



Vidyasagar University

Department of Library and Information Science

Midnapore – 721202, West Bengal

MASTER OF LIBRARY AND INFORMATION SCIENCE (MLIS)

SYLLABUS

(Choice Based Credit System)

WITH EFFECT FROM 2016-2017 ACADEMIC SESSION

Approved in the PGBS meeting held on 15.03.2016

Course Contents Structure				Marks distribution		
	Course Code	Course Title	Course Summary	Semester Exam	Internal Assessment	Total Marks
S E M E S T E R I	MLI-101	Information and Communication	Unit 1 : Information : Its Nature, Characteristics and Scope	40	10	50
			Unit 2 : Information Science			
			Unit 3 : Information and Its Communication			
			Unit 4 : Information Generation and Transfer			
			Unit 5 : Class Test / Project / Seminar Presentation			
	MLI-102	Knowledge Organization (Theory)	Unit 1 : Theories of Library Classification	40	10	50
			Unit 2 : Classification of Subjects			
			Unit 3 : Research in Classification			
			Unit 4: Classification and the Internet			
			Unit – 5 : Class Test / Project / Seminar Presentation			
	MLI-103	Content Designation and Metadata Encoding	Unit 1 : Introduction to Content Designation	40	10	50
			Unit 2 : Bibliographic Data Formats			
			Unit 3 : Authority Data Formats			
			Unit 4 : Generic and Domain-specific Metadata Schemes			
			Unit 5 : Class Test / Project / Seminar Presentation			
	MLI-104	Information Sources, Products and Services	Unit 1 : Electronic Information Sources	40	10	50
			Unit 2 : Information Products and Services			
			Unit 3 : Information Institutions and Systems			
			Unit 4 : Library Networks and Consortia			
			Unit 5 : Class Test / Project / Seminar Presentation			
	MLI-105	Information Retrieval – I	Unit – 1 : Fundamentals of Information Retrieval Systems (IRS)	40	10	50
			Unit – 2 : Indexing Systems and Techniques			
			Unit – 3 : Users of Information			
			Unit – 4: ICT and Information Retrieval			
			Unit 5 : Class Test / Project / Seminar Presentation			
	MLI-106	Planning and Management of Information Systems and Services	Unit 1 : Management Thought	40	10	50
			Unit 2 : System Analysis, Design and Monitoring factors			
			Unit 3 : Management Techniques			
Unit 4 : Recent Trends in Management						
Unit 5 : Class Test / Project / Seminar Presentation						
MLI-107	Information and Communication Technology (Theory)-I	Unit 1 : Computer Operating System	40	10	50	
		Unit 2 : High-level Programming Languages				
		Unit 3 : Database Management System				
		Unit 4 : Computer Communication System				

			Unit 5 : Class Test / Project / Seminar Presentation			
	MLI-108	Information and Communication Technology (Practice)-I	Unit 1 : Linux User Level Tasks, Linux System Administration Tasks	40	10	50
			Unit 2 : Advance Level HTML and DHTML (Form, Frames, CSS and Java Scripts)			
			Unit 3 : C Programming Language			
			Unit 4 : PHP or ASP or PERL Scripting Language			
			Unit 5 : Class Test / Project / Seminar Presentation / Viva-Voce			
	MLI-109	Research Methodology	Unit 1 : Basic Concepts	40	10	50
			Unit 2 Research Methods			
			Unit 3 Research in the Context of LIS			
			Unit 4 : Concept of Ethnographic Research			
			Unit 5 : Class Test / Project / Seminar Presentation			
	MLI-110	Technical Writing	Unit - 1 : Technical Writing and Information Design	40	10	50
			Unit - 2 : Scientific Writing			
			Unit - 3 : Web Writing			
			Unit 4 : Plagiarism			
			Unit 5 : Class Test / Project / Seminar Presentation			
	MLI-201	Information and Society	Unit 1 : Information Society	40	10	50
			Unit 2 : Knowledge Management			
			Unit 3 : Economics of Information			
			Unit 4 : Marketing of Library and Information Products and services			
			Unit 5 : Class Test / Project / Seminar Presentation			
S E M E S T E R II	MLI-202	Knowledge Organisation (Practice)	Unit 1 : Colon Classification(Ed. - 7) Practice	40	10	50
			Unit 2 : Class Test / Project / Seminar Presentation			
	MLI-203	Resource Description (Practice)	Unit 1 : Cataloguing of Non-book Materials by AACR 2R and MARC 21	40	10	50
			Unit 2 : Class Test / Project / Seminar Presentation			
	MLI-204	Open Knowledge System and Academic Evaluation	Unit – 1 : Introduction to Open Access	40	10	50
			Unit – 2 : Way to Open Access			
			Unit – 3 : Networks and Organizations Promoting Open Access			
			Unit – 4 : Open Access Mandates and Policies			
			Unit – 5 : Class Test / Project / Seminar Presentation			
		MLI-205	Information Analysis	Unit 1 : IAC Product design	40	10

	and Consolidation (Practice)	Unit 2 : Viva-voce			
MLI-206	Information Retrieval – II	Unit – 1 : Evolution of IRS Unit – 2 : Searching and Information Retrieval Unit 3 : Evaluation of IR System Unit 4 : Trends in IR Unit 5 : Class Test / Project / Seminar Presentation	40	10	50
MLI-207	Studies of Academic Metrics	Unit 1 : Introduction to Research Evaluation Metrics and Related Indicators Unit 2 : Performance Measurement of R & D in S & T Unit 3 : Article and Author-Level Measurements Unit 4 : Growth of Literature and Measurement of Scientific Productivity Unit 5 : Class Test / Project / Seminar Presentation	40	10	50
MLI-208	Information and Communication Technology (Theory)-II	Unit 1 : Automated Library System Unit 2 : Digital Library System Unit 3 : Multilingual Library System and IR System Unit 4 : Field Study Unit 5 : Class Test / Project / Seminar Presentation	40	10	50
MLI-209	Information and Communication Technology (Practice)-II	Unit 1 : MySQL and / or PostGreSQL RDBMS Unit 2 : WWWISIS and / or ISIS 3W for Web Accessibility of ISO-2709 supported Bibliographic Databases Unit 3 : Library Automation Software Managerial Level Tasks (SOUL / KOHA / WEBLIS), Digital Library Software GSDL / DSpace / E-Print Archive Unit 4 : Unicode based Multilingual Automated and Digital Library System Unit 5 : Class Test / Project / Seminar Presentation /Viva-Voce	40	10	50
MLI-210	Quantitative Techniques in Library and Information Centres	Unit – 1 : Useful Mathematical Devices Unit – 2 : Descriptive Statistics for collection and presentation of data Unit – 3 : Analytical methods for collection and presentation of data Unit - 4 : Sampling and Statistical Inference Unit 5 : Class Test / Project / Seminar Presentation /Viva-Voce	40	10	50

FIRST SEMESTER

Course Code: MLI-101

Course Title: Information and Communication

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

- Information : Definition, Attributes, Kinds, Use, Nature and Characteristics ;
- Knowledge : Definition, Nature and Characteristics, Categories, Sources of knowledge, Growth and development ;
- Process of Cognition : different views and methodology including Spiral of Scientific Method and Dialectical Materialistic Approach ;
- Conceptual relation between data, information, knowledge, wisdom and related concepts ;
- Information and knowledge as object of study in various subjects and disciplines.

Unit – 2 : Information Science

- Information Science : Definition, Origin and development, scope and coverage, Relationship with other disciplines and professions.
- Information Science from system perspectives – Introduction to systems theory, Churchman systems model, Debon's EATPUT model and Component oriented models.

Unit – 3 : Information and Its Communication

- Communication process in society – Personal and mass communication, Information diffusion, Scholarly communication process, Scientific communication ;
- Historical development ;
- Types of communication: Verbal and nonverbal, Formal and informal etc. ;
- Communication Channels and Models of communication ;
- Barriers to communication and remedial propositions ;
- Role of libraries in communication process

Unit – 4 : Information Generation and Transfer

- Information transfer process : Generation to utilization (Information eco-system) ;
- Information theory – Introduction ; measure of information. Average information content of symbols in long independent and dependent sequences ;
- Entropy, Encoding of source output.

