LIS Program Learning Objectives (Desired Learning Outcomes).
Detailed version for LIS 571 and general

This is a draft list of Learning Objectives (desired learning outcomes) for Library and Information Studies (LIS) programs. The *Broad Overview* and the *Detailed Overview* were created in consultation with faculty from the University at Buffalo Library and Information Studies Department and approved by the LIS Council I 2010. (The formulation of the Goals of the UB MS in Information and Library Science/MS in School Librarianship Program has changed since, see http://gse.buffalo.edu/lis/mgo). In the *Very Detailed List* many objectives are elaborated by adding more specific sub-objectives. In many cases, the learning objectives specified in professional standards, such as ALA's Core Competences of Librarianship 2008, the ALA Standards of Accreditation and the ALA/=AASL Standards for Initial Preparation of School Librarians (2010) correspond to the more specific objectives found in the Very Detailed List.

The *Very Detailed List, general* includes also specific course objectives for some courses, specifically all the learning objectives listed for lectures and assignments in UB LIS 571 *Information Organization* for instructor Dagobert Soergel. The *Very Detailed List for LIS 571* includes only learning objectives addressed in LIS 571 and broader objectives needed to keep the hierarchical context.

"Graduates" is used as shorthand for "Students and Graduates"; many objectives should be and are achieved by students while they are in the program.

"Graduates understand" means any of the following
        "Graduates can demonstrate understanding of"
        "Graduates are able to communicate understanding of"
        "Graduates can demonstrate knowledge of"
        "Graduates are able to communicate knowledge of"

"Graduates are aware of" means any of the following
        "Graduates can demonstrate awareness of"
        "Graduates are able to communicate awareness of"

Learning Objectives addressed in LIS 571 are highlighted in yellow in col.1.

&	The first objective in each continuous block of objectives addressed in LIS 571 is marked with &; CTRL-F & finds the next LIS 571 block.
#	Specific to a course
=ALA	From ALA, with the ALA number, also (if from the standards, the number starts with S) >ALA Objective here is more encompassing than ALA's <ALA ALA's objective is more encompassing
=AASL	From =AASL, with the =AASL number > < same as for ALA

LIS Program Learning Goals and Objectives. Broad Overview
Approved by LIS Council October 6, 2011

Superseded by the LIS Goals found at http://gse.buffalo.edu/lis/mgo

Goal 1. Graduates have the theoretical and conceptual foundation from which to develop a skill set they can adapt through life-long learning.

Objectives.

1 **Graduates understand the foundations of library and information studies.**
   The nature of information, its historical roots as well as its generation, organization, and dissemination to and use by individuals, organizations, and society.

2 **Graduates have the domain knowledge and skills required to carry out information functions**.
   Including information needs assessment, collection management, knowledge organization, information technology, user services, and pedagogy and information literacy instruction.

3 **Graduates have general knowledge and skills needed across professions.**
   Skills in management, communication and collaboration, research, and critical thinking.

Goal 2. Graduates are prepared to join the profession as leaders, demonstrate professional excellence and social responsibility, and transform lives through information.

Objectives

4 **Graduates understand the nature of the library and information profession**
   and the roles, responsibilities, and values of library and information professionals and are prepared to put professional values into practice.

5 **Graduates understand the importance of personal qualities conducive to professional success.** The program fosters the development of professionals with these qualities.

LIS Program Learning Goals and Objectives. Detailed Overview

Goal 1. Graduates have the theoretical and conceptual foundation from which to develop a skill set that can be adapted through life-long learning

Objectives

1   **Graduates understand the foundations of library and information studies.**
The nature of information, its historical roots as well as its generation, organization, and dissemination to and use by individuals, organizations, and society.

1.1   Graduates understand the nature of information and its role in learning, research and scholarship, business, society, and culture.

1.2   Graduates have a grounding in the history and development of the ways and means of communication (language and writing, information technologies) and their influence on the development of society and culture.

1.3   Graduates have a grounding in the history and development of information agencies, including libraries, and their influence on the development of society and culture.

1.4   Graduates understand the national and international systems of information and communication and the diverse types of information agencies, including libraries, archives, museums, publishing industry, media, Internet, etc.

1.5   Graduates understand the role of library and information services in a diverse global society, including the role of serving the needs of underserved groups. They are aware of national and international social, public, information, economic, and cultural policies, practices, and trends that interact with and influence the system of information and communication, including libraries, and their importance for the development of the partnerships and collaborations needed to make libraries vital parts of their communities.

1.6   Graduates understand the role of library and information services in a rapidly changing technological society and are equipped to respond to the evolving needs. This means they are aware of such trends, are able to spot emerging trends, and have the concepts needed to adapt information systems and services in response to these trends.

1.7   Graduates understand the legal framework within which information agencies, including libraries, operate, including laws relating to copyright, privacy, freedom of information, freedom of expression, equal rights (e.g., the Americans with Disabilities Act), and intellectual property.

1.8   Graduates understand the importance of research to the advancement of the field's knowledge base and demonstrate an awareness of some of the central research findings and research literature of the field.

1.9   Graduates understand the importance of contributions of library and information studies to other fields of knowledge.

1.10   Graduates understand the importance of contributions of other fields of knowledge to library and information studies. Graduates are familiar with and are able to apply an evolving body of knowledge that reflects the findings of basic and applied research from such relevant fields.

2   **Graduates have the domain knowledge and skills required to carry out information functions**.
Including information needs assessment, collection management, knowledge organization, information technology, user services, and pedagogy and information literacy instruction.

2.1   Graduates are able to analyze information needs and to design, promote, and assess information services. (related to 4.1 Management)

2.2   Graduates are able to manage user-oriented collections of information resources and access, i.e. user-driven collection development and content management.

2.3   Graduates understand and are able to apply principles of knowledge organization for a wide range of applications, from organizing a collection to expert searching to support for learning**.**

2.4   Graduates have technological knowledge and skills needed for carrying out information functions. They understand the potential and the uses of technology by individuals and organizations. They are able to apply technology skills in the design and implementation of simple systems, such as websites, simple databases, arrangement of small library spaces, and in the use of complex systems. Armed with a knowledge of what is possible they are able to articulate user requirements to computer system analysts and programmers, architects, and other technology specialists, and ensure that systems as delivered meet these requirements.

2.5   Graduates understand and are able to apply the principles of information seeking and of reference and user services in different modes of communication (face-to-face, telephone, computer communication) for users of all ages and groups, including those with diverse styles of information use and diverse physical and intellectual abilities and needs. Graduates understand and are able to apply a wide range of advanced search techniques.

2.6   Graduates understand and are able to apply principles of pedagogy, including learning theories, instructional design, instructional methods, lesson planning, and assessment methods. This will allow them to function as effective teachers , instructors, mentors, and information counselors and to design instruction generally. In particular, they are able to promote information literacy / information competence / information fluency, including visual literacy and numerical and statistical literacy**. (**Information literacy encompasses concepts, processes, and skills used in seeking, evaluating, using and producing data / information / knowledge, including competence in social media.)

3   **Graduates have general knowledge and skills needed across professions.**
Skills in management, communication and collaboration, research, and critical thinking.

3.1   Graduates understand leadership principles and are able to successfully lead and manage information agencies, including libraries.

3.2   Graduates have skills in managing their own work, such as priority setting and time management.

3.3   Graduates are able to communicate effectively in multiple media, as receivers of communications (active listening, reading, interpreting graphs and images), as producers of communications (presenting, speaking, writing, visual design) and as collaborators.

3.4   Graduates are able to collaborate with people in other disciplines, professions, or professional positions.

3.5   Graduates understand and are able to apply a variety of research methods / methods of inquiry, exhibit critical thinking, and are able to assess and apply research findings.

Goal 2. Graduates are prepared to join the profession as leaders, demonstrate professional excellence and social responsibility, and transform lives through information.

Objectives

4   Graduates understand the nature of the library and information profession and the roles, responsibilities, and values of library and information professionals and are prepared to put professional values into practice.

4.1   Students understand career paths available in the information profession and are able to discern the career path(s) best suited to their abilities, strengths, and interests and design a plan of study that focuses on the objectives and competencies that support this (these) career path(s).

4.2   Graduates understand the nature of the information profession and the roles and responsibilities of information professionals.

4.2.1   Graduates understand and follow professional standards and ethics as well as legal requirements in the information profession, including certification and/or licensure requirements of specialized areas of the profession.

4.2.2   Graduates understand the importance of diversity in the information profession.

4.2.3   Graduates understand the value of teaching and service to the advancement of the field.

4.2.4   Graduates understand the importance of, and are prepared for, continuing professional development and lifelong learning.

4.2.5   Graduates model a strong commitment to the profession by participating in professional growth and leadership opportunities through membership in professional associations in the information field, attendance at professional conferences, reading professional publications, and exploring Internet resources. Graduates plan for ongoing professional growth.

4.2.6   Graduates are able to create their own professional network and have the beginnings of such a network at graduation.

4.3   Graduates understand the values of the profession and their importance and are prepared to put these values into practice.

4.3.1   Graduates are equipped and motivated to use information to transform lives and to promote equity, mutual respect, and a rich social fabric in a diverse society.

4.3.2   Graduates are equipped and motivated to use information to increase productivity and improve the standard of living for all.

4.3.3   Graduates are equipped and motivated to advocate for users and their right to have information; for libraries and other information agencies, their staff, and the information profession; and the services they provide

4.3.4   Graduates will demonstrate understanding of, respect for, and sensitivity to the diversity in society, including age, culture, economic means, ethnicity, language, physical and mental ability, race, and sexual orientation.

4.3.5   Graduates are equipped and motivated to promote equity of access to information services for all members of society, remembering groups that are disadvantaged or marginalized, such as people with disabilities, people with limited literacy, the poor, and people who are discriminated against for whatever reason.

4.3.6   Graduates are equipped and motivated to promote democratic principles, promote and protect intellectual freedom (including freedom of expression, thought, and conscience), intellectual property, and the individual reader's/viewer's and listener's right to privacy.

4.4   Graduates are motivated to be reflective professionals: Reflect on their actions and be open to critique and suggestions from all sides.

4.5   Graduates have gained practical professional experience – through a job or through in-service education.

4.6   Graduates are ready to serve as leaders and advance the field.

5   Graduates understand the importance of personal qualities conducive to professional success. The program fosters the development of professionals with such qualities.

Important examples of such qualities (this list will be updated occasionally):

Poise and professional appearance. Integrity. Authenticity. Interpersonal skills, be engaging and friendly. Empathy. Tolerance. Respectfulness. Assertiveness . Persistence. Self-motivation.	Creativity. Innovativeness. Resourcefulness. Flexibility / adaptability / versatility. Initiative. Being proactive. Enthusiasm. Passion. Energy. Positive thinking. Interest in learning / intellectual curiosity	Ability to work with others / team member. Ability to follow rules and procedures, willingness "to serve as private before becoming a general" Dependability. Assumes responsibility. Ability to work beyond job boundaries.

