its Demerits TSO 3.f Describe its various forms	**Unit-3.0 Centralized and Co-operative cataloguing** 3.1 Centralized cataloguing: Meaning and definition 3.2 Concept 3.3 Pre-requisite 3.4 Inherits 3.5 Demerits 3.6 Form	**1&5**
TSO4a. Explain meaning and definition of Union catalogue *TSO4b.* Explain its objective and Utility *TSO4c.* Explain Pre-requisite of union catalogue *TSO4d.* Describe its types	**Unit-4.0 Union Catalogue and OPAC** 4.1 Meaning and definition 4.2 Objective and Utility 4.3 Pre-requisite 4.4 Types 4.5 Meaning and definition 4.6 Types of OPAC	**1&5**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO4e. Explain meaning and definition of online public access catalogue *TSO4f.* Describe its types *TSO4g.* Describe the search option in OPAC	4.7 Searching through OPAC 4.8 Search option in OPAC 4.9 Advantages 4.10 Limitations	
TSO5a. Explain meaning of canons TSO5b. Explain the need of canons TSO5c. Describe the various Types of canons TSO5d. Write an essay on the development of ISBD TSO5e. Explain the purpose of international standard Bibliographic description TSO5f. Describe the types of ISBD TSO5g. Explain ISBD (G).	**Unit-5.0 Canon of Cataloguing and ISBD (International standard Bibliographic description)** 5.1 Meaning of Canon 5.2 Need of Canons 5.3 Types of Canons 5.4 Development 5.5 Types of ISBD 5.6 ISBD (G)	**3&4**

Note: One major TSO may require more than one Theory session/Period.

Rationale:- Preparation of Catalogues entries in a Library in the main function of this course. Strell is given more on card form of catalogue entry. In the 3rd semester course design AACR-II has been taken in to consideration. Classifying catalogue code is practiced in the 6th semester of the Diploma course.

K) Suggested Laboratory (Practical) / Tutorials and Outcomes: P2441603

Outcomes	S. No.	Laboratory (Practical)/ Tutorials Titles	Relevant COs Number(s)
LSO 1.1. Will be able to catalogue books and periodical with the help of CCC.	1.	• Cataloguing of books and periodical with the help of CCC.	**5**
LSO 2.1. Prepare main and added entries of documents according to CCC having the following item. (a) Single personal author (b) Shared author and Mix responsibility (c) Corporate author (d) Serials.	2.	• Preparation of main and added entries of document according to classified catalogue code (CCC) (latest available edition) having the following items. (a) Single personal author (b) Shared author and Mixed responsibility (c) Corporate author (d) Serials.	**4&5**

L) Suggested Term Work and Self Learning: S2441603

a. Assignments: Questions/Problems/Exercises to be provided by the course teacher in line with the targeted COs.

1. Cataloguing of books and periodicals according to CCC.
2. Cataloguing at least 50 titles of on own Library.
3. Prepare a project on main and added entries of documents according to CCC having the following items:-
   (a) Single personal author
   (b) Shared author and Mix responsibility
   (c) Corporate author
   (d) Serials.

M) Suggested Course Evaluation Matrix: The course teacher has to decide and use appropriate assessment strategy and its weightage in theory, laboratory and Term Work for ensuring CO attainment. The response/performance of each student in each of these designed activities is to be used to calculate **CO attainment**.

COs	Course Evaluation Matrix						
	Theory Assessment (TA)**		Term Work Assessment (TWA)			Lab Assessment (LA)#	
	Progressive Theory Assessment (PTA) Class/Mid Sem Test	End Theory Assessment (ETA)	Term Work& Self Learning Assessment			Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)
			Assignments	Micro Projects	Other Activities*		
CO-1	15%	15%	15%	20%	15%	10%	15%
CO-2	25%	25%	25%	20%	25%	15%	15%
CO-3	10%	10%	10%	20%	10%	20%	20%
CO-4	20%	20%	20%	20%	20%	15%	10%
CO-5	30%	30%	30%	20%	30%	25%	15%
Total Marks	**30**	**70**	**20**	**20**	**10**	**20**	**30**
			50				

Legend:

*: Other Activities include self- learning, seminar, visits, surveys, product development, software development etc.