Unit – 5: Class Test / Project / Seminar Presentation

Reading List:

- Bawden, David & Robinson, Lyn (2012). *Foundations of information science*. London: Facet Publishing.
- Bell, D. (1980). *The social framework of the information society*. In Derrouzos M C & Moses, L. (eds), *The computer age: a twenty year view*. Cambridge: MIT Press.
- Benjamin, J.B. (1986). *Communication: concept and contexts*. New York: Harper & Row.
- Bose, H (1986). *Information science : Principles and Practice*. New Delhi : Sterling Publishers Private Limited
- Chakraborty, A.R. (1990). *Fundamentals of Information Science*. Calcutta : Sanskrit Pustak Bhandar
- Dearnley, J. & Feather, J. (2001). *The wired world: an introduction to the theory and practice of the information society*. London: Library Association.
- Debons, Anthony and Larson, Arvid G., Ed. (1983). *Information science in action: system design*. 2 vols. Boston: Martinus Nijhoff Publishers.
- Delanty, G. (2001). *Challenging knowledge: the university in the knowledge society*. Open University Press.
- Dordick, H.S. & Wang, G. (1993). *The information society: a retrospective view*. Newbury Park, CA: Sage.
- Drucker, P. (1998). From capitalism to knowledge society. *The knowledge economy*, 15-34.
- Feather, J. (2008). *The information society: a study of continuity and change*. 5th ed. London: Facet Publishing.
- Martin, W. J. (1995). *The global information society*. Brookfield, VT: Gower.
- Vickery B. C. & Vickery A. (1987). *Information science in theory and practice*. London: Butterworth
- Webster, F. (2002). *Theories of the information society*. 2nd Ed. London: Routledge
- SinghaRoy, D. K. (2014). *Knowledge society: new identities in emerging India*. New York: Cambridge University Press.
- Masuda, Y. (1980). *The information society as post-industrial society*. Washington, D.C.: World Future Society
- Gilchrist, Alan, Ed. (2009). *Information science in transition*. London: Facet Publishing.
- Machlup, F. (1984). *The economics of information and human capital*. Princeton: Princeton University Press

Course Code: MLI-102

Course Title: Knowledge Organization (Theory)

Unit – 1 : Theories of Library Classification

- Principles and postulates: Aristotle, Bacon, Harris, Richardson, Sayers, Brown, Bliss, Ranganathan and Vickary;
- Absolute Syntax;
- Categories : Aristotle, Bacon, Harris, Vickery, Barbara Kyle and Ranganathan
- Systems Approach to knowledge organisation.

Unit – 2 : Classification of Subjects

- Classification in an information system : Complexity of subjects, comparison of hierarchical and faceted classification schemes;
- Features of classification schemes : Literary warrant, main class order, generalia class, citation order and schedule order;
- General vs. Special classification schemes ;
- Design and construction of depth classification schedule.

Unit – 3 : Research in Classification

- Role of CRC, DRTC, FID;
- Broad system of Ordering;
- Theory of Integrative level;
- Thesaurifacet;
- Development of special classification scheme.

Unit – 4 : Classification and the Internet

- Ontology;
- Use of Classification by search engines;
- Use of conventional classification schemes;
- Use of Thesauri and authority lists;
- OPACs;
- Classification of electronic documents;
- Classification Scheme as aid to searching;
- Automatic classification.

Unit – 5 : Class Test / Project / Seminar Presentation

Reading List:

- Broughton, Vanda. (2004). *Essential classification*. London: Facet Publishing. Batty, C. D. (1966). *An introduction to Colon Classification*. London: Bingley.
- Chan, L. M. (1985). *Cataloguing and classification: an introduction*. New York: McGraw Hill.
- Krishan Kumar. (1980). *Theory of classification*. New Delhi: Vikas.
- Kumbhar, R. (2011). *Library classification trends in the 21st century*. Burlington: Elsevier Science.
- Kaula, P. N. (1985). *A treatise on Colon Classification*. New Delhi: Sterling
- Husain, Sabahat. (2004). *Library classification: facets and analysis*. Delhi: B. R. Publishing.
- Halgamuge, S. K., & Wang, L. (2005). *Classification and clustering for knowledge discovery*. Berlin: Springer
- F.I.D. (1993). *Universal Decimal Classification*. IME. London: BSI. Forest Press. (2002). *WebDewey*. Dublin, Ohio: OCLC Forest Press.
- Foskett, D. J. (1974). *Classification and indexing in social sciences*. London: Aslib. Foskett, A. C. (1996). *The subject approach to information*. 5th ed. London: Clive Bingley.
- Dhyani, P. (1998). *Library classification: theory and principles*. New Delhi: Wishwa Prakashan.
- Dhyani, P. (1983). *Classification schemes and Indian libraries*. New Delhi: Metropolitan.
- Lim, E. H. Y., Liu, J. N. K., & Lee, R. S. T. (2011). *Knowledge seeker: Ontology modelling for information search and management: a compendium*. Berlin: Springer
- Maltby, A. (1975). *Sayers' manual of classification for librarians*. 5th ed. London: Andre Deutsch
- Navalani, K., & Gidwani, N. N. (1981). *A practical guide to colon classification*. New Delhi: Oxford & IBH.
- Needham, C. D. (1971). *Organizing knowledge in libraries*. 2nd ed. London: Andre Deutsch.
- Ranganathan, S. R. (2006). *Philosophy of library classification*. Bangalore: Ess Ess. Ranganathan, S.R. (1966). *Elements of library classification*. 2nd ed. Bombay: UBS.
- Ranganathan, S.R. (1967). *Prolegomena to library classification*. 3rd ed. Bombay: UBS
- Ranganathan, S. R. (1987). *Colon Classification*. Bangalore: SRELS.
- Rowley, J.E. & Farrow, J. (2000). *Organizing knowledge: an introduction to managing access to information*. 3rd ed. Aldershot: Gower.
- Satija, M. P. (2011). *A guide to the theory and practice of Colon Classification*. New Delhi: Ess Ess Publications.
- Sood, S. P. (1998). *Universe of knowledge and universe of subjects*. Jaipur: G. Star Printers.
- Taylor, A. G. (2007). *Introduction to cataloguing and classification*. 10th ed. New Delhi: Atlantic.

Course Code: MLI-103

Course Title: Content Designation and Metadata Encoding

Unit – 1 : Introduction to Content Designation

- Role of content designation in bibliographic data exchange;
- Content Designation Standards- Physical Standards (ISO-2709, Z 39.2, MARC-XML etc.)
- Content Designation and Logical Standards (ISBDs, AACR, FRBR, FRAD, FRSAD etc.)
- Content Designation Standards – Framework Standards (CCF, UNIMARC, MARC-21)

Unit – 2 : Bibliographic Data Formats

- Principles and Evolution of Cataloguing Codes and Standards for Bibliographic Description:
- Standards and format for Bibliographic Description; - ISBD, ISO 2709, CCF, UNIMARC, MARC 21;
- Evolution of Principles for Bibliographic Description;
- Development of Codes for Bibliographic Record;
- Development of models for Bibliographic Record – FRBR, FRAD
- Distributed Cataloguing (Z 39.50 protocols and services)

Unit – 3: Authority Data Formats

- Definition, scope, objectives and use
- Interaction of Authority list with library catalogue
- MARC-21 Authority Data Format
- FRAD and FRSAD model

Unit – 4 : Generic and Domain-specific Metadata Schemes

- Introduction and development of Metadata scheme
- Metadata – Definition, use, functions, models and best practice guidelines
- Generic Metadata Scheme: Dublin Core
- RDF, XML and Metadata Schemes
- Metadata Schemes in different domains
- Learning Object Domains: GEMS, IEEE-LOM, CanCore
- ETD Domain – ETD-MS, UKETD, Shodganga
- Other domains – Geographical Data, Science Data, Music, Image, News Items, Publishing etc.

Unit – 5: Class Test / Project / Seminar Presentation

Reading List

ALA (1968). *ALA Rules for filing Catalog Cards*. Chicago: ALA.

Bean, C.A., & Green, R. (2001). *Relationships in organization of knowledge*. London: Kluwer.

Bowman, J. H. (2003). *Essential cataloguing*. London: Facet Publishing. Chan, L. M. (1994). *Cataloging and classification: an introduction*. New York: McGraw-Hill.

Chapman, Liz. (1984). *How to catalogue: a practical handbook*. London: Clive Bingley.

Delsey, T. (1999). *The logical structure of AACR – Part I & Part II*. Retrieved from <http://www.nlc-bnc.ca/jsc/aacrdel.htm>

Heaney, M. (1995). *Object-oriented cataloguing*. *Information Technology and Libraries*, 14(3), 135–153.

Horner, J. (1975). *Cataloguing*. London: AAL.

Hunter, E. J. (1986). *Computerised cataloguing*. London: Clive Bingley. Hunter, E. J., & Blackwell, K.G.B. (1983). *Cataloguing*. London: Clive Bingley

IFLA. (1998). *IFLA: Functional requirements for bibliographic records: final report*. Munchen: K.G. Saur.

Le, B. P. (2005). *Functional requirements for bibliographic records (FRBR): hype or cure-all?* Binghamton, NY: Haworth Information Press.

Welsh, A., & Batley, S. (2012). *Practical cataloguing: AACR, RDA and MARC 21*. Chicago: Neal-Schuman, an imprint of the American Library Association.

Yee, M.M. & Layne, S.S. (1998). *Improving online public access catalogue*. Chicago: ALA.

Zeng, M. L., Žumer, M., Salaba, A., & IFLA Working Group on the Functional Requirements for Subject Authority Records (FRSAR). (2011). *Functional requirements for subject authority data (FRSAD): a conceptual model*. Berlin: De Gruyter Saur.

Zeng, M. L., & Žumer, M. (January 01, 2010). *Introducing FRSAD and mapping it with SKOS and other models*. *International cataloguing and bibliographic control*, 39, 3, 53-56.

Course Code: MLI-104

Course Title: Information Sources, Products and Services

Unit – 1 : Electronic Information Sources

- Traditional and classical vs. electronic information sources;
- Categories, characteristics and utility of electronic sources of information;
- Online and Off-line bibliographic databases (Reference, Referral and Source databases);
- E-journals, e-journal gateways and electronic reference tools;
- Discussion forums, ListSers, bulletin boards, subject directories, subject gateways, institutional repositories and digital libraries.