LIS Program Learning Goals and Objectives. Very Detailed List for UBLIS 571

P1	**Graduates understand the foundations of library and information studies.** The nature of information, its historical roots as well as its generation, organization, and dissemination to and use by individuals, organizations, and society. (part of ALA 1)	
&P1.1	Graduates understand the nature of information and its role in learning, research and scholarship, business, society, and culture. RT P1.5 and P1.6, NT P2.3.0,1#	571-L2.1
P1.1.1#	Graduates understand the characteristics and facets of different types of knowledge	571-L2.1
P1.1.2#	Graduates understand findings from cognitive psychology on the way people form and deal with concepts	571-L2.1
P2	**Graduates have the domain knowledge and skills required to carry out information functions.** Including information needs assessment, collection management, knowledge organization, information technology, user services, and pedagogy and information literacy instruction.	
&P2.0^	**Graduates have a broad understanding of information systems and how they function**	
P2.0.1^	Graduates are able to analyze, critique, and design information systems and there components, including tools and interfaces they provide. Graduates are able and motivated to take the initiative and make suggestions to the designers and operators of information systems. NT P2.1.5	571-L3.1 571-L7.2 571-A5 571-A8
P2.0.2^	Graduates know and understand the functional components of an information system. Graduates are able to use this framework to analyze, critique, and design or improve an information system, such as a library. Includes drawing specific implications on the design and operation of specific functions in an information system. NT P2.1.0, P2.5.2,5.1	571-L3.1 571-A5
P2.0.2,1^	Graduates are able to use this framework to integrate the subject matter from this and other courses.	571-L3.1
P2.0.3^	Graduates have an appreciation for the wide variety of information systems that exist, including expert systems RT P1.6, P4.1	571-L1.1 571-L1.2 571-A1 571-L3.1
P2.0.3,1^	Graduates are able to characterize an information system or a job in an information system using a number of facets or dimensions.	571-L1.1
P2.0.4^	Graduates appreciate how a system that can process and visualize data in sophisticated ways − from statistical analysis to machine learning / data mining to drawing logical inferences (reasoning) − can save a user considerable time and improve problem solving and decision making. NT P2.3.0,3	571
P2.0.5^	Graduates understand the objectives of information systems and associated performance measures. They are aware both of the difficulties of defining objectives and measures and of the importance of having clearly defined objectives and measures. BT P3.1.2, NT P2.5.2,2	571-L3.2 571-L14Q8

P2.0.5,1^	Graduates are able to apply these objectives and measures to
	• design, evaluation, planning, and monitoring operations;
	• communicating requirements to systems analysts
	• the evaluation of an information system as a whole and the analysis of the contributions of individual information system components;
	• the selection of information systems (reference tools, databases, search engines, library software etc.) for acquisition (including training for use);
	• the conduct of individual searches, including
	  • the specification of individual user/search requirements;
	  • the selection of an information system (database and search system) that can be expected to meet these requirements;
	  • the determination of optimal search effort (resources to be allocated to the search);
	  • the evaluation of search results and determining when to stop searching.
	BT P3.1.2, NT P2.5.2,2
		571-L3.2

P2.1	**Graduates are able to analyze information needs and to design, promote, and assess information services.** (RT P2.5, P3.1 Management, esp. P3.1.2,3 Systems analysis)	571
P2.1.0^	Graduates are inspired to be proactive in finding out about information needs and take an active role in discerning information needs	571-L3.1 571-L14Q9
P2.1.0,1^	Graduates are inspired to be proactive in finding out about information needs.	571-L3.1
P2.1.0,2^	Graduates understand the importance of determining requirements without being hemmed in by constraints of present systems or present technology	571-L3.1
P2.1.0,3^	Graduates are inspired to play an assertive professional role in helping users determine their true information needs	571-L3.1
P2.1.0,4^	Graduates appreciate the need for understanding the relevance criteria of a specific user in a particular situation for conducting a good search	571-L3.1 571-L3.2
&P2.1.3	Graduates are able to analyze and understand diverse users, their backgrounds, goals, problems, and tasks and the resulting information needs and are able to assess and evaluate information services and their outcomes.	571-L3.2 571-L14Q9 571-L14Q13
P2.1.3,1	Graduates are able to learn the structure, issues, and vocabulary of specific disciplines and application domains as, required.	
&P2.1.5	Graduates are able to design information services to meet a diversity of user needs, user communities, and user preferences. (>ALA 5F)	571-L7.2
P2.2	**Graduates are able to manage user-oriented collections of information resources and access, i.e. user-driven collection development and content management.** (>ALA 2)	
P2.2.2	Graduates are able to develop and maintain collections of informational, educational, and entertainment resources in a variety of formats that reflect the developmental, cultural, social, linguistic, professional, and technical needs of the users or organization to be served. This includes collecting and managing content created by the community and assistance in creating that content. (=ALA 2C)	
P2.2.2,2	Graduates evaluate and select print, non-print, and digital resources using professional selection tools and evaluation criteria to develop and manage a quality collection designed to meet the diverse curricular, personal, and professional needs of all to be served. = P2.5.2,3 (=AASL2010 2.1)	

&P2.2.2,2.1^	Graduates understand document functions and text types	571-L5.2a
P2.2.2,2.1.1^	Graduates understand the functions of documents and are able to discern which function a user requires	571-L5.2a
P2.2.2,2.1.2^	Graduates are aware of the different types of text and the communication purposes they serve	571-L5.2a
P2.2.2,2.2	Graduates understand principles of and gain a feel for good document design – document structure and presentation where the internal logical/conceptual structure drives the external form / is conveyed well through the external form.. Graduates understand the importance of good document design for the efficient transmission of information, both for human understanding and for machine processing. RT P2.3.1, P2.3.1,4	571-L5.2a-571-L6.1b 571-L1.1 – 571-L2.2 571-L4.2
P2.2.2,2.3	Graduates are able to apply understanding of information structure and principles of document design and text structure to the analysis, critique, assessment and evaluation of information and its design in all forms (RT P2.5.2,5)	571-L2.1 571-L5.2a-b
P2.2.2,2.3.1	Graduates are able to assess quality and usability of information in all forms for collection development.	571-L5.2a-b
P2.2.2,2.3.2	Graduates are able to match information in all forms to user characteristics and needs. XXX in P2.5 also	571-L5.2a-b

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&P2.3	**Graduates understand and are able to apply principles of knowledge organization for a wide range of applications, from organizing a collection to expert searching to support for learning.** (=ALA 3)	571
P2.3.0	Graduates understand the importance of knowledge organization in the field	571
P2.3.0,1#	Graduates have a sense of the pervasive applications of organization of knowledge concepts and principles	571-L1.1
P2.3.0,2#-	Graduates have an idea of Organization of Knowledge concepts and skills that are needed in practice BT P4.1.1	571-L1.1
P2.3.0,3#	Graduates appreciate how a system that can draw logical inferences (reason) can save a user considerable time and improve problem solving and decision making.. BT P2.0.3	
P2.3.1	Graduates understand the principles of organization / representation/ modeling of data / information / knowledge and are able to apply this understanding to user-oriented system design, information architecture, information design, document design, instructional design, and user services. RT P2.4.2,1 (>ALA 3A)	571
P2.3.1,0	Graduates understand the importance of information structure / knowledge representation as the heart of an information system RT P2.3.4	571-L1.2
P2.3.1,0.1#	Graduates understand how data need to be structured to allow automatic reasoning	571-L1.2
P2.3.1,1#	Graduates understand and are able to apply specific approaches to the organization / representation/ modeling of data / information / knowledge	571-L1.2 571-L2.2
P2.3.1,1.1#	Graduates understand and are able to apply the entity-relationship (E-R) approach to the organization / representation/ modeling of data / information / knowledge [Have a first idea of the entity-relationship approach to knowledge representation, 571-L1.2.]	571-L1.2 571-A1 571-L4.1 571-L4.2
P2.3.1,1.1.1#	Graduates understand a general model of information retrieval based on the entity-relationship approach. Graduate are able to use this general model to • recognize common principles across types of information systems and develop an overall vision of retrieval possibilities • analyze specific systems and information retrieval operations in terms of this general model. • use existing systems in new and imaginative ways, in particular, to use several different systems in synergistic ways; = P2.3.2,1 • design new systems with increased power, for example to search for Linked Open Data on the Web	571-L1.2 571-A1 571-L4.1
P2.3.1,1.1.2#	Graduates understand linked (open) data (LOD)	571-L4.1, 571-L4.2
P2.3.1,1.1.3#	Graduates have a general idea of RDF (Resource Description Framework), its use for expressing and implementing metadata schemas, and its extended use for expressing for any data stored in triples expressing binary relationships (Linked [Open] Data).	571-L7.1b
P2.3.1,1.1.4#	Graduates are able to construct a conceptual data schema for a given information system BT P2.3.4,2	571-L4.2 571-A6 571-L14Q6 571-L14Q13

P2.3.1,1.1.4,1#	Graduates are able to identify entity types that reflect only intrinsic properties and not relationships to other entities	571-L4.2 571-A6
P2.3.1,1.1.4,2#	Graduates are able to identify relationship types	571-L4.2 571-A6
P2.3.1,1.1.4,.3#	Graduates are able to find easy-to-understand terms for entity types and relationship types	571-L4.2 571-A6
P2.3.1,1.2#	Graduates have an understanding of frames	571-L2.2
P2.3.1,1.2.1#	Graduates can see how frames are useful to help learners acquire and organize knowledge. RT P2.6	571-L2.2
P2.3.1,2#	Graduates understand different mechanisms of knowledge processing	571-L2.2
P2.3.1,2.1#	Graduates understand the principle of hierarchical inheritance and are able to apply it to achieve more compact internal storage – in the computer and in the mind – and more compact and more easily grasped external representation.	571-L2.2 571-A4 571-L5.1 571-L7.3Q1 571-L14Q3
P2.3.1,3#	Graduates understand the relationship between information structure/representation and usability	571
P2.3.1,4#	Graduates are able to apply understanding of information structure and principles of document design and text structure to information presentation, including the creation of good documents of all kinds (such as websites). Graduates understand the principles of good document design: developing a good conceptual structure for a body of knowledge and representing that structure for human understanding and for machine processing. (RT P2.2.2,2.2; P2.5.2,3)	571-L2.1 571-L5.2a-L6.1b 571-L14Q2
P2.3.1,5	Graduates understand specific issues in document structure and be able to apply this understanding to document analysis and design, including text processing techniques.	571-L5.2b-571-L6.1b
P2.3.1,5.1#	Graduates understand the importance of document templates that codify document structure	571-L5.2b
P2.3.1,5.2#	Graduates understand document type / document template systems with hierarchy and hierarchical inheritance	571-L5.2b
P2.3.1,5.3#	Graduates are able to design a document template or template system at the conceptual level so it can be implemented by the IT department.	571-L5.2b 571-L7.3Q1
P2.3.1,5.4#	Graduates understand the principles of markup languages (HTML, specialized markup languages defined using XML) and markup / template definition languages (XML) and their importance for the implementation of good document design	571-L6.1a
P2.3.1,5.5#	Graduates understand information reuse and repurposing: a single properly structured internal document can, through transformation, give rise to many external and internal representations of all or selected content.	571-L6.1a
P2.3.1,5.6#	Graduates are able to recognize a situation where information reuse and repurposing would be useful and suggest a solution in general terms so it can be implemented by the IT department.	571-L6.1a

P2.3.1,5.7#	Graduates understand the importance of noun phrases as carriers of meaning in English	571-L6.1b 571-A7
P2.3.1,5.8#	Graduates understand the characteristics of context that determine the meaning of an ambiguous word and how these characteristics can be used for automatic word sense disambiguation (WSD).	571-L6.1b 571-A7
P2.3.1,5.9#	Graduates understand text coherence and cohesion and their role in text understanding by people and by computer programs. RT P2.3.3,1	571-L6.1b
P2.3.1,5.9.1#	Graduates understand how the idea of structuring information in frames or in a semantic network applies to discerning the structure of text.	571-L6.1b
P2.3.1,5.9.2#	Graduates understand the problems of anaphoric reference and co-reference and their impact on information retrieval, esp. proximity searching, and information extraction.	571-L6.1b 571-A7
P2.3.1,5.10	Graduates understand patterns used in text to represent relationships and how such patterns can be used for information extraction. RT P2.3.3,1	571-L6.1b
P2.3.1,5.11#	Graduates understand information extraction into frames.	571-L6.1b
P2.3.1,6#	Graduates are able to analyze and select or design the input formats and output formats used to interact with an information system: • input formats that make data entry complete, error-free, and easy; • output formats (for reports, such as recurring bibliographies, or the display of search results) that contain all the information needed (and no more) in an easy-to-read form	571-L4.2
P2.3.2	Graduates understand the basics of search algorithms, including ranked retrieval, and are able to apply that understanding in searching. RT P2.5.2,1.5	571
P2.3.2,1#	Graduates are able to combine different kinds of data to find an answer (inference, chained searches) (BT P2.5.2,1	571-L1.2 571-L2.2 571-L4.1 571-L7.3Q3 571-L14Q6
P2.3.3	Graduates are aware of advanced knowledge organization and processing techniques and their potential for improving services to users. Examples are: Inferencing techniques and linguistic techniques as used in information retrieval, information extraction, etc, and data mining.	571
P2.3.3,1#	Graduates have a general understanding of prevalent document analysis methods, including word sense disambiguation (WSD). Be aware of the many useful applications of document analysis in dealing with vast quantities of text, including automatic indexing for information retrieval, automatic abstracting and summarization, information extraction, and automated translation. Graduate are able to recognize situations where information extraction and other methods of document analysis would be useful, to suggest the use of appropriate software, and to participate in the selection of such software. RT P2.3.1,5.7 – 11 (a list of methods can be found there)	571-L6.1b 571-L7.3Q5
P2.3.3,1.1#	Graduates have some idea how automatic syntactic parsing (sentence diagraming) and semantic parsing work (For advanced study)	571-L6.1b