**: Mentioned under point- (N)

#: Mentioned under point-(O)

Note:

- The percentage given are approximate
- In case of Micro Projects and End Laboratory Assessment (ELA), the achieved marks will be equally divided in all those COs mapped with total experiments.
- For CO attainment calculation indirect assessment tools like course exit survey need to be used which comprises of questions related to achievement of each COs.

N) Suggested Specification Table for End Semester Theory Assessment: Specification table represents the reflection of sample representation of assessment of cognitive domain of full course.

Unit Title and Number	Total Classroom Instruction (Cl) Hours	Relevant COs Number(s)	Total Marks	ETA (Marks)		
				Remember (R)	Understanding (U)	Application & above (A)
Unit-1.0 Subject cataloguing	10	1&3	14	4	6	4
Unit-2.0 Catalogue Codes :AACR-II and CCC	10	1&4	16	4	6	6
Unit-3.0 Centralized and co-operative Cataloguing	10	1&5	14	4	6	4
Unit-4.0 Union Catalogue and OPAC	10	1&5	12	4	4	4
Unit-5.0 Canon of Cataloguing and ISBD (International Standard Bibliographic Description)	10	3&4	14	4	6	4
Total	**50**	**-**	**70**	**20**	**28**	**22**

Note: Similar table can also be used to design class/mid-term/ internal question papers for progressive assessment.

O) Suggested Instructional/Implementation Strategies: Different Instructional/ Implementation Strategies may be appropriately selected, as per the requirement of the content/outcome. Some of them are Improved Lecture, Tutorial, Case Method, Group Discussion, Industrial visits, Industrial Training, Field Trips, Portfolio Based, Learning, Role Play, Live Demonstrations in Classrooms, Lab, Field Information and Communications Technology (ICT)Based Teaching Learning, Blended or flipped mode, Brainstorming, Expert Session, Video Clippings, Use of Open Educational Resources (OER), MOOCs etc.

P) List of Major Laboratory Equipment, Tools and Software:

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/Practical Number
1.	High end computers	Processor Intel Core i7 with RAM 32 GB, DDR3/DDR4, HDD 500 GB, OS Windows 10 with internet connection	All
2.	Equipment	Blank Catalogue Card, Sayer's List of Subject Headings, Catalogue Codes-AACR-II and CCC.	1,2,3,4,5
3.	Printer and Scanner	High Speed Combo Printer and Hand Held Scanner	

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Knowledge Organization in Library and info Science	Dr. SM Rokade	Crescent Publishing Corporation ,New Delhi-0(1 jan 2017)
2.	Library catoluging	Krishna Kumar	Vikash Publishing House
3.	Library and society	JK Khana	Khurustetra 1987
4.	Granthalaya Evam Suchna Vigyan	BK Sharma & Adarsh	YK Publisher, Agra
5.	Phushtkalya evam samaj	Pandey Sk Sharma	Prabhat Prakashan

(b) Online Educational Resources:

1. https://ignou.ac.in/
2. https://www.inflibnet.ac.in/
3. https://www.engranthalaya.nic.in/
4. https://epgp.inflibnet.ac.in/
5. https://nptel.ac.in/
6. https://www.mooc.org/
7. https://www.jstor.org/
8. https://ndl.iitkgp.ac.in/
9. https://www.nic.in/
10. https://egyankosh.ac.in/

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(b) Others:

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A) Course Code : 2441604 (T2441604 /P2441604 /S2441604)

B) Course Title : Information Processing and Retrieval

C) Pre- requisite Course(s) :

D) Rationale

A modern Library is not merely a Store House of reading materials. It is an institute of self learning. It works as an University, Knowledge and Skill is needed to recognize, collect, organize and utilize the print and non-print documents.

Information Storage and retrieval and documentation and Bibliography have been design with the basic point of information storage and Retrieval and providing theoretical knowledge about application of modern technologies in Documentation service and documentation work.

E) Course Outcomes (COs): After the completion of the course, other student will be to:-

CO-1 To learn the advanced information processing Techniques.

CO-2 To develop the capability in retrieving the information by applying different search techniques.