Unit – 2 : Information Products and Services

- Information products: Utility, design issues;
- Information newsletters, house bulletins and other in-house communications;
- Trade and product bulletins;
- State-of-the-art reports, reviews, trend reports and technical digests;
- IAC;
- Information services: Concepts, definition, need, requirements and trends;
- Utility and design of alerting services (CAS & e-CAS, SDI & e-SDI);
- Bibliographic, referral, literature search, document delivery and translation services;
- ICT enabled information services (user services, MIS support services, web based services, etc.).
- Information products and services corresponding to special library and information systems (Corporate librarianship, media and communication librarianship, industrial librarianship, medical librarianship)

Unit – 3 : Information Institutions and Systems

- Libraries and information centers: Types and their organization;
- Data Centres and Referral Centers;
- Science data networking systems in India: overview
- Information analysis and consolidation centers;
- Information systems: Structure, functions, objectives, features and system design;
- Global information systems (INIS, AGRIS, MEDLARS etc.);
- Indian information systems (science & technology, biotechnology, medical science, agricultural science, environmental science, statistics);
- Role of international organizations in the development of systems and services (IFLA, UNESCO, FAO, UNEP, UNDP, FID CILIP etc.).

- Humanities and Social Science Information System

Unit – 4: Library Networks and Consortia

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

Unit – 5 : Class Test / Project / Seminar Presentation

Reading List

- Cassell, K. A., & Hiremath, U. (2013). *Reference and information services: An introduction*. 3rd ed. London: Facet Publishing
- Cheney, F. N. (1975). *Fundamental reference sources*. Chicago: American Library Association.
- Crawford, J., & Aslib. (2000). *Evaluation of library and information services*. London: Aslib
- Crawford, J. (2006). *The Culture of evaluation in library and information services*. Burlington: Elsevier Science.
- Farmer, L. S. J. (2007). *The human side of reference and information services in academic libraries: Adding value in the digital world*. Oxford: Chandos
- Guha, B. (1983). *Documentation and information: services, techniques and systems*. Calcutta: World Press.
- Katz, B. (2002). *Introduction to reference work*. Boston: McGraw-Hill. Katz, W. A., & Tarr, A. (1978). *Reference and information services: a reader*. Metuchen, NJ: Scarecrow Press.
- Krishan Kumar (1996). *Reference service*. New Delhi: Vikas Pub. House. Lankes, R. D., & Nast, P. (2008). *Virtual reference service: from competencies to assessment*. New York: Neal-Schuman Publishers.
- Lester, Ray, Ed. (2005-2007). *New Walford: guide to reference sources*. 2 vols. (Vol. 1 – Science, Technology and Medicine, Vol. 2 – Social Sciences). London: Facet Publishing.
- Lipow, A. G. (2003). *The virtual reference librarian's handbook*. Berkeley, Calif.: Library Solutions Press.
- Lipson, C. (2006). *Cite right: A quick guide to citation styles--MLA, APA, Chicago, the sciences, professions, and more*. Chicago: University of Chicago Press.
- Ranganathan, S. R. (2006). *Reference service*. Bangalore: Sarada Ranganathan Endowment for Library Science.
- Ross, C.S., Nilsen, K., & Dewdney, P. (2002). *Conducting the reference interview: a how-to-do manual for librarians*. London: Facet Publishing.
- Stevens, R. E., & Smith, L. C. (1986). *Reference work in the university library*. Littleton, Colo.: Libraries Unlimited.
- Foskett, D. J. (1994). *Information service in libraries*. New Delhi: Anmol Publications.

Course Code: MLI-105

Course Title: Information Retrieval – I

Unit – 1: Fundamentals of Information Retrieval Systems (IRS)

- Concept, Characteristics, Objectives, Types, Operations and Design ;
- Objective of IR systems ;
- Historical and Theoretical Foundation - Kinds, Functions and Components of IR systems;
- Role of libraries and other information agencies in information transfer cycle;
- Sources of Information : Characteristics, Evolution, Types

Unit – 2 : Indexing Systems and Techniques

- Indexing Systems - Need and purpose ; Historical perspectives - contributions of Cutter, Kaiser, Ranganathan, Farradane, Coates, etc.;
- Indexing Languages: Natural languages Vs. Indexing languages, Types, and Characteristics;
- Natural Language Indexing; Controlled Language Indexing;
- Assigned and Derived indexing systems; Critical studies of various indexing systems: Chain, POPSI, PRECIS, UNITERM, etc.
- Vocabulary Control devices : Meaning, Importance, types, characteristic, interrelationship, development and designing - Subject Headings List, Thesaurus, Thesarofacet, Classaurus, Folksonomies
- Keyword indexing, and citation indexes;
- Automatic Indexing

Unit – 3 : Users of Information

- Nature, Types; Information needs
- Models of information seeking behaviors – Wilson’s model, Dervin model, Ellis’s model, Bates model, Kulthau’s model; Information search models - Belkin’s model, Saracevic’s model etc.
- User - centered design of interface

Unit – 4: ICT and Information Retrieval

- Information Visualisation
- Commercial Databases
- Subject Gateways
- Consortia

Unit – 5 : Class Test / Project / Seminar Presentation

Reading List

- Aitchison, J., Gilchrist, A. & Bawden, D. (2000). *Thesaurus construction and use: a practical manual*. 4th ed. London: Aslib.
- Anderson, James D. (1997). *Guidelines for indexes and related information retrieval devices: a technical report*. Bethesda, Maryland: National Information Standard Organization
- Bawden, D. (2007). *Information seeking and information retrieval: the core of the information curriculum*. *Journal of Education for Library and Information Science*, 48 (2), pp.125-138.
- Chowdhury, G. G. (2010). *Introduction to modern information retrieval*. 3rd ed. London, Facet Publishing.
- Foskett, A. C. (1996). *Subject approach to information*. 5th Ed. London: The Library Association.
- Ghosh, S. B. and Satpathi, J. N., Eds. (1998). *Subject indexing systems: concepts, methods and techniques*. Calcutta. IASLIC
- Lancaster, F. W. (1998). *Indexing and abstracting in theory and practice*. 2nd ed. Champaign, Illinois: University of Illinois.
- Chu, H. (2003). *Information representation and retrieval in the digital age*. Medford, N.J: Published for the American Society for Information Science and Technology by Information Today.
- Vickery, B. C. (1986). *Knowledge representation: a brief review*. *Journal of Documentation*, 42 (3), pp.145-159.
- Sarkhel, Juran Krishna (2001). *Information analysis in theory and practice*. Kolkata: Classique Books, 2001.
- Peters, C., Braschler, M., & Clough, P. (2012). *Multilingual information retrieval: from research to practice*. Heidelberg: Springer.
- Manning, Christopher D., Raghavan, Prabhakar & Schütze, Hinrich. (2008):
Introduction to Information Retrieval. New York: Cambridge University Press.
- Lancaster, F. W. (1979). *Information retrieval systems: characteristics, testing, and evaluation*. 2nd ed. New York, John Wiley.
- Lancaster, F.W. (1986). *Vocabulary control for information retrieval*. 2nd ed. Arlington, VA: Information Resources

Course Code: MLI-106

Course Title: Planning and Management of Information Systems and Services

Unit – 1 : Management Thought

- Definition and scope of management
- Approaches or Schools to the study of Management
 - Management Philosophy;
 - Environment on Management Philosophy;
- Outline of history of management thought
- Management Schools of thought – Scientific, Classical, Bureaucratic, Human Relations, Behavioural, Modern; Situational / Contingency theory, Decision theory – Their applications in Library and Information Centres.

Unit – 2 : System Analysis, Design and Monitoring factors

- System Analysis;
- System Design;
- Library and Information Centers as a System;
- Planning Local and National Information System;
- Monitoring and controlling techniques – OR, MIS, MBO, SWOT, Network Analysis, PERT / CPM.

Unit – 3 : Management Techniques

- Personnel Management – Meaning, Objectives
- Performance Appraisal;
- Interpersonal Relation, Group dynamics, Johari Window;
- Leadership – different theories, styles, approaches and models;
- Communication – methods of communication, types of communication model;
- Motivation – theories of motivation, sources of motivation.
- Total Quality Management – Definition, Concept, Elements, Objectives, Benefits
- Total Quality Management for Library and Information Science;
 - Relevance and importance of Total Quality Management;
 - Quality improvement efforts;
 - Quality improvement programmes.

Unit – 4 : Recent Trends in Management

- Change management – Concept and Forces
- Changes in procedures, methods;
- Change management strategies
- Problems in incorporating change;
- Techniques of Managing change.
- Change management in libraries and Information Centres
- Globalization and Management

Globalization – what, reason, process, dimension, argument in favour and against impact of globalization on management practices in Indian Library and Information Services.