P2.3.4^	Graduates are able to select or create the framework for organizing a collection of data / information / knowledge, either selecting suitable metadata schemes and knowledge organization systems or creating or adapting schemes for the specific collection and user purposes. (>ALA 3C) [Graduates are able to analyze or design the conceptual data schema of an information system. 571-A1, 571-L4.2] RT P2.3.1	571 571-A1 571-L4.2
P2.3.4,1#	Graduates are able to analyze the knowledge structure of an existing information system and apply the results to • judging the adequacy of this schema with respect to the queries to be answered • using the knowledge of the schema to exploit fully the possibilities of obtaining answers from the information system RT P2.5.2,1	571-L2.2 571-L4.2
P2.3.4,2#	Graduates are able to select or design the knowledge structure for a new info. system Specifically, graduates are able to select or design a conceptual data schema for an information system based on user requirements.	571-L2.2 571-L4.2 571-L7.3Q2 571-L14Q1
P2.3.5	Graduates are able to apply schemes of organizing / representing / modeling of data/ information/ knowledge – metadata, cataloging, classification, ontology, and vocabulary standards – in cataloging, indexing, and metadata creation, and searching and to deploy automated and computer-assisted metadata creation tools. (>ALA 3C)	571
P2.3.5,1	Graduates understand the nature and importance of metadata and metadata creation (cataloging).	571-L6.2a
P2.3.5,1.1	Graduates understand the use of metadata for finding, interpreting, and using any kind of data source (in some interpretations: any kind of object).	571-L6.2a
P2.3.5,1.2	Graduates understand the use of metadata for finding, interpreting, and using any kind of data source (in some interpretations: any kind of object) Be aware of the range of metadata schemas for various types of entities, with the MARC format and RDA being one example, and are able to locate and use an appropriate metadata schema for cataloging outside the scope of MARC and RDA	571-L6.2a
P2.3.5,1.3	Graduates know to reuse existing cataloging data / metadata whenever possible, know when to amend such metadata to meet local user needs, and know how to locate and use resources for sharing metadata.	571-L6.2a 571-L7.2
P2.3.6#	Graduates understand the application of general information structure principles to the descriptive cataloging of documents and other entities. Put differently Graduates understand the fundamental problems of bibliographic control as an application of general principles of Organization of Information	571-L6.2b
P2.3.6,1#	Graduates understand fundamental issues in bibliographic control	571-L6.2b
P2.3.6,1.1#	Graduates understand the problems of defining "document" and of defining the relationships between several versions of a document	571-L6.2b
P2.3.6,1.2#	Graduates are able to apply this understanding to the analysis, critique, and design of cataloging codes.	571-L6.2b 571-L6.2c
P2.3.6,1.3#	Graduates understand the complexities in determining the useful entries (access points) for a document	571-L7.1a 571-A9

P2.3.6,1.4#	Graduates are sufficiently familiar with AACR2 /**RDA** rules for entry to find the rule that applies to a given situation	571-A9
P2.3.6,1.5#	Graduates understand that there are multiple solutions to problems of bibliographic description and are aware of the variety of codes for bibliographic description.	571-L6.2b-c
P2.3.6,2#	Graduates are able to catalog consulting the record format (such as MARC, but also others) and the cataloging rules (such as AACR2 or **RDA**, but also others) used and know their way around appropriate sources (such as Cataloger's desktop) to find the needed detail	571-L6.2c 571-L7.2 571-A8
P2.3.6,2,1#	Graduates are familiar with the MARC record format	571-A3 571-L4.2
P2.3.6,3#	Graduates are able to exploit knowledge of catalog structure for searching., especially the record format (such as MARC) and the cataloging rules (such as AACR2 or RDA, but also others) used %%	571-A3
P2.3.7#	Graduates understand the application of general information structure principles to the subject cataloging/indexing/coding of documents and other entities Graduates understand the issues in creating and using a good classification / index language / coding scheme This is a general heading encompassing P2.3.8 and P2.3.9	571
P2.3.8#	Graduates understand the problems and principles of vocabulary control / authority control and are able to apply these principles to indexing and searching	571-L8.1 571-L8.2a
P2.3.8,1#	Graduates understand the retrieval and communication problems caused by variety and ambiguity in language – synonymy, homonymy, polysemy – including any kind of names, such as names of organizations.	571-L8.1 571-L8.2a
P2.3.8,2#	Graduates understand and are able to apply vocabulary control to remedy these problems, either through using a controlled vocabulary in indexing or through query term expansion in searching. RT P2.5.2,1.3.3	571-A7 571-A10 571-L8.1 571-L8.2a 571-L14Q5
P2.3.8,3#	Graduates understand the structure of a thesaurus with its synonym-homonym structure (all terms), classificatory structure (concepts expressed by preferred terms), index language (concepts and corresponding preferred terms selected as subject descriptors), and lead-in vocabulary (all terms that are not subject descriptors).	571-L8.1 571-L8.2a
P2.3.9#	Graduates understand the principles of classification and indexing and be able to apply these principles for the benefit of users	571-L8.1+
P2.3.9,1#	Graduates understand the pervasive role of classification throughout the human endeavor.	571-L2.1 571-L2.2 571-L8.1+
P2.3.9,2#	Graduates understand the functions of classification (more broadly, Knowledge Organization Systems, KOS) for a wide variety of tasks in a wide variety of systems.	571-L8.1 571-L8.2b 571-L10.2a+
P2.3.9,2.1#	Graduates understand the use of classification to support learning.	571-L8.2b
P2.3.9,2.2#	Graduates understand the use of classification to help users get oriented in a subject and clarify their information needs.	571-L8.2b

P2.3.9,2.3#	Graduates understand the principle of request-oriented indexing (user-centered indexing) and the fundamental role of the index language to communicate users' interests to the indexer..	571-L8.2b 571-A11 571-L14Q9
P2.3.9,2.4#	Graduate are able to make intelligent decisions about the type of index language, indexing, and query formulation to be used in a given IR system, considering costs and benefits.	571-L8.2b 571-L14Q8
P2.3.9,2.5#	Graduate are able to recognize search requests that are difficult to handle in a system that does not use request-oriented indexing and be able to compensate, as far as possible, through creative pursuit of different avenues for the search.	571-L8.2b
P2.3.9,3#	Graduates understand the principles of the structure of subject classification, in particular facet organization and hierarchy and of methods for presenting this structure, and be able to apply these principles to the analysis of existing schemes and to indexing and query formulation.	571-A2 571-Part 4 571-A12 571-A13.1-4 L14Q1
P2.3.9,3.1#	Graduates understand the nature of hierarchical relationships among concepts.	571-L8.1 571-L9.1 571-A12.2
P2.3.9,3.2#	Graduates understand the principle of concept componentiality: Elemental concepts can be combined into compound concepts and compound concepts can be analyzed (often non-obviously) into their elemental components resulting in a concept formula (semantic factoring, facet analysis)	571-L8.1 571-L9.1 571-A11 571-A12.1
P2.3.9,3.3#	Graduate are able to use the entity-relationship approach, specifically facet analysis, to discern the conceptual structure of a subject domain. Graduate are able to discern the facet structure of a subject domain. (There are facets everywhere.)	571-L8.1 571-L9.1 571-A11 571-A12 571-L14Q1
P2.3.9,3.3.1#	Graduates understand the discernment of abstract concepts that apply across subject disciplines through semantic factoring.	571-L9.1
P2.3.9,3.4#	Graduates understand inclusive (hierarchically expanded) searching and be able apply inclusive searching in any system.	571-A2 571-L9.2 571-L14Q4
P2.3.9,3.5#	Graduates understand how the relationship between two compound concepts can be inferred by comparing the concept formulas. Graduates understand the complex hierarchies that result from combining hierarchically structured facets. Graduates understand compound concepts as nodes in a semantic network. Graduate are able to apply this understanding to broadening or narrowing query formulations and to the analysis of classification systems such as DDC, LCC, and subject heading systems, such as LCSH.	571-L10.1 571-A12.3 571-L12.1
P2.3.9,3.6#	Graduates understand of postcombination and precombination - more generally, the degree of precombination — and how they relate to the retrieval mechanism used. Graduates understand the nature of precombined descriptors as new nodes in a semantic network	571-L12.1 571-L14Q14
P2.3.9,3.7#	Graduates understand the effect of precombination on index language structure and searching and are able to apply this understanding to the analysis of classification schemes such as DDC and LCC and improved searching with such schemes.	571-L12.1

P2.3.9,3.8#	Graduate are able to match the index language structure to the database organization and search mechanism available.	571-L12.1
P2.3.9,3.9#	Graduates understand the access mechanisms that help a user find the proper descriptors in a large classification scheme with many precombined descriptors, in particular cross-references and a descriptor-find index.	571-L12.1 571-L14Q7
P2.3.9,3.10	Graduates understand principles of meaningful arrangement of search results	571-L12.1 571-L14Q10 571-L14Q12
P2.3.9,4#	Know and understand actual schemes. Be cognizant of the wide range of different types of classification schemes and other Knowledge Organization Systems (KOS) and their many uses. Grasp the structure of these schemes by applying the general conceptual framework developed earlier in the course to their analysis.	571-L8.1 571-L10.2a 571-L10.2b 571-L11.1 571-L11.2 571-L12.2 571-L13.1 571-L13.2a 571-A13.1-4
P2.3.9,4.1#	Be acquainted with major KOS used on the Web or in American libraries, such as Yahoo (or DMOZ) Classification, Dewey Decimal Classification, Library of Congress Classification, Library of Congress Subject Headings ERIC Thesaurus	571-L10.2a 571-L10.2b 571-L11.1 571-L11.2 571-L13.2a
P2.3.9,4.2#	Have started to learn to use some KOS used in American libraries for cataloging (indexing) and query formulation for searching.	571-L10.2a 571-L10.2b 571-L11.1 571-L11.2 571-L13.2a
P2.3.9,4.3#	Be cognizant of the wide range of different types of classification schemes and other Knowledge Organization Systems (KOS) and their many uses. Be acquainted with some important example KOS.	571-L13.1
P2.3.9,5#	Graduates understand indexing characteristics and their effect on system performance and be able to apply this understanding to the analysis and design of databases and to database selection and query formulation.	571-L13.2b 571-L14Q4 571-L14Q5 571-L14Q8
P2.3.9,5.1#	Graduates understand the concepts of exhaustivity and specificity of indexing and their effect on searching.	571-L13.2b 571-L14Q11 571-L14Q14
P2.3.9,5.2#	Graduate are able to ascertain the exhaustivity and specificity of indexing in a given system and apply this knowledge to appropriate query formulation.	571-L13.2b
P2.3.9,5.3#	Graduates understand the concepts of weights in indexing and query formulation.	571-L13.2b 571-L14Q11
P2.3.9,5.4#	Graduate are able to apply indexing weights in query formulation (including analogous techniques in free-text searching).	571-L13.2b

| P2.3.9,5.5# | Graduate are able to determine the proper levels of exhaustivity and specificity of indexing for a new IR system based on user requirements | 571-L13.2b |
| P2.3.9,6# | Graduate are able to extend classification and indexing principles to entity types other than Subject, for example to a hierarchy of organizations and organizational units | 571-L8.1 |