CO-3 To introduce the information repackaging and Consolidation technique.

CO-4 To develop familiarity with various bibliographic description standards.

CO-5 To understand the thesaurus and information needs.

F) Suggested Course Articulation Matrix (CAM):

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	**PO-2** Problem Analysis	**PO-3** Design/Development of Solutions	**PO-4** Engineering Tools	**PO-5** Engineering Practices for Society, Sustainability and Environment	**PO-6** Project Management	**PO-7** Life Long Learning	**PSO-1**	**PSO-2**
CO-1	3	1	-	-	-	-	-		
CO-2	3	2	-	-	-	-	-		
CO-3	3	2	1	-	-	-	-		
CO-4	3	3	1	1	-	-	-		
CO-5	3	3	2	2	-	-	1		

Legend: High(3),Medium (2),Low(1) and No mapping(-)

***** PSOs will be developed by respective programme coordinator at institute level. As per latest NBA guidelines, formulating PSOs is optional

G) Teaching & Learning Scheme:

Course Code	Course Title	Scheme of Study (Hours/Week)					
		Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+SL)	Total Credits (C)
		L	T				
2441604	Information Processing and Retrieval	02	01	04	02	09	06

Legend:

CI: Classroom Instruction (includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem based learning etc. to deliver theoretical concepts)

LI: Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)

Notional Hours: Hours of engagement by learners, other than the contact hours for ensuring learning.

TW: Term Work (includes assignments, seminars, micro projects, industrial visits, any other student activities etc.)

SL: Self Learning, MOOCs, spoken tutorials, online educational resources etc.

C: Credits= (1x CI hours) + (0.5x LI hours) + (0.5 x Notional hours)

Note: TW and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of teacher to ensure outcome of learning.

H) Assessment Scheme:

Course Code	Course Title	Assessment Scheme(Marks)						Total Marks(TA+TWA+LA)
		Theory Assessment(TA)		Term Work& Self-Learning Assessment(TWA)		LabAssessment (LA)		
		Progressive Theory Assessment (PTA)	End Theory Assessment	Internal	External	Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)	
2441604	Information Processing and Retrieval	30	70	20	30	20	30	200

Legend:

PTA: Progressive Theory Assessment in class room (includes class test, mid-term test and quiz using online/offline modes)

PLA: Progressive Laboratory Assessment (includes process and product assessment using rating Scales and rubrics)

TWA: Teamwork & Self Learning Assessment (Includes assessment related to student performance in assignments, seminars, micro projects, industrial visits, self-learning, any other student activities etc.

Note:

- ETA & ELA are to be carried out at the end of the term/ semester.
- Term Work is to be done by the students under the guidance of internal faculty but its assessment will be done **internally (40%)** as well as **externally (60%)**. Assessment related to planning and execution of Term Work activities like assignment, micro project, and seminar and self-learning is to be done by internal faculty (Internal Assessment) whereas assessment of output/product/

presentation related to these activities will be carried out by external faculty/expert (External Assessment). However, criteria of internal as well as external assessment may vary as per the requirement of respective course. For valid and reliable assessment, the internal faculty should prepare checklist & rubrics for these activities.

I) **Course Curriculum Detailing:** This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Term Work (TW) and Self Learning (SL). Students are expected to demonstrate the attainment of Theory Session Outcomes (TSOs) and Lab Session Outcomes (LSOs) leading to attainment of Course Outcomes (COs) upon the completion of the course. While curriculum detailing, NEP 2020 related reforms like Green skills, Sustainability, Multidisciplinary aspects, Society connect, Indian Knowledge System (IKS) and others must be integrated appropriately.