Unit – 5 : Class Test / Project / Seminar Presentation

Reading List

- Bakewell, K. G. B. (1997). Managing user-centred libraries and information services. 2nd ed. London: Maxwell.*
- Cook, C. (2002). The maturation of assessment in academic libraries: The role of LibQUAL+ TM. Bradford, England: Emerald Group Pub*
- Coote, H. & Batchelor, B. (1997). How to market your library services effectively. 2nd ed. London: Aslib.*
- Crawford, J. (1997). Evaluation of library and information services effectively. 2nd ed. London: Aslib.*
- Evans, G. E. (1983). Management techniques for librarians. 2nd ed. New York: Academic Press.*
- Evans, G. Edward and Layzell, Patricia. (2007). Management basics for information professionals. 2nd ed. London: Libraries Unlimited.*
- Gautam, J. N. (1991). Library and information management. New Delhi: Prentice-Hall India*
- Hayes, R. M. (2001). Models for library management, decision-making, and planning. San Diego, Calif.: Academic Press.*
- Heath, F. M., Kyrillidou, M., & Askew, C. A. (2004). Libraries act on their LibQUAL+ findings: From data to action. Binghamton, NY: Haworth Information Press.*
- Katz, W.A. (1980). Collection development, the selection of materials for libraries. New York: Holt, Rinehart & Winston.*
- Krishan Kumar. (1985). Library manual. New Delhi: Vikas*
- Lancaster, F. W., & Sandore, B. (1997). Technology and management in library and information services. Champaign, Ill: University of Illinois Graduate School of Library and Information Science.*
- Laughlin, S., & Wilson, R. W. (2008). The quality library: A guide to staff-driven improvement, better efficiency, and happier customers. Chicago: American Library Association.*
- Martin, J. (2009). Human resource management. Los Angeles: SAGE*
- Mittal, R.L. (1984). Library administration: theory and practice. 5th ed.. Delhi: Metropolitan*
- Ranganathan, S.R. (1959). Library administration. 2nd ed. Bombay*
- Spiller, David. (1974). Book selection: an introduction to principles and practice. Rev. 2nd ed. London: Clive Bingley*

Course Code: MLI-107

Course Title: Information and Communication Technology (Theory) - I

Unit – 1 : Computer Operating System

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

Unit – 2 : High-level Programming Languages

- Overview of high-level programming languages and their use in problem solving;
- Overview of Algorithmic high-level programming languages (Any one of C, PASCAL and FORTRAN);
- Overview of Scripting high-level programming languages (Any one of PHP, ASP, PERL and Java).

Unit – 3 : Database Management System

- Files, files organization and file structures; Indexing and hashing;
- Bibliographical database management system;
- Database architecture and data modeling;
- Open source RDBMS (MySQL and PostGreSQL).

Unit – 4 : Computer Communication System

- Basics of computer networking; Network hardware, topology and cabling;
- Network features and relationships (peer-to-peer and client/server relationships);
- OSI networking model;
- TCP/IP reference model;
- Internet and intranet.

Unit – 5 : Class Test / Project / Seminar Presentation

Reading List

- Basandra, Suresh K. (2002). Computers today. New Delhi: Galgotia*
- Bob, W., & McKellen, M. (1995). A beginner's guide to the PC. Delhi: Affiliated East West Press,.*
- Botto, Francis. (1993). Multimedia, CD-ROM and compact disc: a guide for users and developers. New Delhi: Galgotia.*
- Bradley, P. (2007). How to use Web 2.0 in your library. London: Facet.*
- Bradley, P. (1999). Internet power searching: the advanced manual. New York: Neal-Schuman Publishers.*
- Bradley, P., & Aslib. (2000). World Wide Web: how to design and construct web pages. London: ASLIB.*
- Chowdhury, G. G., & Chowdhury, S. (2001). Searching CD-ROM and online information sources. London: Facet Publishing.*
- Deenadayalu, R. (1990). Computer science (Vol. 2). New Delhi: TMH.*
- Engard, N. C. (2009). Library mashups: Exploring new ways to deliver library data. Medford, N.J: Information Today, Inc.*
- Engard, N. C. (2010). Practical open source software for libraries. Oxford: Chandos Publishing.*
- Gorman, M. (2003). The enduring library: technology, tradition, and the quest for balance. Chicago: American Library Association.*
- Hagler, R. (1997). The bibliographic record and information technology. Chicago: American Library Association.*
- Jacsó, P., & Lancaster, F. W. (1999). Build your own database. Chicago: American Library Association.*
- Jean, G. (2011). Digital library. New Delhi: World Technologies*

Course Code: MLI-108

Course Title: Information and Communication Technology (Practice) - I

Unit – 1 : Linux User Level Tasks, Linux System Administration Tasks

Unit – 2 : Advance Level HTML and DHTML (Form, Frames, CSS and Java Scripts)

Unit – 3 : C Programming Language

Unit – 4 : PHP or ASP or PERL Scripting Language

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

Reading List

- Kam, D. (2009). Role and policy implications of ICT in India. New Delhi: Shree Publishers & Distributors.*
- Kernighan, B. W., & Ritchie, D. M. (1988). The C programming language. Englewood Cliffs, N.J: Prentice Hall.*
- Leon, A. & Mathews, L. (2004.). Fundamentals of information technology (Latest edition.). Chennai: Leon Tech World.*
- Library Association., & Library Information Technology Centre. (1996). Library technology. London: Published jointly by the Library Association and the Library Information Technology Centre.*
- Chartered Institute of Library and Information Professionals (Great Britain). (1998).*
- Multimedia information & technology: MmIT. London, England: Multimedia Groups of Aslib.*
- Library of Congress. (1988). Advances in library information technology. Washington, D.C: Cataloging Distribution Service, Library of Congress.*
- Matthews, J. R. (1980). Choosing an automated library system: A planning guide. Chicago: American Library Association.*
- Mukhopadhyay, P. (2013). Course of action: Library information technology. Kolkata: Prova Prakashani.*
- Mukhopadhyay, P. (2014). Course of action: Automated library system. Kolkata: Prova Prakashani.*
- Satyanarayana, N. R. (1995). A manual of computerisation in libraries. New Delhi: Wishwa Prakashan.*
- Rajaraman, V. (1995). Fundamentals of computers. New Delhi: PHI.*
- Rajasekharan, K., & Nafala, K. M. (2007). Creation of digital document archives with Winisis. Kerala Institute of Local Administration.*
- Scott, M. L. (2006). Programming language pragmatics. San Francisco, CA: Morgan Kaufmann Pub.*
- Sinha, P. K. (1992). Computer fundamentals: concept, systems and applications (2nd ed.). Delhi: BPB Publications.*
- Tanenbaum, A. S. (1996). Computer networks. Upper Saddle River, N.J: Prentice Hall PTR.*
- Tanenbaum, A. S. (1984). Structured computer organization. Englewood Cliffs, N.J: Prentice-Hall.*
- Vaughan, J., & ALA TechSource. (2011). Web scale discovery services. Chicago, Ill: ALA TechSource.*
- Viswanathan, T. (1992). Telecommunication switching systems and networks. New Delhi: Prentice Hall of India Private Ltd.*
- Walsh, T. (2005). Introducing ICT: Basic to intermediate. Dublin: Gill & Macmillan*

Course Code: MLI-109
Course Title: Research Methodology

Unit – 1 : Basic Concepts

- Research: Meaning, Scope, Objective and Characteristics; Kinds – Fundamental / Basic and Applied; and Research Methods;
- Developing Research Project and Writing Research Proposal;
- Concept of Research in the Context Various Broad Disciplines (Physical Sc. Chemical Sc. Earth Sc. Space Sc. Medical Sc. Engineering Sc. Mathematical and Computer Sc. Agricultural Sc. Life Sc. Social Sc. Etc.)
- Research in Science and Humanities: Basic Differences

Unit – 2 : Research Methods

- Historical Research: Nature, Scope and Sources of Historical Data including the Methods of Ascertainment of their Authenticity;
- Experimental Research: Nature and Types, Experimental Design; Research Design - Steps;
- Descriptive / Survey Research: Nature and Types, Data collection tools and techniques, Sampling – Types and Techniques, Scope of Experiment in Social research;
- Case study and Delphi method;
- Organisation, analysis and interpretation of data;
- Writing Research Report;

Unit – 3 : Research in the Context of LIS

- Theory and Empirics in LIS Research: Basic Concepts
- Concept of Research in Social Sciences
- Role of Libraries / Information Centres in Research;
- Trends of Research in Library and Information Science.
- Ethics of Research

Unit – 4 : Concept of Ethnographic Research

- Introduction, Action Research, Integrated Research to study Culture etc.
- Planning an Ethnographic Research
- Collection and Documentation of Data
- Different Methods: Participant Observation, Field Notes, In-Depth and Group Interviews, Diaries and Self-Documentation etc.