P2.4	**Graduates have the technological knowledge and skills needed for carrying out information functions.** They understand the potential and the uses of technology by individuals and organizations. They are able to apply technology skills in the design and implementation of simple systems, such as websites, simple databases, arrangement of small library spaces, and in the use of complex systems. Armed with a knowledge of what is possible they are able to articulate user requirements to computer system analysts and programmers, architects, and other technology specialists, and ensure that systems as delivered meet these requirements. (ALA 4, S2.3.3)	
P2.4.2	Graduates are familiar with fundamental concepts, techniques, and issues of information, communication, assistive/adaptive, and related technologies, including principles of human-computer interaction and universal design. (ALA 4A)	
&P2.4.2,1	Graduates understand basic principles of data structures for data storage, access, and search, of algorithms, and of computer programming. NT P2.5.2,1.5, RT P2.3.1, RT P2.3.2	571-L5.1
P2.4.2,1.1#	Graduates understand how a given data structure supports answering questions through retrieval and inference, especially how the tables in a database can be used together to answer questions, and how indexes help. RT P2.5.2,1, NT2.5.2,1.5	571-L5.1
P2.4.2,1.2#	Graduates are able to analyze the storage structures (tables, record formats) of an information system and design simple storage structures, including the use of hierarchical inheritance.	571-L5.1
P2.4.2,1.3#	Graduates are able to design simple data structures for access (for example, indexes)	571-L5.1
P2.5	**Graduates understand and are able to apply the principles of information seeking and of reference and user services in different modes of communication (face-to-face, telephone, computer communication) for users of all ages and groups, including those with diverse styles of information use and diverse physical and intellectual abilities and needs. Graduates understand and are able to apply a wide range of advanced search techniques.** (=ALA 5, 5A)	
&P2.5.2	Graduates are able to select diverse information sources for the question at hand and to retrieve, evaluate, interpret, and synthesize the information found, tailored to the specific needs and background of users of all ages and groups. (=ALA 5B)	571
P2.5.2,1P	Graduates are able to conduct good searches that are responsive to user needs NT P2.3.2,1, RT P2.3.2, P2.3.4,1	571
P2.5.2,1.1#	Graduates understand and are able to apply the basic principle of searching: use all available evidence to predict the degree of relevance of some entity	571-L5.1
P2.5.2,1.2#	Graduates understand query-based search and navigation as two approaches to search and are able to use these, alone or in combination, to best advantage for the search at hand	571-A1 571-4.1
P2.5.2,1.3	Graduates understand search algorithms: Boolean retrieval and ranked retrieval and the role of synonym expansion and hierarchic expansion in both and are able to apply this knowledge in systems that support inclusive searching as well as in systems that do not, including free-text searching	571-A2 571-L5.1 571-L14Q5
P2.5.2,1.3.1	Graduates are able to formulate Boolean queries	571-A2 571-L5.1
P2.5.2,1.3.2	Graduates understand the role of hierarchy in searching and be able to use hierarchy in searching.	571-A2 571-L5.1

P2.5.2,1.3.3	Graduates understand problems of free-text searching and are able to formulate free-text (such as Google) queries enhanced through synonym and hierarchic expansion. RT P2.3.8,2#	571-A2 571-L5.1 571-A10 571-L8.1
P2.5.2,1.4	Graduates understand and are able to use advanced search techniques used by expert searchers, such as fielded searching, truncation, phrase searching, and using knowledge structures, as in synonym and hierarchic expansion. {searching skills}	571-L5.1
P2.5.2,1.5	Graduates are able to evaluate and critique search interfaces	

P2.5.2,2	Graduates understand retrieval performance measures and are able to apply these measures to the tasks specified under Objective P2.0.4, especially
	• the conduct of individual searches, including
	   • the specification of individual user/search requirements;
	   • the selection of an information system (database and search system) that can be expected to meet these requirements;
	   • the determination of optimal search effort (resources to be allocated to the search);
	   • the evaluation of search results and determining when to stop searching.
	BT P2.0.4
		571-L3.2

P2.5.2,3^	Graduates are able to assess and evaluate information = P2.2.2,2	571
P2.5.2,3.1^	Graduate are able to match documents to user characteristics and needs. BT P2.2.2,2.3	571-L5.2a-b
P2.5.2,4^	Graduates are able to analyze, interpret and synthesize information	
P2.5.2,5	Graduates are familiar with and able to apply methods, techniques, and tools for information analysis and presentation, including data visualization. See also P3.3 and P3.5	
&P2.5.2,5.1	Graduates understand the added value of post-search information analysis by software and/or an information professional.	571-L3.1

P2.6	**Graduates understand and are able to apply principles of pedagogy, including learning theories, instructional design, instructional methods, lesson planning, and assessment methods. This will allow them to function as effective teachers, instructors, mentors, and information counselors and to design instruction generally. In particular they are able to promote information literacy / information competence / information fluency, including visual literacy and numerical and statistical literacy.** (Information literacy encompasses concepts, processes, and skills used in seeking, evaluating, using, and producing data/ information/ knowledge, including competence in social media.) (>ALA 5D, 7C, 7D)	
P2.6.1	Graduates have knowledge of learners and learning. (=AASL2010 1.1)	
P2.6.1,2	Graduates assess learner needs and design instruction that reflects educational best practice. (=AASL2010 1.1.2)	
&P2.6.1,2.1P^	Graduates are able to apply understanding of types of knowledge and of concept formation and use to designing learning experiences. BT P1.1	571-L2.1

P3	**Graduates have general knowledge and skills needed across professions.** Skills in management, communication and collaboration, research, and critical thinking.	
P3.1	**Graduates understand leadership principles and are able to successfully lead and manage information agencies, including libraries.** (=ALA 8) (See also P2.1.5, =ALA8C	
&P3.1.4	Graduates are able to apply systems analysis to organizations and managerial problems	571-A5
P4	**Graduates understand the nature of the library and information profession and the roles, responsibilities, and values of library and information professionals and are prepared to put professional values into practice.** (ALA 1, 1A)	
&P4.1	**Students understand career paths available in the information profession, are motivated to take another look at their career choices, and are able to discern the career path(s) best suited to their abilities, strengths, and interests, and design a plan of study that focuses on the objectives and competencies that support this (these) career path(s).** Elaboration# Students/graduates have an appreciation for the wide variety of information tasks that an education in information studies enables them to undertake and the wide variety of information environments they can work in. Put differently, students/graduates should gain a sense of the breadth of functions and the breadth of environments they can work in, the breadth of careers RT P1.6, P2.0	571-L1.1
P4.1.1	Students / graduates understand the skills and competencies needed for the various careers in the information field. NT L2.3.0,2#	
P4.1.2	Graduates are able to develop personal professional development plan including a plan of how continue to increase their knowledge and skills as library and information professionals	
P4.3	**Graduates understand the values of the profession and their importance and are prepared to put these values into practice.**	
P4.3.3	Graduates will demonstrate understanding of, respect for, and sensitivity to the diversity in society, including age, physical and mental ability, sexual orientation, race, ethnicity, language, culture, and economic means. {cultural competency} (See also P4.2.2,) (ALA S2.3.4)	
P4.3.4	Graduates are equipped and motivated to promote equity of access to information services for all members of society, including groups that are disadvantaged or marginalized, such as people with disabilities, people with limited literacy, the poor, and people who are discriminated against for whatever reason. (Also listed in knowledge about serving users. P2.5.1,1.)	
P4.4	**Graduates are motivated to be reflective professionals: Reflect on their actions and be open to critique and suggestions from all sides.**	
P4.5	**Graduates have gained practical professional experience – though a job or through in-service education.**	
&P4.6	**Graduates are equipped and motivated to serve as leaders and advance the field.** (ALA S2.3.6)	571 gen 571-L7.2

P5	**Graduates understand the importance of personal qualities conducive to professional success. The program fosters the development of professionals with these qualities.**	
&P5.9	Assertiveness. (ALA S2.3.1)	571-L7.2
&P5.16	Initiative	571-L7.2
P5.17	Being proactive.	571

Candidate objectives

Graduates are aware of methods for automatic classification 571-L14Q10

Graduates are able to transfer concepts from one context to another 571-L14Q11

LIS Program Learning Goals and Objectives. Very Detailed List. General

P1	**Graduates understand the foundations of library and information studies.** The nature of information, its historical roots as well as its generation, organization, and dissemination to and use by individuals, organizations, and society. (part of ALA 1)	
&P1.1	Graduates understand the nature of information and its role in learning, research and scholarship, business, society, and culture. RT P1.5 and P1.6, NT P2.3.0,1#	571-L2.1
P1.1.1#	Graduates understand the characteristics and facets of different types of knowledge	571-L2.1
P1.1.2#	Graduates understand findings from cognitive psychology on the way people form and deal with concepts	571-L2.1
P1.2	Graduates have a grounding in the history and development of the ways and means of communication (language and writing, information technologies) and their influence on the development of society and culture. (=ALA 1D)	
P1.3	Graduates have a grounding in the history and development of information agencies, including libraries, and their influence on the development of society and culture. (=ALA 1C)	
P1.3.1	Graduates are aware of forms of cultural memory (archives, museums…).	
P1.4	Graduates understand the national and international systems of information and communication and the diverse types of information agencies, including libraries, archives, museums, publishing industry, media, Internet, etc. (>ALA 1E	
P1.4.1	Graduates understand publishing as a business, published works as part of the market place and the economics of publication, and buying publications in a global context.	
P1.4.2	Graduates understand alternatives to traditional publishing, such as open access journals	
P1.5	Graduates understand the role of library and information services in a diverse global society, including the role of serving the needs of underserved groups. They are aware of national and international social, public, information, economic, and cultural policies, practices, and trends that interact with and influence the system of information and communication, including libraries. They understand the importance of these trends for the development of the partnerships and collaborations needed to make libraries vital parts of their communities. (>ALA 1F) (3.1.6 deals with developing such partnerships.) (ALA S1.2.8)	
P1.6	Graduates understand the role of library and information services in a rapidly changing technological society and are equipped to respond to the evolving needs. This means they are aware of such trends, are able to spot emerging trends, and have the concepts needed to adapt information systems and services in response to these trends. RT P2.0, P2.4., P4.1 (ALA S2.3.5) (ALA S1.2.9) See also 2.4	
P1.7	Graduates understand the legal framework within which information agencies, including libraries, operate, including laws relating to copyright, privacy, freedom of information, freedom of expression, equal rights (e.g., the Americans with Disabilities Act), and intellectual property. (=ALA 1G)	
P1.8	Graduates understand the importance of research to the advancement of the field's knowledge base and demonstrate an awareness of some of the central research findings and research literature of the field. (ALA =6B, S1.2.5)	

| P1.9 | Graduates understand the importance of contributions of library and information studies to other fields of knowledge. (=ALA S1.2.6) | |
| P1.10 | Graduates understand the importance of contributions of other fields of knowledge to library and information studies. Graduates are familiar with and are able to apply an evolving body of knowledge that reflects the findings of basic and applied research from such relevant fields. (=ALA S1.2.7, S2.3.2) | |

P2	**Graduates have the domain knowledge and skills required to carry out information functions.** Including information needs assessment, collection management, knowledge organization, information technology, user services, and pedagogy and information literacy instruction.	
&P2.0^	**Graduates have a broad understanding of information systems and how they function**	
P2.0.1^	Graduates are able to analyze, critique, and design information systems and there components, including tools and interfaces they provide. Graduates are able and motivated to take the initiative and make suggestions to the designers and operators of information systems. NT P2.1.5	571-L3.1 571-L7.2 571-A5 571-A8
P2.0.2^	Graduates know and understand the functional components of an information system. Graduates are able to use this framework to analyze, critique, and design or improve an information system, such as a library. Includes drawing specific implications on the design and operation of specific functions in an information system. NT P2.1.0, P2.5.2,5.1	571-L3.1 571-A5
P2.0.2,1^	Graduates are able to use this framework to integrate the subject matter from this and other courses.	571-L3.1
P2.0.3^	Graduates have an appreciation for the wide variety of information systems that exist, including expert systems RT P1.6, P4.1	571-L1.1 571-L1.2 571-A1 571-L3.1
P2.0.3,1^	Graduates are able to characterize an information system or a job in an information system using a number of facets or dimensions.	571-L1.1
P2.0.4^	Graduates appreciate how a system that can process and visualize data in sophisticated ways – from statistical analysis to machine learning / data mining to drawing logical inferences (reasoning) – can save a user considerable time and improve problem solving and decision making. NT P2.3.0,3	571
P2.0.5^	Graduates understand the objectives of information systems and associated performance measures. They are aware both of the difficulties of defining objectives and measures and of the importance of having clearly defined objectives and measures. BT P3.1.2, NT P2.5.2,2	571-L3.2 571-L14Q8