J) Theory Session Outcomes (TSOs) and Units: T24416054

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
SO 1a. Write in detail about info. Storage and retrieval system *SO 1b.* Describe the function of library system *SO 1c.* Explain computerized database and CDS/ISIS	**Unit-1.0 Information storage and retrieval system** 1.1 Introduction to ISR system 1.2 Function of Library system 1.3 Computerized Database and CDS/ISIS	**1&4**
TSO 2a. Explain concept and process of Indexing *TSO 2b.* Describe Indexing technique *TSO 2c.* Explain Pre-coordinate and Post-coordinate indexing system *TSO 2d.* Explain Indexing in computer *TSO 2e.* Explain the process of file Generation *TSO 2f.* Briefly describe the PRECIS AND POPSI *TSO 2g.* Differentiate between PRECIS and POPSI	**Unit-2.0 Indexing** 2.1 Concept and process 2.2 Indexing technique 2.3 Pre-coordinate and Post-coordinate system 2.4 Indexing in computer 2.5 PRECIS and POPSI	**1&4**
TSO 3a. Write the need and purpose of abstracting *TSO 3b.* List out the various types of abstracting *TSO 3c.* Explain the methods of abstracting	**Unit-3.0 Abstracting** 3.1 Abstracting: need and purpose 3.2 Types of abstracting 3.3 Methods of abstracting	**1,2&5**
TSO 4a. Describe the information retrieval process *TSO 4b.* Describe the search strategic *TSO 4c.* Explain the online and offline information retrieval process	**Unit-4.0 Information Retrieval Process** 4.1 Information retrieval process 4.2 Search strategies 4.3 Online and offline 4.4 Manual and machine-based	**1,2&5**
TSO 5a. Explain in detail meaning and definition of thesaurus *TSO 5b.* List out the various types of thesaurus *TSO 5c.* Describe role of vocabulary control *TSO 5d.* Give the brief description of Thesaurus and information needs	**Unit-5.0 Introduction to the thesaurus** 5.1 Thesaurus: meaning and definition 5.2 Types of thesaurus 5.3 Role of vocabulary control 5.4 Thesaurus and information needs	**1,2&4**

Note: One major TSO may require more than one Theory session/Period.

K) Suggested Laboratory (Practical) / Tutorials and Outcomes: P2441604

Outcomes	S. No.	Laboratory (Practical)/ Tutorials Titles	Relevant COs Number(s)
LSO 1a Practice with the classification of documents with complex subjects according to UDC, DDC, and colon classification.	**1**	• Classification of documents with complex subjects according to UDC, DDC and colon classification.	**1&4**
LSO 2a Practice with the cataloging of a document involving complicated personal and corporate authorship using CCC & AACR-II. *LSO 2b* Practice with cataloging of documents involving complex , periodical and non-book material using CCC and AACR-II.	**2**	• Cataloging of documents involving complicated personal and corporate authorship, complex, periodical, and Non-book material.	**1&3**
LSO 3a Apply and evaluate indexing practices using PRECIS. *LSO 3b* Apply and evaluate indexing practices using KWIC.	**3**	• indexing practices using PRECIS & KWIC etc.	**1,2&5**

L) Suggested Term Work and Self-Learning: S2441604

1. Prepare a detailed project of indexing of at least 50 titles of one's library .
2. Make a project on indexing of books and periodicals
3. Make a project of classification of documents with complex subject according to DDC.
4. Prepare a detail project on classification of document with complex subject according to colon classification
5. Prepare a detail project on classification of document with complex subject according to UDC
6. Make a project on cataloguing of document involving complicated personal and corporate authoriship using CCC and AACR-II.
7. Make a detail project of cataloguing of document involving non book material using CCC and AACR-II.

M) Suggested Course Evaluation Matrix: The course teacher has to decide and use appropriate assessment strategy and its weightage in theory, laboratory and Term Work for ensuring CO attainment. The response/performance of each student in each of these designed activities is to be used to calculate **CO attainment**.

COs	Course Evaluation Matrix						
	Theory Assessment (TA)**		Term Work Assessment (TWA)			Lab Assessment (LA)#	
	Progressive Theory Assessment (PTA) Class/Mid Sem Test	End Theory Assessment (ETA)	Term Work& Self Learning Assessment			Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)
			Assignments	Micro Projects	Other Activities*		
CO-1	15%	15%	15%	20%	15%	-	-
CO-2	25%	25%	25%	20%	25%	-	-
CO-3	10%	10%	10%	20%	10%	-	-
CO-4	20%	20%	20%	20%	20%	-	-
CO-5	30%	30%	30%	20%	30%	-	-
Total Marks	**30**	**70**	**20**	**20**	**10**	**-**	**-**
			50				

Legend:

*: Other Activities include self- learning, seminar, visits, surveys, product development, software development etc.