Unit – 5 : Class Test / Project / Seminar Presentation

Reading List

- Das, N.G. (2009). *Statistical methods*. Calcutta: Tata McGraw-Hill.
- Glazier, Jack D, & Hall, Peter M. (1992). *Qualitative research in information management*. Englewood, CO: Libraries Unlimited.
- Goon, A.M., Gupta, M.K. and Dasgupta, B. (1978). *Basic statistics*. Calcutta: World Press.
- Gorman, G.E. & Clayton, Peter. (2004). *Qualitative Research for the Information Professional: a practical handbook*. 2nd ed. London: Facet.
- Donald, H. K. & Boyce, Bert R. (1991). *Operations research for libraries and information agencies: techniques for the evaluation of management decision alternatives*. San Diego: Academic Press.
- Hafner, Arthur W. (1997). *Descriptive statistical techniques for librarians*. (2nd ed.). Chicago: American Library Association.
- Hernon, P. (1989). *Handbook of statistics for library decision making*. Norwood, NJ: Ablex
- Khan, M. A. (2002). *Research methods in library and information science*. New Delhi: Cosmo Publications.
- Krishan Kumar (1992). *Research methods in library in social science*. New Delhi: Vikas.
- Lawal, I. O. (2009). *Library and information science research in the 21st century: a guide for practicing librarians and students*. Oxford, UK: Chandos Pub.
- Losee, Robert M., Jr., & Worley, Karen A. (1993). *Research and evaluation for information professionals*. San Diego: Academic Press.
- Moore, N. (2006). *How to do research*. 3rd ed. London: Facet Publishing.
- Pickard, Alison Jane. (2012). *Research Methods in Information*. 2nd ed. London: Facet.
- Prytherch, Ray. (1994). *Information management and library science: a guide to the literature*. Brookfield, VT: Gower
- McClure, Charles R. & Hernon, Peter, Ed. (1991). *Library and Information science research: perspectives and strategies for improvement*. Norwood, NJ: Ablex Publishing Corporation.
- Simpson, I. S. (1990). *How to interpret statistical data: A guide for librarians and information scientists*. London: Library Association.
- Slater, Margaret, Ed. (1990). *Research methods in library and information studies*. London: Library Association.
- Stephen, Peter, & Hornby, Susan. (1995). *Simple statistics for library and information professionals*. London: Library Association.
- Williamson, K., Ed. (2002). *Research methods for students, academics and professionals: Information management and systems*. 2nd ed. Wagga Wagga, Australia: Center for Information Studies, Charles Stuart University

Course Code: MLI-110
Course Title: Technical Writing

Unit - 1 : Technical Writing and Information Design

- Introduction, definition, purpose, scope
- Principles of technical writing
- Role of technical writers
- Prospect of technical writers
- Information design

Unit - 2 : Scientific Writing

- Understanding target groups
- Information collection and organization
- Drafting of information
- Graphical representation of information
- Presentation of scientific information, standards of bibliographic description

Unit - 3 : Web Writing

- Audience profiling
- Estimating technical documentation
- Documentation planning and visualization
- Information architecture
- Selection of tools and software
- Templates and page design

Unit – 4 : Plagiarism

- Definition, Meaning, Purpose
- Methods of Detection
- Plagiarism Checking Software
- Sources of Plagiarism
- Predatory Publications: Definition, Meaning
- Role of Plagiarism in Growth of Predatory Publications

Unit – 5 : Class Test / Project / Seminar Presentation

Reading List

Arms, W. Y., Bianchi, C., & Overly, E. A. (1997). An architecture for information in digital libraries. *D-lib magazine*, 3(2).

Bertrand, P., van Lamsweerde, A., & Verleysen, M. Principles of Technical Writing.

Blum, S. D. (2011). *My word!: Plagiarism and college culture*. Cornell University Press.

Carroll, J., & Oxford Centre for Staff Development. (2007). *A handbook for deterring plagiarism in higher education* (Vol. 2). Oxford: Oxford Centre for Staff and Learning Development.

Eighmey, J. (1997). Profiling user responses to commercial web sites. *Journal of advertising research*, 37(3), 59-67.

Lannon, J. M. (1985). *Technical writing*. Boston: Little, Brown.

Li, X., & Crane, N. (1993). *Electronic style: a guide to citing electronic information*. Westport: Meckler.

Lipson, C. (2006). *Cite right: A quick guide to citation styles--MLA, APA, Chicago, the sciences, professions, and more*. Chicago: University of Chicago Press.

Mallon, T. (1991). Stolen Words Forays into the Origins and Ravages of Plagiarism.

Mills, G. H., & Walter, J. A. (1986). *Technical writing*. New York: Holt, Rinehart, and Winston.

Pennycook, A. (1996). Borrowing others' words: Text, ownership, memory, and plagiarism. *TESOL quarterly*, 30(2), 201-230.

Rosenfeld, L., & Morville, P. (2002). *Information architecture for the world wide web*. " O'Reilly Media, Inc."

Pearsall, T. E. (1997). *The elements of technical writing*. Prentice Hall.

SECOND SEMESTER

Course Code: MLI-201

Course Title: Information and Society

Unit – 1 : Information Society

- Social implications of information ; Genesis and Characteristics ;
- National and International plans, policies and programmes relating to information for development with special reference to India and developing countries ;
- Politics of information : What – Why – and How, Global Information Order vs. Indigenous Knowledge System, Information explosion vs. Information dearth, Information divide and digital divide ; freedom, confidentiality and privacy of information ;
- Information Society and Knowledge Society: What – for Whom – Why – and How, Characteristics, changing role of information organizations and professionals, The developing world perspective;
- Typology of information sectors ;
- Globalization and Information Communication Technology.

Unit – 2 : Knowledge Management

- Information and Knowledge Management: Concepts and tools, Comparison, Informatics, Cybernetics
- Knowledge in Organizations ;
- Managing Knowledge in Organizations ;
- Knowledge Tools for Individuals, Groups and Organizations ;
- Institutional Support for Knowledge Economies ;
- Functions of Knowledge Management ;
- Knowledge Market.

Unit – 3 : Economics of Information

- Economics of information : Concept, scope and objective ;
- Information economics vs. economics of information ;
- Demand and supply of information ;
- Production, distribution and consumption of information and knowledge ;
- Economic analysis models, cost-benefit analysis and cost effectiveness ;

Unit – 4 : Marketing of Library and Information Products and Services

- Fundamental Concepts : Needs, Objectives and Philosophy ;
- Marketing Environment : Producer, Consumer - Buyer Behaviour ;
- Marketing Information System, Market Segmentation, Marketing Mix ;
- Strategies and Techniques of Marketing – Strategic planning, Marketing Research and Marketing Process ;
- Promotion of LIS products and Services - LIS products and Services as a marketable commodity, Pricing, Distribution Channels and Communication Strategies, Advertising, Sales Promotion, Public Relations and E-marketing

Unit – 5 : Class Test / Project / Seminar Presentation

Reading List

- Bell, D. (1980). The social framework of the information society . In Derrouzos MC & Moses J (eds), The computer age: a twenty year view. Cambridge: MIT Press.*
- Coote, Heler and Batchelor, Bridget. How to Market your library services effectively (1997) Ed2. London: Asib*
- Delanty, G. (2001). Challenging Knowledge: The university in the knowledge society. Open University Press.*
- Drucker, P. (1998). From capitalism to knowledge society. The knowledge economy . 15-32*
- Father, J. (2000). The information society, London: Library Association.*
- Gupta, D.K et al. Marketing library and information services; international perspectives (2006) Munich; K.G. Saur*
- Khan, M.T.M (1997), Information Organisation and Communication, Ess Ess Publication, New Delhi.*
- Laxman Rao, N, Sudarshan Rao, S., Prafulla Chandra, T.v. (2004). Knowledge societies and libraries. Ess Ess Publications, New Delhi.*
- Machlup, F. (1984). The economics of information and human capital, Princeton: Princeton University Press.*
- Mahapatra, P.K. & Chakrabarti, B. (2002). Knowledge management in libraries. Ess Ess Publication,*
- Martin W.j (1995). The global information society. brookfield, VT: Gower*
- Masuda, Y. (1993). The information society.*
- Mc Garry, K.J. (1993) The changing concept of information : an introductory analysis.*
- Mukherjee, Bhaskar (2012). Information Communication and Society. New Delhi, Ess Ess Publications. New Delhi.*
- Raghavar, K.S. & Prasad, K.N. Eds. (2006). Knowledge organization, Information Systems and Other Essays (Professor A. Neelameghar Festschrift) New Delhi: Ess Ess Publications.*
- Raman, Thothathri A: (2003). Knowledge management: a resource book 1st ed. New Delhi: Excel Books.*
- Singh, Surendra and Singh, Sonal (2002). Libraray Information Science and society, Ess Ess Publications, New Delhi.*
- Singha Roy, D.K. (2014). Knowledge society: New identities in emerging India. New York: Cambridge University Press.*
- Taragowski, A.S. (1998). Global information infrastructure: the birth, vision and architecture itarrisburg: Idea Group.*

Course Code: MLIS-202
Course Title: Knowledge Organisation (Practice)