P2.0.5,1^	Graduates are able to apply these objectives and measures to
	• design, evaluation, planning, and monitoring operations;
	• communicating requirements to systems analysts
	• the evaluation of an information system as a whole and the analysis of the contributions of individual information system components;
	• the selection of information systems (reference tools, databases, search engines, library software etc.) for acquisition (including training for use);
	• the conduct of individual searches, including
	  • the specification of individual user/search requirements;
	  • the selection of an information system (database and search system) that can be expected to meet these requirements;
	  • the determination of optimal search effort (resources to be allocated to the search);
	  • the evaluation of search results and determining when to stop searching.
	BT P3.1.2, NT P2.5.2,2
		571-L3.2

P2.1	**Graduates are able to analyze information needs and to design, promote, and assess information services.** (RT P2.5, P3.1 Management, esp. P3.1.2,3 Systems analysis)	571
P2.1.0^	Graduates are inspired to be proactive in finding out about information needs and take an active role in discerning information needs	571-L3.1 571-L14Q9
P2.1.0,1^	Graduates are inspired to be proactive in finding out about information needs.	571-L3.1
P2.1.0,2^	Graduates understand the importance of determining requirements without being hemmed in by constraints of present systems or present technology	571-L3.1
P2.1.0,3^	Graduates are inspired to play an assertive professional role in helping users determine their true information needs	571-L3.1
P2.1.0,4^	Graduates appreciate the need for understanding the relevance criteria of a specific user in a particular situation for conducting a good search	571-L3.1 571-L3.2
P2.1.1	Graduates understand the role of the information agencies, including libraries, in the functioning of the communities or organizations they serve.	
P2.1.2	Graduates understand principles of information seeking and use behavior and are able to apply them to the design of information systems and services and to service to individual users.	
&P2.1.3	Graduates are able to analyze and understand diverse users, their backgrounds, goals, problems, and tasks and the resulting information needs and are able to assess and evaluate information services and their outcomes.	571-L3.2 571-L14Q9 571-L14Q13
P2.1.3,1	Graduates are able to learn the structure, issues, and vocabulary of specific disciplines and application domains as, required.	
P2.1.4	Graduates understand and are able to apply the principles and methods used to assess the impact of current and emerging situations or circumstances on the design and implementation of appropriate services or resource development. (ALA 5G)	
&P2.1.5	Graduates are able to design information services to meet a diversity of user needs, user communities, and user preferences. (>ALA 5F)	571-L7.2
P2.1.6	Graduates are able to promote and explain the use of information and information services for learning, problem solving, and entertainment to reach a wide range of specific audiences. Graduates understand and are able to apply principles of marketing. (ALA 5E)	
P2.1.6,1	Graduates promote reading. They use a variety of strategies to promote leisure reading and model personal enjoyment of reading in order to promote habits of creative expression and lifelong reading. (=AASL2010 2.2)	
P2.1.7	Graduates are able to assess and articulate the quality, outcomes, and impact of information services through systematic studies and anecdotal evidence. (See also P3.5 Research methods / methods of inquiry.) (=ALA 8C)	
P2.2	**Graduates are able to manage user-oriented collections of information resources and access, i.e. user-driven collection development and content management.** (>ALA 2)	
P2.2.1	Graduates understand the concept and issues related to the lifecycle of data / information / knowledge, from creation through various stages of use to disposition. (=ALA 2A)	

P2.2.2	Graduates are able to develop and maintain collections of informational, educational, and entertainment resources in a variety of formats that reflect the developmental, cultural, social, linguistic, professional, and technical needs of the users or organization to be served. This includes collecting and managing content created by the community and assistance in creating that content. (=ALA 2C)	
P2.2.2,1	Graduates are able to manage and carry out the acquisition and disposition of resources or access to resources such as licensing, including evaluation, selection, purchasing, processing, storing, and deselection. (ALA 2B)	
P2.2.2,2	Graduates evaluate and select print, non-print, and digital resources using professional selection tools and evaluation criteria to develop and manage a quality collection designed to meet the diverse curricular, personal, and professional needs of all to be served. = P2.5.2,3 (=AASL2010 2.1)	
&P2.2.2,2.1^	Graduates understand document functions and text types	571-L5.2a
P2.2.2,2.1.1^	Graduates understand the functions of documents and are able to discern which function a user requires	571-L5.2a
P2.2.2,2.1.2^	Graduates are aware of the different types of text and the communication purposes they serve	571-L5.2a
P2.2.2,2.2	Graduates understand principles of and gain a feel for good document design – document structure and presentation where the internal logical/conceptual structure drives the external form / is conveyed well through the external form.. Graduates understand the importance of good document design for the efficient transmission of information, both for human understanding and for machine processing. RT P2.3.1, P2.3.1,4	571-L5.2a-571-L6.1b 571-L1.1 – 571-L2.2 571-L4.2
P2.2.2,2.3	Graduates are able to apply understanding of information structure and principles of document design and text structure to the analysis, critique, assessment and evaluation of information and its design in all forms (RT P2.5.2,5)	571-L2.1 571-L5.2a-b
P2.2.2,2.3.1	Graduates are able to assess quality and usability of information in all forms for collection development.	571-L5.2a-b
P2.2.2,2.3.2	Graduates are able to match information in all forms to user characteristics and needs. XXX in P2.5 also	571-L5.2a-b
P2.2.2,3^	Graduates are familiar with a wide range of literature (as applicable: children's, young adult, adult, and professional literature) in multiple formats and languages to support, as applicable, reading for information, reading for pleasure, and reading for lifelong learning.	
P2.2.2,4^	Graduates are able to collect and manage content created by the community and provide encouragement, leadership, and assistance in creating such content, for example by encouraging an oral history project that preserves the unique cultural heritage of a community. (=ALA 2D)	
P2.2.2,5^	Graduates are able to manage and carry out the preservation and conservation of resources.	
P2.2.3	Graduates are able to implement systems and policies for flexible, open, equitable access to materials in a variety of formats (including print, non-print, and digital formats) and information services, overcoming physical, social, and intellectual barriers.	

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&P2.3	**Graduates understand and are able to apply principles of knowledge organization for a wide range of applications, from organizing a collection to expert searching to support for learning.** (=ALA 3)	571
P2.3.0	Graduates understand the importance of knowledge organization in the field	571
P2.3.0,1#	Graduates have a sense of the pervasive applications of organization of knowledge concepts and principles	571-L1.1
P2.3.0,2#-	Graduates have an idea of Organization of Knowledge concepts and skills that are needed in practice BT P4.1.1	571-L1.1
P2.3.0,3#	Graduates appreciate how a system that can draw logical inferences (reason) can save a user considerable time and improve problem solving and decision making.. BT P2.0.3	
P2.3.1	Graduates understand the principles of organization / representation/ modeling of data / information / knowledge and are able to apply this understanding to user-oriented system design, information architecture, information design, document design, instructional design, and user services. RT P2.4.2,1 (>ALA 3A)	571
P2.3.1,0	Graduates understand the importance of information structure / knowledge representation as the heart of an information system RT P2.3.4	571-L1.2
P2.3.1,0.1#	Graduates understand how data need to be structured to allow automatic reasoning	571-L1.2
P2.3.1,1#	Graduates understand and are able to apply specific approaches to the organization / representation/ modeling of data / information / knowledge	571-L1.2 571-L2.2
P2.3.1,1.1#	Graduates understand and are able to apply the entity-relationship (E-R) approach to the organization / representation/ modeling of data / information / knowledge [Have a first idea of the entity-relationship approach to knowledge representation, 571-L1.2.]	571-L1.2 571-A1 571-L4.1 571-L4.2
P2.3.1,1.1.1#	Graduates understand a general model of information retrieval based on the entity-relationship approach. Graduate are able to use this general model to • recognize common principles across types of information systems and develop an overall vision of retrieval possibilities • analyze specific systems and information retrieval operations in terms of this general model. • use existing systems in new and imaginative ways, in particular, to use several different systems in synergistic ways; = P2.3.2,1 • design new systems with increased power, for example to search for Linked Open Data on the Web	571-L1.2 571-A1 571-L4.1
P2.3.1,1.1.2#	Graduates understand linked (open) data (LOD)	571-L4.1, 571-L4.2
P2.3.1,1.1.3#	Graduates have a general idea of RDF (Resource Description Framework), its use for expressing and implementing metadata schemas, and its extended use for expressing for any data stored in triples expressing binary relationships (Linked [Open] Data).	571-L7.1b
P2.3.1,1.1.4#	Graduates are able to construct a conceptual data schema for a given information system BT P2.3.4,2	571-L4.2 571-A6 571-L14Q6 571-L14Q13

P2.3.1,1.1.4,1#	Graduates are able to identify entity types that reflect only intrinsic properties and not relationships to other entities	571-L4.2 571-A6
P2.3.1,1.1.4,2#	Graduates are able to identify relationship types	571-L4.2 571-A6
P2.3.1,1.1.4,.3#	Graduates are able to find easy-to-understand terms for entity types and relationship types	571-L4.2 571-A6
P2.3.1,1.2#	Graduates have an understanding of frames	571-L2.2
P2.3.1,1.2.1#	Graduates can see how frames are useful to help learners acquire and organize knowledge. RT P2.6	571-L2.2
P2.3.1,2#	Graduates understand different mechanisms of knowledge processing	571-L2.2
P2.3.1,2.1#	Graduates understand the principle of hierarchical inheritance and are able to apply it to achieve more compact internal storage – in the computer and in the mind – and more compact and more easily grasped external representation.	571-L2.2 571-A4 571-L5.1 571-L7.3Q1 571-L14Q3
P2.3.1,3#	Graduates understand the relationship between information structure/representation and usability	571
P2.3.1,4#	Graduates are able to apply understanding of information structure and principles of document design and text structure to information presentation, including the creation of good documents of all kinds (such as websites). Graduates understand the principles of good document design: developing a good conceptual structure for a body of knowledge and representing that structure for human understanding and for machine processing. (RT P2.2.2,2.2; P2.5.2,3)	571-L2.1 571-L5.2a-L6.1b 571-L14Q2
P2.3.1,5	Graduates understand specific issues in document structure and be able to apply this understanding to document analysis and design, including text processing techniques.	571-L5.2b-571-L6.1b
P2.3.1,5.1#	Graduates understand the importance of document templates that codify document structure	571-L5.2b
P2.3.1,5.2#	Graduates understand document type / document template systems with hierarchy and hierarchical inheritance	571-L5.2b
P2.3.1,5.3#	Graduates are able to design a document template or template system at the conceptual level so it can be implemented by the IT department.	571-L5.2b 571-L7.3Q1
P2.3.1,5.4#	Graduates understand the principles of markup languages (HTML, specialized markup languages defined using XML) and markup / template definition languages (XML) and their importance for the implementation of good document design	571-L6.1a
P2.3.1,5.5#	Graduates understand information reuse and repurposing: a single properly structured internal document can, through transformation, give rise to many external and internal representations of all or selected content.	571-L6.1a
P2.3.1,5.6#	Graduates are able to recognize a situation where information reuse and repurposing would be useful and suggest a solution in general terms so it can be implemented by the IT department.	571-L6.1a