**: Mentioned under point- (N)

#: Mentioned under point-(O)

Note:

- The percentage given are approximate
- In case of Micro Projects and End Laboratory Assessment (ELA), the achieved marks will be equally divided in all those COs mapped with total experiments.
- For CO attainment calculation indirect assessment tools like course exit survey need to be used which comprises of questions related to achievement of each COs.

N) Suggested Specification Table for End Semester Theory Assessment: Specification table represents the reflection of sample representation of assessment of cognitive domain of full course.

Unit Title and Number	Total Classroom Instruction (Cl) Hours	Relevant COs Number(s)	Total Marks	ETA (Marks)		
				Remember (R)	Understanding (U)	Application & above (A)
Unit-1.0 Information storage and retrieval system	10	1&4	11	4	4	3
Unit-2.0 Indexing	12	1&4	16	4	6	6
Unit-3.0 Abstracting	8	1,2&5	10	3	4	3
Unit-4.0 Information Retrieval Process	10	1,2&5	12	4	6	2
Unit-5.0 Introduction to the thesaurus	10	1,2&4	21	5	8	8
Total	**50**	**-**	**70**	**20**	**28**	**22**

Note: Similar table can also be used to design class/mid-term/ internal question paper for progressive assessment.

O) Suggested AssessmentTable for Laboratory (Practical): (Not Applicable)

P) Suggested Instructional/Implementation Strategies: Different Instructional/ Implementation Strategies may be appropriately selected, as per the requirement of the content/outcome. Some of them are Improved Lecture, Tutorial, Case Method, Group Discussion, Industrial visits, Industrial Training, Field Trips, Portfolio Based, Learning, Role Play, Live Demonstrations in Classrooms, Lab, Field Information and Communications Technology (ICT)Based Teaching Learning, Blended or flipped mode, Brainstorming, Expert Session, Video Clippings, Use of Open Educational Resources (OER), MOOCs etc.

Q) List of Major Laboratory Equipment, Tools and Software:

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/Practical Number
1.	High end computers	Processor Intel Core i7 with Compilers and Programming Languages; RAM 32 GB, DDR3/DDR4, HDD 500 GB, OS Windows 10.	All
2.	Software	Scientific Calculators, Graphing Calculator, SCILAB, GraphEq^2.13, Micro soft Mathematics, GeoGebra, Math3D	1,2,3,4,5
3.	Printer	High Speed Duplex Printer	
4.	Scanner	Handheld 3D scanner, Accuracy up to 0.1 mm, Resolution up to 0.2 mm, Wireless technology with an inbuilt touch screen and battery, Extended field of view for capturing both large and small objects.	

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Information Process And Retrieval	C K Sharma A K Sharma	Atlantic Publisher and Distributer Pvt Ltd
2.	Online Retrieval (The Dialogue of Theory and Practice)	Geraldene Walker and Joseph Janes	Libraries Unlimited Inc
3.	Library Classification and Cataloguing	P.Balasubramanian A.Baladhandayutham	Deep and Deep

(b) Online Educational Resources:

- https://ignou.ac.in/
- https://www.inflibnet.ac.in/
- https://www.engranthalaya.nic.in/
- https://epgp.inflibnet.ac.in/
- https://nptel.ac.in/
- https://www.mooc.org/
- https://www.jstor.org/
- https://ndl.iitkgp.ac.in/
- https://www.nic.in/
- https://egyankosh.ac.in/

Note: Teachers are requested to check the creative commons license status/ financial implications of the suggested, online educational recourses before use by the students.

(c) Others:

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A) Course Code : 2441605(P2441605/S2441605)

B) Course Title : Major Project

C) Pre- requisite Course(s) :

D) Rationale :

Project work plays a very important role in engineering education in developing core technical skills, soft skills and higher level of cognitive, psychomotor and affective domain skills. Major Project work is normally done when students have acquired sufficient knowledge, skills and attitude and are able to integrate all these, entirely in new situation or task to solve the problems of the industries/field agencies/etc.