Unit – 1 : Colon Classification(Ed. – 7) Practice

Unit – 2 : Class Test / Project / Seminar Presentation

Reading List

- Dhiman, A. K. & Yashoda Rani. (2005). *Learn library classification*. New Delhi: Ess Ess.
- Dhyani, P. (1998). *Library classification: theory and principles*. New Delhi: Wishwa Prakashan.
- Dhyani, P. (1983). *Classification schemes and Indian libraries*. New Delhi: Metropolitan.
- F.I.D. (1993). *Universal Decimal Classification*. IME. London: BSI. Forest Press. (2002).
WebDewey. Dublin, Ohio: OCLC Forest Press.
- Foskett, D. J. (1974). *Classification and indexing in social sciences*. London: Aslib. Foskett, A. C. (1996). *The subject approach to information*. 5th ed. London: Clive Bingley.
- Halgamuge, S. K., & Wang, L. (2005). *Classification and clustering for knowledge discovery*. Berlin: Springer.
- Hunter, E. J. (1988). *Classification made simple*. Aldershot: Gower,.
- Husain, Sabahat. (2004). *Library classification: facets and analysis*. Delhi: B. R. Publishing.
- Navalani, K., & Gidwani, N. N. (1981). *A practical guide to colon classification*. New Delhi: Oxford & IBH.
- Needham, C. D. (1971). *Organizing knowledge in libraries*. 2nd ed. London: Andre Deutsch.
- Pathak, L. P. (2000). *Sociological terminology and classification schemes*. New Delhi: Mittal Publications.
- Quinn, B. (1994). Recent theoretical approaches in classification and indexing.
Knowledge Organization. 21(3); p.140-147.
- Raju, A. A. N. (1984). *Decimal, Universal Decimal and Colon Classification: a study in comparison*. Delhi: Ajanta.
- Ranganathan, S. R. (2006). *Philosophy of library classification*. Bangalore: Ess Ess. Ranganathan, S.R. (1966).
Elements of library classification. 2nd ed. Bombay: UBS. Ranganathan, S.R. (1967). *Prolegomena to library classification*. 3rd ed. Bombay: UBS.
- Ranganathan, S. R. (1987). *Colon Classification*. Bangalore: SRELS.
- Rowley, J.E. & Farrow, J. (2000). *Organizing knowledge: an introduction to managing access to information*.
3rd ed. Aldershot: Gower.
- Satija, M. P. (2011). *A guide to the theory and practice of Colon Classification*. New Delhi: Ess Ess Publications.
- Sood, S. P. (1998). *Universe of knowledge and universe of subjects*. Jaipur: G. Star Printers.
- Taylor, A. G. (2007). *Introduction to cataloguing and classification*. 10th ed. New Delhi: Atlantic.
- Vickery, B. C. (1968). *Faceted classification: a guide to construction and use of special schemes*. London: Aslib

Course Code: MLIS-203

Course Title: Resource Description (Practice)

Unit – 1 : Cataloguing of Non-book Materials by AACR 2R and MARC 21

Unit – 2 : Class Test / Project / Seminar Presentation

Reading List

- Clack, D. H. (1990). *Authority control: Principles, applications, and instructions*. Chicago: American Library Association.
- Hasan, N. (1984). *Cataloguing practice: According to classified catalogue code (Ed 5)*. New Delhi: Gitanjali Pub. House.
- Hoffmann, C. F. B. (1980). *Getting ready for AACR 2: The cataloger's guide*. White Plains, NY: Knowledge Industry Publications.
- Hunter, E. J. (1979). *AACR 2: An introduction to the second edition of Anglo-American cataloguing rules*. London: C. Bingley.
- Hunter, E. J., & Fox, N. J. (1980). *Examples illustrating AACR 2: Anglo-American cataloguing rules second edition*. London: Library Association.
- Hunter, E. J. (1989). *An introduction to AACR 2: A programmed guide to the second edition of the Anglo-American cataloguing rules, 1988 revision*. London: C. Bingley.
- Hunter, E. J. (1989). *Examples illustrating AACR 2 1988 revision*. London: Library Association.
- IFLA International Programme for UBC. (1984). *Guidelines for authority and reference entries*. London: IFLA International Programme for UBC.
- Lehnus, D. J. (1971). *How to determine author and title entries according to AACR: An interpretive guide with card examples*. Dobbs Ferry, N.Y.: Oceana Publications.
- Maxwell, Robert and Maxwell, Margaret F. (1997). *Maxwell's handbook of AACR2R: Explaining and illustrating the Anglo American Cataloguing Rules and the 1993 amendments*. Chicago: ALA.
- Olson, N. B., Intner, S. S., & Swanson, E. (1992). *Cataloging of audiovisual materials: A manual based on AACR 2*. DeKalb, Ill: Minnesota Scholarly Press.
- Olson, N. B., Swanson, E., & Intner, S. S. (1985). *Cataloging of audiovisual materials: A manual based on AACR 2*. Mankato, Minn: Minnesota Scholarly Press.
- Parameswaran, M. (1988). *Headings and access points for personal authors and corporate bodies: A comparative study of the Anglo-American Cataloguing Rules (2nd ed.) and the Classified Catalogue Code (5th ed.)*. Thesis (MSc) --

Course Code: MLI-204

Course Title: Open Knowledge System and Scholarly Evaluation

Unit – 1 : Introduction to Open Access

- Introduction, Definition, Purpose
- Need of Open Access
- History of Open Access
- Open Information and Data Resources (Open Data, Open Educational Resources)

Unit – 2 : Way to Open Access

- Green Open Access
- Gold Open Access
- Gratis and Libre Open Access
- Hybrid Model

Unit – 3 : Networks and Organizations Promoting Open Access

- Introduction
- OA Initiatives and Scenario
- OA Supporters (Persons)
- OA Organizations
- OA Journals (Fee-based and No-Fee based, Popular)
- OA Scholarly Publisher Association
- OA Repositories
- Institutional Repositories
- Major OA Networks, Facilitators, Coalitions and Initiatives (INASP, JISC, SPARC, SHERPA Project, Global OA Portal-UNESCO, OpenAIRE, COAR, EOS, NDLTD)

Unit – 4 : Open Access Mandates and Policies

- Institutional Mandates (NIH Public Access Policy)
- National Centre for Atmospheric Research
- Open Access Policy
 - Coalition of Open Access Policy Institutions (COAPI)
 - MIT Faculty Open Access Policy
 - Harvard Business School Open Access Policy
 - Rutgers Open Access Policy
 - Publication Policies of Major Research Funders

- IES Mandate
- Wellcome Trust (UK) OA Mandate
- The World Bank (USA) OA Policy
- UNESCO OA policy
- Canadian Institutes of Health Research (OA Policy)
- Government level Mandates
 - UK Government Mandate
 - US Government Mandate
 - European Government Mandate
 - Canadian Government Mandate
 - Indian Government Mandate
 - Thesis Mandates
 - Shodhganga
- ROARMAP
- SHERPA/JULIET – Research Funders’ Open Access Policies
- Data Archiving Policies

Unit – 5 : Class Test / Project / Seminar Presentation

Reading List

- Chan, L., & Chan, Leslie. (2012). *Re-imagining research impact in the open knowledge environment*.
- Chan, L., Kirsop, B., & Arunachalam, S. (2005). *Open access archiving: the fast track to building research capacity in developing countries*. London: Science and development network (SciDevNet)
- Clinic on Library Applications of Data Processing, Sutton, B., Davis, C. H., University of Illinois at Urbana-Champaign., & Committee on Institutional Cooperation. (1992). *Networks, open access, and virtual libraries: implications for the research library*. Urbana-Champaign: Graduate School of Library and Information Science, University of Illinois at Urbana-Champaign.
- Crawford, W. (2011). *Open access: what you need to know now*. Chicago: American Library Association.
- D'Antoni, S., Savage, C., & Unesco. (2009). *Open educational resources: Conversations in cyberspace*. Paris: United Nations Educational, Scientific and Cultural Organization.
- European Union., & UNESCO (2008). *Open Access: opportunities and challenges*. Luxembourg: EUR-OP.
- Godwin, P., & Parker, J. (2012). *Information literacy beyond Library 2.0*. London: Facet Pub.
- Harnad, Stevan. (2008). *Mandate Open Access to maximizing research progress*. (<http://hdl.handle.net/10077/2603>.)
- Harnad,S. (2005). Impact analysis in the open access era. Retrieved September 5, 2013 from <http://openaccess.eprints.org/index.php?/archives/2005/10/10.html>
- Okada, A., Connolly, T., & Scott, P. J. (2012). *Collaborative learning 2.0: Open educational resources*. Hershey PA: Information Science Reference.
- Schmidt, B., & Kuchma, I. (2012). *Implementing open access mandates in Europe: OpenAIRE study on the development of open access repository communities in Europe*. Göttingen: Universitätsverlag Göttingen.
- Suber, P. (2012). *Open access*. Cambridge, Mass: MIT Press.
- Swan, A., & Chan, L. (2009). *Open access scholarly information sourcebook: practical steps for implementing open access*. S.l.: Openoasis.org.
- Swan, A., & UNESCO. (2012). *Policy guidelines for the development and promotion of open access*. Paris: United Nations Educational, Scientific, and Cultural Organization.
- UNESCO. (2013). *An open door to UNESCO's knowledge*.
- UNESCO. (2006). *UNESCO open access resource directory*. Paris: United Nations Educational Scientific and Cultural Organization.
- Willinsky, J. (2006). *The access principle: the case for open access to research and scholarship*. Cambridge, Mass: MIT Press.
- Hood, A. K., & Association of Research Libraries. (2007). *Open access resources*. Washington, D.C: Association of Research Libraries.
- ISSN International Centre., & Unesco. (2013). *ROAD: Directory of open access scholarly resources*.
- Jacobs, N. (2006). *Open access: key strategic, technical and economic aspects*. Oxford: Chandos.
- Mukhopadhyay, P. (2014). *Interoperability initiatives*. In UNESCO course on Open Access (Module 4: Interoperability and Retrieval in OA – Unit 2). New Delhi: CEMCA/UNESCO.
- Mukhopadhyay, P. (2014). *Resource description*. In UNESCO course on Open Access (Module 4: Interoperability and Retrieval in OA – Unit 1). New Delhi: CEMCA/UNESCO

Course Code: MLI-205

Course Title: Information Analysis and Consolidation (Practice)

Design and development of an IAC product like trend report, state-of-the-art report, digest, etc.