P2.3.1,5.7#	Graduates understand the importance of noun phrases as carriers of meaning in English	571-L6.1b 571-A7
P2.3.1,5.8#	Graduates understand the characteristics of context that determine the meaning of an ambiguous word and how these characteristics can be used for automatic word sense disambiguation (WSD).	571-L6.1b 571-A7
P2.3.1,5.9#	Graduates understand text coherence and cohesion and their role in text understanding by people and by computer programs. RT P2.3.3,1	571-L6.1b
P2.3.1,5.9.1#	Graduates understand how the idea of structuring information in frames or in a semantic network applies to discerning the structure of text.	571-L6.1b
P2.3.1,5.9.2#	Graduates understand the problems of anaphoric reference and co-reference and their impact on information retrieval, esp. proximity searching, and information extraction.	571-L6.1b 571-A7
P2.3.1,5.10	Graduates understand patterns used in text to represent relationships and how such patterns can be used for information extraction. RT P2.3.3,1	571-L6.1b
P2.3.1,5.11#	Graduates understand information extraction into frames.	571-L6.1b
P2.3.1,6#	Graduates are able to analyze and select or design the input formats and output formats used to interact with an information system: • input formats that make data entry complete, error-free, and easy; • output formats (for reports, such as recurring bibliographies, or the display of search results) that contain all the information needed (and no more) in an easy-to-read form	571-L4.2
P2.3.2	Graduates understand the basics of search algorithms, including ranked retrieval, and are able to apply that understanding in searching. RT P2.5.2,1.5	571
P2.3.2,1#	Graduates are able to combine different kinds of data to find an answer (inference, chained searches) (BT P2.5.2,1	571-L1.2 571-L2.2 571-L4.1 571-L7.3Q3 571-L14Q6
P2.3.3	Graduates are aware of advanced knowledge organization and processing techniques and their potential for improving services to users. Examples are: Inferencing techniques and linguistic techniques as used in information retrieval, information extraction, etc, and data mining.	571
P2.3.3,1#	Graduates have a general understanding of prevalent document analysis methods, including word sense disambiguation (WSD). Be aware of the many useful applications of document analysis in dealing with vast quantities of text, including automatic indexing for information retrieval, automatic abstracting and summarization, information extraction, and automated translation. Graduate are able to recognize situations where information extraction and other methods of document analysis would be useful, to suggest the use of appropriate software, and to participate in the selection of such software. RT P2.3.1,5.7 – 11 (a list of methods can be found there)	571-L6.1b 571-L7.3Q5
P2.3.3,1.1#	Graduates have some idea how automatic syntactic parsing (sentence diagraming) and semantic parsing work (For advanced study)	571-L6.1b

P2.3.4^	Graduates are able to select or create the framework for organizing a collection of data / information / knowledge, either selecting suitable metadata schemes and knowledge organization systems or creating or adapting schemes for the specific collection and user purposes. (>ALA 3C) [Graduates are able to analyze or design the conceptual data schema of an information system. 571-A1, 571-L4.2] RT P2.3.1	571 571-A1 571-L4.2
P2.3.4,1#	Graduates are able to analyze the knowledge structure of an existing information system and apply the results to • judging the adequacy of this schema with respect to the queries to be answered • using the knowledge of the schema to exploit fully the possibilities of obtaining answers from the information system RT P2.5.2,1	571-L2.2 571-L4.2
P2.3.4,2#	Graduates are able to select or design the knowledge structure for a new info. system Specifically, graduates are able to select or design a conceptual data schema for an information system based on user requirements.	571-L2.2 571-L4.2 571-L7.3Q2 571-L14Q1
P2.3.5	Graduates are able to apply schemes of organizing / representing / modeling of data/ information/ knowledge – metadata, cataloging, classification, ontology, and vocabulary standards – in cataloging, indexing, and metadata creation, and searching and to deploy automated and computer-assisted metadata creation tools. (>ALA 3C)	571
P2.3.5,1	Graduates understand the nature and importance of metadata and metadata creation (cataloging).	571-L6.2a
P2.3.5,1.1	Graduates understand the use of metadata for finding, interpreting, and using any kind of data source (in some interpretations: any kind of object).	571-L6.2a
P2.3.5,1.2	Graduates understand the use of metadata for finding, interpreting, and using any kind of data source (in some interpretations: any kind of object) Be aware of the range of metadata schemas for various types of entities, with the MARC format and RDA being one example, and are able to locate and use an appropriate metadata schema for cataloging outside the scope of MARC and RDA	571-L6.2a
P2.3.5,1.3	Graduates know to reuse existing cataloging data / metadata whenever possible, know when to amend such metadata to meet local user needs, and know how to locate and use resources for sharing metadata.	571-L6.2a 571-L7.2
P2.3.6#	Graduates understand the application of general information structure principles to the descriptive cataloging of documents and other entities. Put differently Graduates understand the fundamental problems of bibliographic control as an application of general principles of Organization of Information	571-L6.2b

P2.3.6,1#	Graduates understand fundamental issues in bibliographic control	571-L6.2b
P2.3.6,1.1#	Graduates understand the problems of defining "document" and of defining the relationships between several versions of a document	571-L6.2b
P2.3.6,1.2#	Graduates are able to apply this understanding to the analysis, critique, and design of cataloging codes.	571-L6.2b 571-L6.2c
P2.3.6,1.3#	Graduates understand the complexities in determining the useful entries (access points) for a document	571-L7.1a 571-A9
P2.3.6,1.4#	Graduates are sufficiently familiar with AACR2 /**RDA** rules for entry to find the rule that applies to a given situation	571-A9
P2.3.6,1.5#	Graduates understand that there are multiple solutions to problems of bibliographic description and are aware of the variety of codes for bibliographic description.	571-L6.2b-c
P2.3.6,2#	Graduates are able to catalog consulting the record format (such as MARC, but also others) and the cataloging rules (such as AACR2 or **RDA**, but also others) used and know their way around appropriate sources (such as Cataloger's desktop) to find the needed detail	571-L6.2c 571-L7.2 571-A8
P2.3.6,2,1#	Graduates are familiar with the MARC record format	571-A3 571-L4.2
P2.3.6,3#	Graduates are able to exploit knowledge of catalog structure for searching., especially the record format (such as MARC) and the cataloging rules (such as AACR2 or RDA, but also others) used %%	571-A3
P2.3.7#	Graduates understand the application of general information structure principles to the subject cataloging/indexing/coding of documents and other entities Graduates understand the issues in creating and using a good classification / index language / coding scheme This is a general heading encompassing P2.3.8 and P2.3.9	571
P2.3.8#	Graduates understand the problems and principles of vocabulary control / authority control and are able to apply these principles to indexing and searching	571-L8.1 571-L8.2a
P2.3.8,1#	Graduates understand the retrieval and communication problems caused by variety and ambiguity in language – synonymy, homonymy, polysemy – including any kind of names, such as names of organizations.	571-L8.1 571-L8.2a
P2.3.8,2#	Graduates understand and are able to apply vocabulary control to remedy these problems, either through using a controlled vocabulary in indexing or through query term expansion in searching. RT P2.5.2,1.3.3	571-A7 571-A10 571-L8.1 571-L8.2a 571-L14Q5
P2.3.8,3#	Graduates understand the structure of a thesaurus with its synonym-homonym structure (all terms), classificatory structure (concepts expressed by preferred terms), index language (concepts and corresponding preferred terms selected as subject descriptors), and lead-in vocabulary (all terms that are not subject descriptors).	571-L8.1 571-L8.2a
P2.3.9#	Graduates understand the principles of classification and indexing and be able to apply these principles for the benefit of users	571-L8.1+

P2.3.9,1#	Graduates understand the pervasive role of classification throughout the human endeavor.	571-L2.1 571-L2.2 571-L8.1+
P2.3.9,2#	Graduates understand the functions of classification (more broadly, Knowledge Organization Systems, KOS) for a wide variety of tasks in a wide variety of systems.	571-L8.1 571-L8.2b 571-L10.2a+
P2.3.9,2.1#	Graduates understand the use of classification to support learning.	571-L8.2b
P2.3.9,2.2#	Graduates understand the use of classification to help users get oriented in a subject and clarify their information needs.	571-L8.2b
P2.3.9,2.3#	Graduates understand the principle of request-oriented indexing (user-centered indexing) and the fundamental role of the index language to communicate users' interests to the indexer..	571-L8.2b 571-A11 571-L14Q9
P2.3.9,2.4#	Graduate are able to make intelligent decisions about the type of index language, indexing, and query formulation to be used in a given IR system, considering costs and benefits.	571-L8.2b 571-L14Q8
P2.3.9,2.5#	Graduate are able to recognize search requests that are difficult to handle in a system that does not use request-oriented indexing and be able to compensate, as far as possible, through creative pursuit of different avenues for the search.	571-L8.2b
P2.3.9,3#	Graduates understand the principles of the structure of subject classification, in particular facet organization and hierarchy and of methods for presenting this structure, and be able to apply these principles to the analysis of existing schemes and to indexing and query formulation.	571-A2 571-Part 4 571-A12 571-A13.1-4 L14Q1
P2.3.9,3.1#	Graduates understand the nature of hierarchical relationships among concepts.	571-L8.1 571-L9.1 571-A12.2
P2.3.9,3.2#	Graduates understand the principle of concept componentiality: Elemental concepts can be combined into compound concepts and compound concepts can be analyzed (often non-obviously) into their elemental components resulting in a concept formula (semantic factoring, facet analysis)	571-L8.1 571-L9.1 571-A11 571-A12.1
P2.3.9,3.3#	Graduate are able to use the entity-relationship approach, specifically facet analysis, to discern the conceptual structure of a subject domain. Graduate are able to discern the facet structure of a subject domain. (There are facets everywhere.)	571-L8.1 571-L9.1 571-A11 571-A12 571-L14Q1
P2.3.9,3.3.1#	Graduates understand the discernment of abstract concepts that apply across subject disciplines through semantic factoring.	571-L9.1
P2.3.9,3.4#	Graduates understand inclusive (hierarchically expanded) searching and be able apply inclusive searching in any system.	571-A2 571-L9.2 571-L14Q4

P2.3.9,3.5#	Graduates understand how the relationship between two compound concepts can be inferred by comparing the concept formulas. Graduates understand the complex hierarchies that result from combining hierarchically structured facets. Graduates understand compound concepts as nodes in a semantic network. Graduate are able to apply this understanding to broadening or narrowing query formulations and to the analysis of classification systems such as DDC, LCC, and subject heading systems, such as LCSH.	571-L10.1 571-A12.3 571-L12.1
P2.3.9,3.6#	Graduates understand of postcombination and precombination - more generally, the degree of precombination — and how they relate to the retrieval mechanism used. Graduates understand the nature of precombined descriptors as new nodes in a semantic network	571-L12.1 571-L14Q14
P2.3.9,3.7#	Graduates understand the effect of precombination on index language structure and searching and are able to apply this understanding to the analysis of classification schemes such as DDC and LCC and improved searching with such schemes.	571-L12.1
P2.3.9,3.8#	Graduate are able to match the index language structure to the database organization and search mechanism available.	571-L12.1
P2.3.9,3.9#	Graduates understand the access mechanisms that help a user find the proper descriptors in a large classification scheme with many precombined descriptors, in particular cross-references and a descriptor-find index.	571-L12.1 571-L14Q7
P2.3.9,3.10	Graduates understand principles of meaningful arrangement of search results	571-L12.1 571-L14Q10 571-L14Q12
P2.3.9,4#	Know and understand actual schemes. Be cognizant of the wide range of different types of classification schemes and other Knowledge Organization Systems (KOS) and their many uses. Grasp the structure of these schemes by applying the general conceptual framework developed earlier in the course to their analysis.	571-L8.1 571-L10.2a 571-L10.2b 571-L11.1 571-L11.2 571-L12.2 571-L13.1 571-L13.2a 571-A13.1-4

P2.3.9,4.1#	Be acquainted with major KOS used on the Web or in American libraries, such as
	
	     Yahoo (or DMOZ) Classification,
	     Dewey Decimal Classification,
	     Library of Congress Classification,
	     Library of Congress Subject Headings
	     ERIC Thesaurus
		571-L10.2a
		571-L10.2b
		571-L11.1
		571-L11.2
		571-L13.2a

P2.3.9,4.2#	Have started to learn to use some KOS used in American libraries for cataloging (indexing) and query formulation for searching.	571-L10.2a 571-L10.2b 571-L11.1 571-L11.2 571-L13.2a
P2.3.9,4.3#	Be cognizant of the wide range of different types of classification schemes and other Knowledge Organization Systems (KOS) and their many uses. Be acquainted with some important example KOS.	571-L13.1