Through major project work, students get direct exposure to the world of work in their relevant field. They are intrinsically motivated to explore new things, new methods, new design, many more ideas and also develop out of the box thinking abilities, creative and innovative capabilities. It also develops many soft skills like confidence, communication skills, creative ability, inquisitiveness, learning to learn skills, lifelong learning skills, problem solving skills, management skills, positive attitude, ethics etc.

Normally in a curriculum document, there is a mention of project work indifferent context. In situation one, project work is reflected as micro project under each and every course curricular detailing, in the form of sessional work mentioned under different semesters. These projects are normally related to the developing skills in respective course of the specific programme.

In the context of diploma programme in Bihar, minor project work will be carried out in Semester 5 with emphasis on project planning.

Major project work is reflected as a course in the total programme structure, normally at 6thsemester depending on the requirement of the programme. Through major project, students try to bring the industrial/real world problems in institutional setting, may be in collaboration/ networking with industries/field agencies/enterprises as per the requirement of different diploma programmes.

E) Course Outcomes: After completion of the major project work, students will be able to -

- **CO-1** Integrate the knowledge (K), skills (S), attitudes (A) developed, in a new task or problem identified in the form of project work.
- **CO-2** Develop higher level of cognitive, psychomotor and affective domain skills relevant to the course/ programme.
- **CO-3** Solve the industrial/real world problems/tasks by Integrating the generic skills/soft skills/employable skills with relevant technical skills.
- **CO-4** Develop the capabilities and skills of innovativeness, creativity, resourcefulness, time management, problem solving abilities, interpersonal skills, pro-activeness, cost effectiveness, environment consideration and sustainability.
- **CO-5** Prepare the project report.

F) Suggested Course Articulation Matrix (CAM):

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	**PO-2** Problem Analysis	**PO-3** Design/ Developmentof Solutions	**PO-4** Engineering Tools	**PO-5** Engineering Practices for Society, Sustainability and Environment	**PO-6** Project Management	**PO-7** Life Long Learning	**PSO-1**	**PSO-2**
CO-1	3	2	3	-	-	-	1		
CO-2	3	-	3	-	-	-	1		
CO-3	3	-	3	3	-	-	1		
CO-4	3	2	3	-	2	2	1		
CO-5	3	-	3	-	-	2	-		

Legend: High (3), Medium (2), Low (1) and No mapping (-)

* PSOs will be developed by respective programme coordinator at institute level. As per latest NBA guidelines, formulating PSOs is optional

G) Teaching & Learning Scheme:

Course Code	Course Title	Scheme of Study (Hours/Week)					
		Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+SL)	Total Credits (C)
		L	T				
2441605	Major Project	-	-	08	04	12	06

Legend:

CI: Classroom Instruction (Includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem based learning etc. to deliver theoretical concepts)

LI: Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)

Notional Hours: Hours of engagement by learners, other than the contact hours for ensuring learning.

TW: Term Work (includes assignments, seminars, micro projects, industrial visits, any other student activities etc.)

SL: Self Learning, MOOCs, spoken tutorials, online educational resources etc.

C: Credits = (1 x CI hours) + (0.5 x LI hours) + (0.5 x Notional hours)

Note: TW and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of teacher to ensure outcome of learning.

H) Assessment Scheme:

Course Code	Course Title	Assessment Scheme (Marks)						Total Marks (TA+TWA+LA)
		Theory Assessment (TA)		Term Work & Self-Learning Assessment (TWA)		Lab Assessment (LA)		
		Progressive Theory Assessment (PTA)	End Theory Assessment (ETA)	Internal	External	Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)	
2441605	Major Project	-	-	20	30	50	100	200

Legend:

PTA: Progressive Theory Assessment in class room (includes class test, mid-term test and quiz using online/offline modes)

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TWA: Term work & Self Learning Assessment (Includes assessment related to student performance in assignments, seminars, micro projects, industrial visits, self-learning, any other student activities etc.

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I) Suggested Implementation of Major Project:

Under the minor project in fifth semester, project planning is almost over. The projects are identified and allocated to students. Teacher's role is important as they act as guide, facilitator, catalyser, motivator to promote brain storming, thinking, creativity, initiativeness and many other skills in the students. Teachers should help or guide continually to monitor whether the students are proceeding in the right direction as per outcomes to be attained.