Unit – 1 : IAC Product design

Unit – 2 : Viva-voce

Reading List

Atherton (Pauline). *Handbook for information Systems and Services*. 1977. Unesco, Paris

Saracevic, T. (1986). Processes and problems in information consolidation. *Information processing & management*, 22(1), 45-60.

Saracevic, T. (1981) *Consolidation of information: A Handbook of evaluation, restructuring and repackaging of scientific and technical information*. Unesco, Paris.

Seetharama, S. (1988). Information analysis & consolidation activities in defence contexts. In *National Conference on Scientific Information for Defence, 25-26 February 1986... New Delhi: Conference Proceedings* (p. 149). The Centre.

Seetharama, S. (1983). Towards a methodology for information consolidation. *SRELS Journal of Information Management*, 20(4), 235-252.

Seetharama, S. (1985). *Modes of presentation of information in information consolidation products*. *Library Science with a Slant to Document*, 22;

Seetharama, S. (1997). *Information consolidation and repackaging*. 1997. Ess Ess, New Delhi.

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Course Code: MLI-206

Course Title: Information Retrieval – II

Unit – 1 : Evolution of IRS

- Library Catalogue and OPAC ;
- CD-ROM IR ;
- Online IR ;
- Text and Multimedia IR ;
- Use of Classical Library and Information Retrieval Tools and Techniques in Internet ;
- Bibliographic Database: Structure, Organization, Types and Access Mechanisms.

Unit – 2 : Searching and Information Retrieval

- Searching methodology: Prerequisites, Presearch interview, Search process ;
- Retrieval models : Boolean Search model, Probabilistic retrieval model, Vector processing model, best match searching model; Alternative retrieval models: Natural language processing model and hypertext model ;
- Search Strategies : Boolean, Proximity, Range, Limiting, Truncation, String Search ;
- Database Searching.

Unit - 3 : Evaluation of IR System

- Meaning, Points of View, and Purpose;
- Evaluation Methodologies: Evaluation Criteria, Retrieval Parameters; Steps of Evaluation;
- Evaluation Experiments
 - Cranfield 1 and 2
 - MEDLARS Test
 - TREC Experiments.
 - Etc.

Unit - 4 : Trends in IR

- Web IR: Web Pages, Search Engines, Meta Search Engines; Web Mining;
- Multilingual Information Retrieval;
- Cross-Lingual Searching;
- Geographic Information Retrieval;
- IR of Public Opinion;

Unit – 5 : Class Test / Project / Seminar Presentation

Reading List

- Aitchison, J., Gilchrist, A. & Bawden, D. (2000). *Thesaurus construction and use: a practical manual*. 4th ed. London: Aslib.
- Anderson, James D. (1997). *Guidelines for indexes and related information retrieval devices: a technical report*. Bethesda, Maryland: National Information Standard Organization.
- Baeza-Yates, R. & Ribeiro-Neto, Berthier (1999). *Modern information retrieval*. New York: ACM Press; Harlow, England: Addison-Wesley.
- Bawden, D. (2007). Information seeking and information retrieval: the core of the information curriculum. *Journal of Education for Library and Information Science*, 48 (2), pp.125-138.
- Ceri, S., Bozzon, A., Brambilla, M., Della Valle, E., Fraternali, P. & Quarteroni, S. (2013). *Web information retrieval*. Heidelberg: Springer.
- Chu, H. (2003). *Information representation and retrieval in the digital age*. Medford, N.J: Published for the American Society for Information Science and Technology by Information Today.
- Chowdhury, G. G. (2010). *Introduction to modern information retrieval*. 3rd ed. London, Facet Publishing.
- Foskett, A. C. (1996). *Subject approach to information*. 5th Ed. London: The Library Association.
- Fugmann, R.: *Subject analysis and indexing: theoretical foundation and practical advice*. Frankfurt: Verlag, 1983.
- Ghosh, S. B. and Satpathi, J. N., Eds. (1998). *Subject indexing systems: concepts, methods and techniques*. Calcutta. IASLIC.
- Gilchrist, A.: *From classification to knowledge organization*, 1997.
- Hyvönen, E. (2012). *Publishing and using cultural heritage linked data on the semantic Web*. San Rafael, Calif: Morgan & Claypool Publishers.
- ISO 2788:1986. *Guidelines for the establishment and development of monolingual thesauri*. Geneva: International Organization for Standardization.
- International Organization for Standardization. (2013). *Information and documentation: Thesauri and interoperability with other vocabularies*. Geneva: ISO.
- Lancaster, F. W. (1998). *Indexing and abstracting in theory and practice*. 2nd ed. Champaign, Illinois: University of Illinois

Course Code: MLI-207

Course Title: Studies of Academic Metrics

Unit – 1 : Introduction to Research Evaluation Metrics and Related Indicators

- Use of Citation-based Indicators for Research Evaluation
- Citation Analysis
- Concepts of Librametrics, Bibliometrics, Scientometrics, Informetrics, Webometrics, etc.
- Common Bibliometric Indicators
- Classical Bibliometric Laws (Bradford's Law, Lotka's Law, Zipf's Law, Mandelbrot's Law, Pareto's Law, Sengupta's Law)
- Transition from Citation-based Indicators to Author Level and Article Level Metrics for Research Evaluation
- Author Level Indicators Using Authors' Public Profiles (h-index, g-index etc.)
- Article Level Metrics Using Altmetric Tools

Unit – 2 : Performance Measurement of R & D in S & T

- Citation Databases
- The Web of Science
- Scopus
- Indian Citation Index (ICI)
- CiteSeerX
- Google Scholar and Google Scholar Citations
- Analytical Products with Journal Performance Metrics
- Journal Citation Reports (JCR®)
- New Platforms for Evaluating Scholarly Communications
- SCImago Journal & Country Rank (SJR) [ScimagoJR.com]
- eigenFACTOR.org
- Publish or Perish (POP) Software
- JournalMetrics.com

Unit – 3 : Article and Author-Level Measurements

- Unique Identifiers for Authors and Researchers
- Open Researcher and Contributor ID (ORCID)
- Article Level Metrics (Altmetrics)

- Measuring Altmetrics using Altmetric.com
- Measuring Altmetrics using ImpactStory.org
- Altmetrics for Online Journals
- Academic Social Networks
- ResearchGate.net
- Academia.edu
- GetCited.org
- Social Science Research Network
- Other Important Social Networks
- Regional Journal Networks with Bibliometric Indicators
- SciELO – Scientific Electronic Library Online
- Redalyc
- Online Citation and Reference Management Tools (Mendeley, CiteULike, Zotero, Google Scholar Library, EndNote Basic)

Unit – 4 : Growth of Literature and Measurement of Scientific Productivity

- Vickery’s Interpretation and Brook’s Work;
- Characteristics of Bibliometric distributions;
- Ageing and Obsolescence study – Half-life Calculation;
- Validity of Bibliometric Measurement and application of Bibliometric laws in Libraries and Information Centres;
- Models of Growth of Literature: Derek De Solla Price Generalized Model (Based on Little Science, Big Science); Power Model; Exponential Model; Logistic Model; Gompertz Model etc.

Unit – 5 : Class Test / Project / Seminar Presentation

Reading List:

- Andres, A. (2009). *Measuring academic research: how to undertake bibliometric study*. Oxford: Chandos Publishing
- Andrews, Penny & Leeds Metropolitan University. (2013). *Amplifying your research and academic profile – a researcher's guide to social media and altmetrics*
- Borgman, C. L. (1990). *Scholarly communication and bibliometrics*. Newbury Park: Sage Publications
- Braun, T. (2007). *The impact factor of scientific and scholarly journals: Its use and misuse in research evaluation: a selection of papers reprinted mainly from the journal Scientometrics*. Budapest: Akadémiai Kiadó.
- Cronin, B., & Sugimoto, C. R., Ed. (2014). *Beyond bibliometrics: harnessing multidimensional indicators of scholarly impact*. Cambridge, Mass.: MIT Press
- De Bellis, N. (2009). *Bibliometrics and citation analysis: from the Science citation index to cybermetrics*. Lanham, MD: Scarecrow Press.
- Tattersall, A. (2014). *Altmetrics: A practical guide for librarians, researchers and academics*. London: Facet Publ.
- Thelwall, M.A. (2004). *Link analysis: an information science approach*. London: Elsevier Academic.
- Thelwall, M. (2009). *Introduction to webometrics: quantitative web research for the social sciences*. San Rafael: Morgan & Claypool
- Garfield, E. (1979). *Citation Indexing – Its theory and application in science and technology and humanities*. New York: John Wiley.
- Sen, B. K., Indian National Science Academy, & Indian National Commission for History of Science. (2005). *Growth of scientific periodicals in India (1901-1947)*
- Mukhopadhyay, Parthasarathi. (2002). The calculation of web impact factors for educational institutes of India: a webometric study. *Proceedings of the National Seminar on Information Management in Electronic Libraries (ImeL), Kharagpur, 2002. Indian Institute of Technology, Kharagpur 2002.* (pp. 531–539)
- Egghe, L. (2005). *Power laws in the information production process: Lotkian informetrics*. Amsterdam: Elsevier/Academic Press.
- Egghe, L., & Rousseau, R. (1990). *Introduction to informetrics: quantitative methods in library, documentation, and information science*. Amsterdam: Elsevier Science Publishers.
- Egghe, L., Neelameghan, A., & Sarada Ranganathan Endowment for Library Science. (2000). *Lectures on informetrics and scientometrics*. Bangalore: Sarada Ranganathan Endowment for Library Science.
- Egghe, Leo. (2009). *Lotkian informetrics and applications to social networks*. The Belgian Mathematical Society

Course Code: MLIS-208

Course Title: Information and Communication Technology (Theory) - II

Unit – 1 : Automated Library System

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

Unit – 2 : Digital Library System

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

Unit – 3 : Multilingual Library System and IR System

- Introduction to multilingual computing and its requirements;
- UNICODE (UTF-8 and UTF-16) and its application;
- Design and development of multilingual automated and digital library system (with special reference to Bengali language);
- Expert System; Decision Support System; Knowledge Discovery / Data Mining;
- NLP Tools and Techniques.