P2.3.9,5#	Graduates understand indexing characteristics and their effect on system performance and be able to apply this understanding to the analysis and design of databases and to database selection and query formulation.	571-L13.2b 571-L14Q4 571-L14Q5 571-L14Q8
P2.3.9,5.1#	Graduates understand the concepts of exhaustivity and specificity of indexing and their effect on searching.	571-L13.2b 571-L14Q11 571-L14Q14
P2.3.9,5.2#	Graduate are able to ascertain the exhaustivity and specificity of indexing in a given system and apply this knowledge to appropriate query formulation.	571-L13.2b
P2.3.9,5.3#	Graduates understand the concepts of weights in indexing and query formulation.	571-L13.2b 571-L14Q11
P2.3.9,5.4#	Graduate are able to apply indexing weights in query formulation (including analogous techniques in free-text searching).	571-L13.2b
P2.3.9,5.5#	Graduate are able to determine the proper levels of exhaustivity and specificity of indexing for a new IR system based on user requirements	571-L13.2b
P2.3.9,6#	Graduate are able to extend classification and indexing principles to entity types other than Subject, for example to a hierarchy of organizations and organizational units	571-L8.1

P2.4	**Graduates have the technological knowledge and skills needed for carrying out information functions.** They understand the potential and the uses of technology by individuals and organizations. They are able to apply technology skills in the design and implementation of simple systems, such as websites, simple databases, arrangement of small library spaces, and in the use of complex systems. Armed with a knowledge of what is possible they are able to articulate user requirements to computer system analysts and programmers, architects, and other technology specialists, and ensure that systems as delivered meet these requirements. (ALA 4, S2.3.3)	
P2.4.1	Graduates understand the role, uses, and potential of information communication, assistive/adaptive, and related technologies in information agencies, such as libraries, information centers, archives, museums, and schools, in other organizations, and in society.	
P2.4.2	Graduates are familiar with fundamental concepts, techniques, and issues of information, communication, assistive/adaptive, and related technologies, including principles of human-computer interaction and universal design. (ALA 4A)	
&P2.4.2,1	Graduates understand basic principles of data structures for data storage, access, and search, of algorithms, and of computer programming. NT P2.5.2,1.5, RT P2.3.1, RT P2.3.2	571-L5.1
P2.4.2,1.1#	Graduates understand how a given data structure supports answering questions through retrieval and inference, especially how the tables in a database can be used together to answer questions, and how indexes help. RT P2.5.2,1, NT2.5.2,1.5	571-L5.1
P2.4.2,1.2#	Graduates are able to analyze the storage structures (tables, record formats) of an information system and design simple storage structures, including the use of hierarchical inheritance.	571-L5.1
P2.4.2,1.3#	Graduates are able to design simple data structures for access (for example, indexes)	571-L5.1
P2.4.2,2	Graduates have a basic understanding of the networked environment and its hardware and software underpinnings.	
P2.4.2,3	Graduates are able to design and test through usability studies simple websites and databases and use a variety of social media tools and sites as well teach the use of these tools.	
P2.4.3	Graduates understand and are able to apply principles of designing facilities for information agencies, including libraries, that are conducive to individual and collaborative information access and learning.	
P2.4.3,1	Graduates understand the principles of and can participate in the design of collaboration and learning spaces, physical or digital, with integral access to information and information production functionality that support learning, especially learning communities, and communities of practice. See also P2.6	
P2.4.4	Graduates are able to evaluate the suitability of existing and emerging information technologies to serve a range of needs and to assess and evaluate the specifications, efficacy, and cost efficiency of technology-based products and services. (-ALA 4C)	
P2.4.4,1	Graduates understand the principles and techniques necessary to identify and analyze emerging technologies and innovations in order to recognize and implement relevant technological improvements.(=ALA 4D)	

P2.4.4,2	Graduates integrate the use of emerging technologies as a means for effective and creative information transfer and communication.
P2.4.5	Graduates able to deploy information, communication, assistive/adaptive, and related technologies as they affect the resources, service delivery, and uses of libraries and other information agencies as well as other organizations and society. (=ALA 4A)
P2.4.6	Graduates demonstrate the ability to use of information, communication, assistive/adaptive, and related technologies, in the design and adaptation of relevant learning experiences that engage all students in authentic learning through the. See also P2.6.
P2.4.6,1	Graduates integrate the use of emerging technologies as a means for effective and creative teaching and to support P-12 students' conceptual understanding, critical thinking and creative processes. (ALA2010 1.4.4)
P2.4.7	Graduates are able to bring the perspective of professional ethics and prevailing service norms and applications to the application of information, communication, assistive/adaptive, and related technologies and tools. (=ALA 4B)

P2.5	**Graduates understand and are able to apply the principles of information seeking and of reference and user services in different modes of communication (face-to-face, telephone, computer communication) for users of all ages and groups, including those with diverse styles of information use and diverse physical and intellectual abilities and needs. Graduates understand and are able to apply a wide range of advanced search techniques.** (=ALA 5, 5A)	
P2.5.1	Graduates are able to interact successfully with and provide services to individuals of all ages and groups, in various communication media, to help users understand their problems / questions and elicit information needs (reference interview) and to provide consultation and guidance in the use of data / knowledge / information. (=ALA 5C)	
P2.5.1,1	Graduates are able to provide equitable access to information services for all members of society, including groups that are disadvantaged or marginalized, such as people with disabilities, people with limited literacy, the poor, and people who are discriminated against for whatever reason. (also listed in professional values, P4.3.5)	
&P2.5.2	Graduates are able to select diverse information sources for the question at hand and to retrieve, evaluate, interpret, and synthesize the information found, tailored to the specific needs and background of users of all ages and groups. (=ALA 5B)	571
P2.5.2,1P	Graduates are able to conduct good searches that are responsive to user needs NT P2.3.2,1, RT P2.3.2, P2.3.4,1	571
P2.5.2,1.1#	Graduates understand and are able to apply the basic principle of searching: use all available evidence to predict the degree of relevance of some entity	571-L5.1
P2.5.2,1.2#	Graduates understand query-based search and navigation as two approaches to search and are able to use these, alone or in combination, to best advantage for the search at hand	571-A1 571-4.1
P2.5.2,1.3	Graduates understand search algorithms: Boolean retrieval and ranked retrieval and the role of synonym expansion and hierarchic expansion in both and are able to apply this knowledge in systems that support inclusive searching as well as in systems that do not, including free-text searching	571-A2 571-L5.1 571-L14Q5
P2.5.2,1.3.1	Graduates are able to formulate Boolean queries	571-A2 571-L5.1
P2.5.2,1.3.2	Graduates understand the role of hierarchy in searching and be able to use hierarchy in searching.	571-A2 571-L5.1
P2.5.2,1.3.3	Graduates understand problems of free-text searching and are able to formulate free-text (such as Google) queries enhanced through synonym and hierarchic expansion. RT P2.3.8,2#	571-A2 571-L5.1 571-A10 571-L8.1
P2.5.2,1.4	Graduates understand and are able to use advanced search techniques used by expert searchers, such as fielded searching, truncation, phrase searching, and using knowledge structures, as in synonym and hierarchic expansion. {searching skills}	571-L5.1
P2.5.2,1.5	Graduates are able to evaluate and critique search interfaces	

P2.5.2,2	Graduates understand retrieval performance measures and are able to apply these measures to the tasks specified under Objective P2.0.4, especially
	• the conduct of individual searches, including
	  • the specification of individual user/search requirements;
	  • the selection of an information system (database and search system) that can be expected to meet these requirements;
	  • the determination of optimal search effort (resources to be allocated to the search);
	  • the evaluation of search results and determining when to stop searching.
	BT P2.0.4
		571-L3.2

P2.5.2,3^	Graduates are able to assess and evaluate information = P2.2.2,2	571
P2.5.2,3.1^	Graduate are able to match documents to user characteristics and needs. BT P2.2.2,2.3	571-L5.2a-b
P2.5.2,4^	Graduates are able to analyze, interpret and synthesize information	
P2.5.2,5	Graduates are familiar with and able to apply methods, techniques, and tools for information analysis and presentation, including data visualization. See also P3.3 and P3.5	
&P2.5.2,5.1	Graduates understand the added value of post-search information analysis by software and/or an information professional.	571-L3.1
P2.5.2,6P	Graduates understand and are able to apply principles and techniques of competitive intelligence / business intelligence.	
P2.5.3^	Graduates understand and are able to implement the educational role of libraries (<ALA 7B)	
P2.5.3,1P	Graduates understand and are able to implement the role of the public library as family literacy center.	
P2.5.3,2P	Graduates are able to promote and support users' lifelong learning through all services provided to users.	
P2.5.3,1	Graduates understand the role of the public library as family literacy center. XXX	
P2.5.4	Graduates understand that information needs arise from and are embedded in the user's whole life situation and are able to recognize cases when referral to other sources of assistance is appropriate and to make such referrals in a sensitive manner or are able to provide further assistance (social worker librarian).	
P2.5.4,1	Graduates are able to work with other helping professionals, such as counselors, health care professionals, legal aid personnel, and adult educators, to provide seamless services to users.	

P2.6	**Graduates understand and are able to apply principles of pedagogy, including learning theories, instructional design, instructional methods, lesson planning, and assessment methods. This will allow them to function as effective teachers, instructors, mentors, and information counselors and to design instruction generally. In particular they are able to promote information literacy / information competence / information fluency, including visual literacy and numerical and statistical literacy.** (Information literacy encompasses concepts, processes, and skills used in seeking, evaluating, using, and producing data/ information/ knowledge, including competence in social media.) (>ALA 5D, 7C, 7D)	
P2.6.0	**Graduates can function as effective teachers** who demonstrate knowledge of learners and learning and who model and promote collaborative planning, instruction in multiple literacies, and inquiry-based learning, enabling members of the learning community to become effective users and creators of ideas and information. Graduates design and implement instruction that engages students' interests and develops their ability to inquire, think critically, gain and share knowledge**.**	
P2.6.0,1	Graduates are familiar with twenty-first century literacy skills, especially as promulgated by =AASL, advocate for consideration of these skills in the curriculum, are able to plan lessons and activities that help students to learn these skills are able to work with teachers to integrate development of these skills into the curriculum.	
P2.6.0,2	Graduates are familiar with some of the widely used models for information literacy learning and instruction and are able to implement these models, either independently or working with other teachers.	
P2.6.1	Graduates have knowledge of learners and learning. (=AASL2010 1.1)	
P2.6.1,1	Graduates are knowledgeable of learning styles, stages of human growth and development, and cultural influences on learning. (=AASL2010 1.1.1)	
P2.6.1,2	Graduates assess learner needs and design instruction that reflects educational best practice. (=AASL2010 1.1.2)	
&P2.6.1,2.1P^	Graduates are able to apply understanding of types of knowledge and of concept formation and use to designing learning experiences. BT P1.1	571-L2.1
P2.6.1,2.2P	Graduates make use of a variety of instructional strategies and assessment tools to design and develop digital-age learning experiences and assessments in partnership with classroom teachers and other educators. (=AASL2010 1.2.2)	
P2.6.1,3	Graduates support the learning of all students and other members of the learning community, including those with diverse learning styles, physical and intellectual abilities and needs. (=AASL2010 1.1.3)	
P2.6.1,4	Graduates base twenty-first century skills instruction on student interests and learning needs and link it to the assessment of student achievement. (=AASL2010 1.1.4)	
P2.6.2	Graduates can function as effective and knowledgeable teachers. (=AASL2010 1.2)	
P2.6.2,1	Graduates implement the principles of effective teaching and learning that contribute to an active, inquiry-based approach to learning. (=AASL2010 1.2.1)	
P2.6.2,1.1P	Establishes and maintains rapport with students.	
P2.6.2,1.2P	Treats all students in a fair and equitable manner.	
P2.6.2,1.3P	Promotes student interest, attention, and participation	

P2.6.2,1.4P	Creates situations that require students to synthesize, apply, compare, analyze, and evaluate information.
P2.6.2,1.5P	Provides clear and coherent explanations
P2.6.2,1.6P	Uses a variety of instructional methods
P2.6.2,1.7P	Uses appropriate assessment procedures to determine student progress and subsequent instruction.
P2.6.2,1.8P	Graduates understand the importance of collaboration on student learning in the learning process.
P2.6.2,2	Graduates can document and communicate the impact of collaborative instruction on student achievement. (=AASL2010 1.2.3)
P2.6.3	Graduates can function as instructional partners to other educators. (=AASL2010 1.3)
P2.6.3,1	Graduates model, share, and promote effective principles of teaching and learning as collaborative partners with other educators. (=AASL2010 1.3.1)
P2.6.3,2	Graduates demonstrate how to collaborate with other teachers to plan and implement instruction of the =AASL *Standards for the 21st-Century Learner* and state curriculum standards. (=AASL2010 1.4.2)
P2.6.3,3	Graduates acknowledge the importance of participating in curriculum development and of engaging in school improvement processes. (=AASL2010 1.3.2)
P2.6.4	Graduates model multiple strategies for users (including, as applicable, students, teachers, and administrators) to locate, evaluate, and ethically use information for specific purposes. (=AASL2010 3.1.2)
P2.6.5	Graduates model and communicate the legal and ethical codes of the profession. (=AASL20103.2.4)
P2.6.6	Graduates promote and model digital citizenship and responsibility. (=AASL2010 5.2.3)
P2.6.7	Graduates educate the community of users on the ethical use of information and ideas.
P2.6.8	Graduates understand & are able to help users understand issues of Internet safety.