It is also suggested that teachers are not supposed to guide and plan each and every step from the point of view of execution of the project, otherwise it will curb the creativity or thinking process of the students. Teachers have to see that he or she is able to create think tank for this fast-technological world of work for the growth of our country. Following points should be taken into consideration while implementing the major project work.
The following steps are undertaken under the major project-

1. Design, Development and Execution of the Major Project.
2. Quality of Project Report Writing and its Presentation.

1.0 Design, Development and Execution of Major Project:

Projects design, development, execution is done by the students under the guidance and feedback by respective teachers for attainment of courses specific outcomes, POs and PSOs.

Continual Monitoring, feedback and assessment mechanism on weekly progress/updates on action taken on different criteria and sub-criteria of the project work need to be planned for individual and team of students. Path breaking teachers who think out of the box are required to guide, monitor and evaluate the project work.

1.1 Unique Features of Major Project:

Following important characteristic features of project need to be given special emphasis during the implementation and evaluation of the major project work-

- Innovativeness
- Creativity
- Originality
- Pro-activeness
- Initiativeness
- Cost Effectiveness
- Resourcefulness
- Development of Soft Skills/Generic Skills
- Ethical Issues
- Environmental Considerations

- Simulated/Automated Industry's/Improvised Process
- Application or Utility in the World of Work.
- Relevance to the Curriculum
- Mapping of Outcomes of Project with Pos and PSOs (if applicable)
- Feasibility of Implementation of the Project

2.0 Quality of Project Report Writing and its Presentation:

Following points need to be taken care of during report writing, its implementation and evaluation-

- Report writing as per prescribed format
- Clarity of outcomes
- Innovativeness
- Presentation of Data
- Data Analysis, Interpretation and Result
- Quality of Product/Prototype

2.1 Project Report Writing:

The suggested format of the project report is mentioned below for teacher's and students' reference:

i. Problem Statement/ Project Title
ii. Abstract
iii. Literature Review
iv. Outcomes of the Project
v. Project Planning, Design and Development
vi. Methodology
vii. Implementation and Testing
viii. Result and its Interpretation
ix. Summary
x. References / Bibliography

2.2 Presentation & Discussion:

Quality of presentation of data need to be ensured using the following criteria -

- Clarity in Communication and Presentation
- Voice Audibility
- Use of Media and Methods
- Satisfying the Queries of Audience
- Attainment of Outcomes

2.3 Project's Potential:

Futuristic scope and recommendation for further studies related to project may be assessed from the following criteria -

- Papers Published or Award Received
- Exhibition or Display or Showcase of Project in Competition or Exhibition or Tech Fest
- Evaluation of Working/Testing of Projects or Prototype
- Relevance and Applications in the World of Work
- Recognition in any Form
- Related Areas/Sub Areas for Further Studies

J) Assessment of the Major Project:

For objective, valid and reliable assessment, different tools of assessment such as a checklist, rating scale, assessment rubric, observation schedule, portfolio assessment, incidental records etc. need to be prepared. Even the students may been courage to adopt self-assessment techniques using the assessment rubrics.

The students need to be assessed continuously based on the suggested below mentioned assessment criteria at project planning stage. The project guide must prepare detailed rubric(s) for each criteria to have more valid and reliable assessment. Criteria of assessment of major project work are mentioned below.

Assessment Scheme for Major Project

S. No.	Suggested Assessment Criteria	Suggested Weightage (%)
1.	**Project Planning during Minor Project Work** 1.1 Identification of Area/Problem Statement 1.2 Literature Survey 1.3 Formulation of Project Title 1.4 Clarity in Formulation of Outcomes of The Project 1.5 Preparation of Synopsis 1.6 Presentation of Synopsis	30
2.	**Design, Development and Execution of the Project**. 2.1 Unique Features of Major Project	45
3.	**Quality of Report Writing and Presentation**. 3.1 Report Writing 3.2 Presentation & Discussion 3.3 Project's Potential	25
	TOTAL	100

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