Unit – 4 : Field Study

Students are required to visit different types of Library and/or Information System in different parts of India to get idea about the recent development of ICT applications in the same. They are also required to submit a report individually on the above within the formal dissolution of classes. The choice of field in which the study is to be conducted will remain under the discretion of the Departmental Committee.

Unit – 5 : Class Test / Project / Seminar Presentation

Reading List:

- Bradley, P. (2007). *How to use Web 2.0 in your library*. London: Facet.
- Bradley, P., & Aslib. (2000). *World Wide Web: how to design and construct web pages*. London: ASLIB.
- Chowdhury, G. G., & Chowdhury, S. (2001). *Searching CD-ROM and online information sources*. London: Facet Publishing.
- Engard, N. C. (2010). *Practical open source software for libraries*. Oxford: Chandos Publishing.
- Gorman, M. (2003). *The enduring library: technology, tradition, and the quest for balance*. Chicago: American Library Association.
- Hagler, R. (1997). *The bibliographic record and information technology*. Chicago: American Library Association.
- Jacsó, P., & Lancaster, F. W. (1999). *Build your own database*. Chicago: American Library Association.
- Jean, G. (2011). *Digital library*. New Delhi: World Technologies.
- Kernighan, B. W., & Ritchie, D. M. (1988). *The C programming language*. Englewood Cliffs, N.J: Prentice Hall.
- Leon, A. & Mathews, L. (2004.). *Fundamentals of information technology* (Latest edition.). Chennai: Leon Tech World.
- Library Association., & Library Information Technology Centre. (1996). *Library technology*. London: Published jointly by the Library Association and the Library Information Technology Centre.
- Chartered Institute of Library and Information Professionals (Great Britain). (1998). *Multimedia information & technology: MmIT*. London, England: Multimedia Groups of Aslib.
- Mathews, J. R. (1980). *Choosing an automated library system: A planning guide*. Chicago: American Library Association.
- Mukhopadhyay, P. (2013). *Course of action: Library information technology*. Kolkata: Prova Prakashani.
- Mukhopadhyay, P. (2014). *Course of action: Automated library system*. Kolkata: Prova Prakashani.
- Rajasekharan, K., & Nafala, K. M. (2007). *Creation of digital document archives with Winisis*. Kerala Institute of Local Administration.
- Scott, M. L. (2006). *Programming language pragmatics*. San Francisco, CA: Morgan Kaufmann Pub.
- Vaughan, J., & ALA TechSource. (2011). *Web scale discovery services*. Chicago, Ill: ALA TechSource.
- Williams, H. E., & Lane, D. (2002). *Web database applications with PHP & MySQL*. Beijing: O'Reilly.

Course Code: MLI-209

Course Title: Information and Communication Technology (Practice) - II

Unit – 1 : MySQL and / or PostGreSQL RDBMS

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

Unit – 3 : Library Automation Software – Managerial Level Tasks (SOUL / KOHA / WEBLIS), Digital Library Software – GSDL / DSpace / E-Print Archive

Unit – 4 : Unicode based Multilingual Automated and Digital Library System

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

Reading List:

- Anuradha, K.T., & Savanur, Kiran P. (2010). Installing newgenlib: open source library automation package. (SRELS Journal of Information Management, 2010, Vol.47, p621.) Sarada Ranganathan Endowment for Library Science.
- Ayres, F. H., Ridley, M., Nielsen, L. P. S., & British Library. (1998). The Bradford
- OPAC 2: Managing and displaying retrievals from a distributed search in Z39.50. Boston Spa: British Library Research and Innovation Centre.
- Breeding, M. (2009). Opening up library systems through web service and SOA: Hype, or reality?. Chicago: ALA TechSource.
- Library and Information Technology Association (U.S.). (2002). Open source software for libraries: An open source for libraries collaboration. Chicago: LITA.
- Morris, A., & Dyer, H. (1998). Human aspects of library automation. Brookfield, Vt: Gower
- Mukhopadhyay, P. (2005). Library automation – software packages. Unit 6 IN MLIS – MLII-104 (ICT Applications – Part I), New Delhi: IGNOU.
- Mukhopadhyay, P. (2005). Introduction to Library Automation. Unit 1 IN CICTAL – BLII-003 (Library Automation and Digitization), New Delhi: IGNOU.
- Mukhopadhyay, P. (2006). Five laws and ten commandments: The open road of library automation in India. (Proceedings of the National Seminar on Open Source Movement - Asian Perspective, XXII, IIT Roorkee, 2006. IASLIC, Kolkata. 2006. p. 27-36.) IASLIC.
- Mukhopadhyay, P. (2008). Library automation through Koha. Kolkata: Prova Prakashani.
- Mukhopadhyay, P. (2014). Library automation processes. Unit 2 IN BLIS – Course 9 (ICT in Libraries), New Delhi: IGNOU.
- Murphy, F. J., Pollitt, A. S., & White, P. R. (1991). Matching OPAC user interfaces to user needs. Huddersfield: The Polytechnic of Huddersfield.
- Pitkin, G. M. (1991). The Evolution of library automation: Management issues and future perspectives. Westport, CT: Meckler.
- Singh, M., & Sanaman, G. (December 01, 2012). Open source integrated library management systems: Comparative analysis of Koha and NewGenLib. Electronic Library, 30, 6, 809-832.
- Sirohi, S., & Gupta, A. (2010). Koha 3 library management system. Birmingham: Packt Pub.
- Texas State Library. (1995). Library automation standards and guidelines. Austin, Tex: Texas State Library, Library Development Division.
- Tramullas, J., & In Garrido, P. (2013). Library automation and OPAC 2.0: Information access and services in the 2.0 landscape. Hershey, Pa: Information Science Reference.
- Winnebago Software Company. (1993). Guide to library automation: A step-by-step introduction. Caledonia, MN: Winnebago Software Co.

Course Code: MLI-210

Course Title: Quantitative Techniques in Library and Information Centres

Unit – 1 : Useful Mathematical Devices

- Concept of Function, Independent and Dependent Variables
- Graphical Presentation of Functions
- Concept of errors (Absolute, Relative and Percentage Errors)
- Concept of Common and Natural Logarithm
- A.P. Series and G.P. Series
- Concept of Permutation and Combination

Unit – 2 : Descriptive Statistics for collection and presentation of data

- Measures of Central Tendency (Mean, Median Mode, Other Averages)
- Measures of Dispersion (Range, Mean Deviation, standard Deviation)
- Measures of Skewness and Kurtosis
- Measures of Relationship (Covariance, Correlation, Regression, Pearson's Correlation Coefficient and Spearman's Rank Correlation Co-efficient)

Unit – 3 : Analytical methods for collection and presentation of data

- Set theory
- Analysis of Variance (ANOVA Technique, One-Way ANOVA, Two-Way ANOVA), Analysis of Co-Variance (ANOCOVA)
- Linear Regression Analysis (Least Squares Estimation, Standard Error, Coefficient of Determination)
- Interpolation: Finite Differences, Differences of a Polynomial Function, Newton's Formula

Unit - 4 : Sampling and Statistical Inference

- Sampling Techniques;
- Probability Theories;
- Hypotheses Testing – Non-parametric tests (Chi-square test, Sign test), Parametric tests; Variance analysis.
- Statistical Inference (Point Estimation, Interval Estimation, Sample Size and its determination, Testing of Significance)

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

Reading List:

- Goon, A.M., Gupta, M.K. and Dasgupta, B. (1978). Basic statistics. Calcutta: World Press.
- Gupta, S.P. (2002). Statistical Methods. New Delhi: Sultan Chand
- Hafner, Arthur W. (1997). Descriptive statistical techniques for librarians. (2nd ed.). Chicago: American Library Association.
- Hafner, Arthur W. (1997). Descriptive statistical techniques for librarians. (2nd ed.). Chicago: American Library Association.
- Khan, M. A. (2002). Research methods in library and information science. New Delhi: Cosmo Publications.
- Hernon. P. (1989). Handbook of statistics for library decision making. Norwood, NJ: Ablex.
- Losee, Robert M., Jr., & Worley, Karen A. (1993). Research and evaluation for information professionals. San Diego: Academic Press.
- Simpson, I. S. (1990). How to interpret statistical data: A guide for librarians and information scientists. London: Library Association
- Stephen, Peter, & Hornby, Susan. (1995). Simple statistics for library and information professionals. London: Library Association.
- Williamson, K., Ed. (2002). Research methods for students, academics and professionals: Information management and systems. 2nd ed. Wagga Wagga, Australia: Center for Information Studies, Charles Stuart University