P3	**Graduates have general knowledge and skills needed across professions.** Skills in management, communication and collaboration, research, and critical thinking.	
P3.1	**Graduates understand leadership principles and are able to successfully lead and manage information agencies, including libraries.** (=ALA 8) (See also P2.1.5, =ALA8C	
P3.1.1	Graduates understand and are able to apply general principles of management and leadership	
P3.1.2	Graduates are able to formulate and use mission and vision statements; values; goals, objectives, and performance measures, and policies. They are aware both of the difficulties of defining objectives and measures and the importance of having clearly defined objectives and measures for design, evaluation, planning, and monitoring operations. NT P2.0.4	
P3.1.3	Graduates are prepared to think out of the box and to be innovative, visionary, transformational leaders who command the management tools of planning and budgeting, including analysis of strength and weaknesses and opportunities and threats;. (See P2.1.5 for marketing.)	
P3.1.3,1	Graduates understand and able to put into practice the concepts behind, issues relating to, and methods for, principled, transformational leadership.	
P3.1.3,2	Graduates are able to initiate and manage change.	
<mark>&P3.1.4^</mark>	Graduates are able to apply systems analysis to organizations and managerial problems	571-A5
P3.1.4,1^	Graduates are able to conduct a functional analysis of an organization	
P3.1.4,2P	Graduates are able to document systems and procedures using appropriate formats, such as data flow diagrams or entity-relationship diagrams. This includes writing job descriptions and documenting software.	
P3.1.4,3P	Graduates understand and are able to apply principles of systems analysis and planning and budgeting and evaluating human, information, and physical resources in information agencies, including libraries. In particular, graduates understand and are able to apply the cycle of setting objectives – evaluation based on data – decision – implementation (This relates to P2.1, analysis of information needs .)	
P3.1.4,4P	Graduates understand and are able to apply the principles of effective project management. {project management skills}	
P3.1.4,5P	Graduates understand and are able to apply the principles of effective quality control and cost control management, for example Balanced Score Card and TQM (Total Quality Management).	
P3.1.5	Graduates understand are able to work in the different functional areas of management: implementing systematic processes for getting the work of an organization done; finance; human resource management and empowering staff; customer service and marketing; and advocacy to reach diverse audiences to promote information services	
P3.1.5,1P	Graduates are able to design and implement systematic processes for the work of an organization done. {business process engineering} RT P3.1.4,1, .1.4.2	
P3.1.5,2P	Graduates are able to manage the finances of an organization.	
P3.1.5,3P	Graduates understand and are able to apply the principles of effective personnel practices and human resource development.	

P3.1.5,4P	Graduates understand and are able to apply the principles of effective customer service, marketing, and public relations to adapt the services of an information agency to the needs of diverse users and increase service utilization for the benefit of the users (see also P2.1, especially P2.1.6)
P3.1.5,5P	Graduates understand and are able to apply the principles of effective advocacy and securing money and other resources for the work of their information agency.
P3.1.6	Graduates will be able to recognize the nature and the importance of management in information agencies, including libraries, and gain insight into how to be a productive colleague in an organizational context.
P3.1.7	Graduates understand and are able to apply principles of developing partnerships, collaborations, networks, and other structures with other close and distant *information agencies*, including different types of libraries.
P3.1.8	Graduates are able to develop partnerships and collaborations with other *organizations that can assist with and/or use information services* and with all stakeholders within the communities served, thus making libraries vital parts of their communities. 1.5 deals with understanding influences on such partnerships This objective deals with collaboration with other organizations and groups, objective P3.4 with collaboration with people.
P3.1.9	Graduates are equipped and motivated to advocate for the importance of people having the information that supports their work and life and of information services that support that goal. This objective is also listed as P4.3.5 from the perspective of professional responsibility.
P3.1.9,1P	Graduates advocate for twenty-first century literacy skills to support the learning needs of the school community. (ASSL2010 1.4.1)
P3.1.10	Graduates are understand and are able to apply principles and techniques of fundraising.
P3.2	**Graduates have skills in managing their own work, such as priority setting and time management.**
P3.3	**Graduates are able to communicate effectively in multiple media** as receivers of communications (active listening, reading, interpreting graphs and images), as producers of communications (presenting, speaking, writing, visual design), and as collaborators. (>ALA 1J)
P3.3.1	Graduates are able to use a variety of computer-supported communication and collaboration tools, including social media.
P3.3.2	Graduates are prepared to be effective meeting participants and leaders.
P3.3.3	Communicates clearly and effectively and uses appropriate grammatical constructions and spelling conventions
P3.3.4	Graduates are able to follow an accepted writing style for references and citations.
P3.3.5	Graduates are able to produce a resume that is well designed and professional in appearance. Also belongs to P4.1
P3.3.6	Graduates are able to effectively use a presentation tool
P3.3.7	Graduates are able to effectively use a publishing tool

P3.4	**Graduates are able to collaborate with people in other disciplines, professions, or professional positions.** Special cases are working with helping professional P2.5.4,1) and with teachers (2.6.3). This objective deals with collaboration with people, objective P3.1.6 deals with collaboration with other non-information organizations and groups. Objective P3.3.1 deals with tools for collaboration.	
P3.5	**Graduates understand and are able to apply a variety of research methods / methods of inquiry, exhibit critical thinking, and are able to assess and apply research findings.** (>ALA 6, S1.2.5)	
P3.5.1	Graduates understand the fundamentals of quantitative and qualitative research methods, including evaluation and measurement. (ALA 6A)	
P3.5.1,1	Graduates understand and are able to apply principles of survey design and measurement, for example in marketing	
P3.5.2	Graduates are able to use creative inquiry and critical thinking to analyze complex problems, create appropriate solutions, and make informed decisions. (=ALA 1L)	
P3.5.3	Graduates are able to locate, evaluate, and use research findings and to assess the value of new research for improving practice. (=ALA 6C)	

P4	**Graduates understand the nature of the library and information profession and the roles, responsibilities, and values of library and information professionals and are prepared to put professional values into practice.** (ALA 1, 1A)	
&P4.1	**Students understand career paths available in the information profession, are motivated to take another look at their career choices, and are able to discern the career path(s) best suited to their abilities, strengths, and interests, and design a plan of study that focuses on the objectives and competencies that support this (these) career path(s).** Elaboration# Students/graduates have an appreciation for the wide variety of information tasks that an education in information studies enables them to undertake and the wide variety of information environments they can work in. Put differently, students/graduates should gain a sense of the breadth of functions and the breadth of environments they can work in, the breadth of careers RT P1.6, P2.0	571-L1.1
P4.1.1	Students / graduates understand the skills and competencies needed for the various careers in the information field. NT L2.3.0,2#	
P4.1.2	Graduates are able to develop personal professional development plan including a plan of how continue to increase their knowledge and skills as library and information professionals	
P4.2	**Graduates understand the nature of the information profession and the roles and responsibilities of information professionals. (ALA 1, 1A)**	
P4.2.1	Graduates understand and follow professional standards and ethics as well as legal requirements in the information profession, including certification and/or licensure requirements of specialized areas of the profession. (See P4.3 for detail)	
P4.2.2	Graduates understand the importance of diversity in the information profession. See also P4.3.4	
P4.2.3	Graduates understand the value of teaching and service to the advancement of the field. (ALA S1.2.4)	
P4.2.4	Graduates understand the importance of and are prepared for continuing professional development and lifelong learning. (ALA 7A, S2.3.7)	
P4.2.4,1	Graduates keep up with best practices and are open to and able to adapt to change.	
P4.2.5	Graduates model a strong commitment to the profession by participating in professional growth and leadership opportunities through membership in professional associations in the information field, attendance at professional conferences, reading professional publications, and exploring Internet resources. Graduates plan for ongoing professional growth.	
P4.2.6	Graduates are able to create their own professional network and have the beginnings of such a network at graduation.	
P4.3	**Graduates understand the values of the profession and their importance and are prepared to put these values into practice.**	
P4.3.1	Graduates are equipped and motivated to use information to transform lives and to promote equity, mutual respect, and a rich social fabric in a diverse society.	

P4.3.2	Graduates are equipped and motivated to use information to increase productivity and improve the standard of living for all.	
P4.3.3	Graduates will demonstrate understanding of, respect for, and sensitivity to the diversity in society, including age, physical and mental ability, sexual orientation, race, ethnicity, language, culture, and economic means. {cultural competency} (See also P4.2.2,) (ALA S2.3.4)	
P4.3.4	Graduates are equipped and motivated to promote equity of access to information services for all members of society, including groups that are disadvantaged or marginalized, such as people with disabilities, people with limited literacy, the poor, and people who are discriminated against for whatever reason. (Also listed in knowledge about serving users. P2.5.1,1.)	
P4.3.5	Graduates are equipped and motivated to advocate for users and their right to have information; for libraries and other information agencies, their staff, and the information profession; and the services they provide. (This objective is also listed as P3.1.7 from the perspective of management skills.) (ALA 1H)	
P4.3.6	Graduates are equipped and motivated to promote democratic principles, promote and protect intellectual freedom (including freedom of expression, thought, and conscience), intellectual property, and the individual reader's/viewer's and listener's right to privacy. See also P2.5.3 (>ALA 1B)	
P4.4	**Graduates are motivated to be reflective professionals: Reflect on their actions and be open to critique and suggestions from all sides.**	
P4.4.1	Graduates are able to recognize their own strengths and weaknesses	
P4.4.2	Graduates respond positively to constructive suggestions and feedback	
P4.5	**Graduates have gained practical professional experience – though a job or through in-service education.**	
&P4.6	**Graduates are equipped and motivated to serve as leaders and advance the field.** (ALA S2.3.6)	571 gen 571-L7.2

P5	**Graduates understand the importance of personal qualities conducive to professional success. The program fosters the development of professionals with these qualities.**	
P5.1	Poise and professional appearance	
P5.2	Integrity	
P5.3	Authenticity	
P5.4	Interpersonal skills, be engaging and friendly RT P5.23 Ability to work with others / team member	
P5.5	Empathy.	
P5.6	Tolerance.	
P5.7	Respectfulness.	
P5.8	Confidence	
&P5.9	Assertiveness. (ALA S2.3.1)	571-L7.2
P5.10	Persistence.	
P5.11	Self-motivation.	
P5.12	Creativity.	
P5.13	Innovativeness.	
P5.14	Resourcefulness	
P5.15	Flexibility / Adaptability / Versatility	
&P5.16	Initiative	571-L7.2
P5.17	Being proactive.	571
P5.18	Enthusiasm.	
P5.19	Passion.	
P5.20	Energy.	
P5.21	Positive thinking	
P5.22	Interest in learning / intellectual curiosity.	
P5.23	Ability to work with others / team member. RT P5.4 Interpersonal skills, be engaging and friendly	
P5.24	Ability to follow rules and procedures, willingness "to serve as private before becoming a general"	
P5.25	Dependability	
P5.26	Assumes responsibility	
P5.27	Ability to work beyond job boundaries.	

Candidate objectives

Graduates are aware of methods for automatic classification 571-L14Q10

Graduates are able to transfer concepts from one context to another 571-L14Q11