**LIS 571**

**Organization and Control of Recorded Knowledge**

**Spring 2011**

<table>
<thead>
<tr>
<th>Catalog Description</th>
<th>Knowledge analysis and representation; information presentation and assimilation; bibliographic and record control.</th>
</tr>
</thead>
<tbody>
<tr>
<td>General objectives</td>
<td><strong>Theoretical foundation of all types of information systems</strong>&lt;br&gt;You will acquire the theoretical foundation needed to understand and apply a range of concepts and techniques to create and fully use traditional, modern, and future information systems:&lt;br&gt;  • paper and digital libraries,&lt;br&gt;  • the Web,&lt;br&gt;  • management information systems, content management, intranets, and enterprise portals in organizations,&lt;br&gt;  • substantive databases,&lt;br&gt;  • artificial intelligence and expert systems (e.g., for diagnosis). The Semantic Web.&lt;br&gt;Put differently, you will understand the primary conceptual structures that organize data, information, knowledge, language, and text. Often the course will not create full knowledge but open a window into more advanced work.</td>
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<td></td>
<td><strong>User orientation as an essential principle</strong>&lt;br&gt;You will acquire a user-oriented (problem-oriented, request-oriented) approach to the design and operation of information systems.</td>
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<td></td>
<td><strong>Emphasis on concepts for lifelong learning</strong>&lt;br&gt;The emphasis is not on specific skills but on concepts that give the student the foundation for acquiring a wide range of skills as required by the tasks at hand over a life-time career.</td>
</tr>
</tbody>
</table>
Disability, religious observance, academic integrity see p. 18
## Reference list of detailed objectives and practical applications

*Refer to these objectives throughout the class and read again towards the end of the class.*

<table>
<thead>
<tr>
<th></th>
<th>Main theme</th>
<th>Objectives: You should</th>
<th>Information professional task supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td><strong>User orientation</strong></td>
<td>.1 have the spirit of user-orientation.</td>
<td>- understanding information needs (as in a reference interview);</td>
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<td></td>
<td></td>
<td>.2 understand the characteristics and facets of different types of knowledge;</td>
<td>- analyzing and assessing info. found;</td>
</tr>
<tr>
<td>1</td>
<td><strong>Types of knowledge</strong></td>
<td>.1 be able to apply this understanding to an analysis of information needs, to the</td>
<td>- organizing different kinds of knowledge in an information system.</td>
</tr>
<tr>
<td></td>
<td><strong>Types of concepts</strong></td>
<td>organization of information, and to the evaluation of information found.</td>
<td>- understanding how people think; thus</td>
</tr>
<tr>
<td></td>
<td>Lect. 2.1-2.2, 5.2-6.1</td>
<td></td>
<td>- understanding how people ask questions and how they process information; thus</td>
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<td></td>
<td></td>
<td></td>
<td>- presenting the right content in the right form.</td>
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<tr>
<td>2</td>
<td><strong>Knowledge representation</strong></td>
<td>.1 understand the main issues in and approaches to knowledge representation; apply</td>
<td>- adapting answers to users’ mental structures;</td>
</tr>
<tr>
<td></td>
<td>Lect. 2.1-2.2, 5.2-6.1</td>
<td>this understanding in the analysis and design of information systems.</td>
<td>- searching effectively;</td>
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<td></td>
<td></td>
<td>- organizing a body of knowledge for simple retrieval, and</td>
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<td></td>
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<td>for more complex inference. (Inference enables a system to draw conclusions from the knowledge stored,</td>
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<td></td>
<td></td>
<td></td>
<td>creating new knowledge.)</td>
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<tr>
<td>3</td>
<td><strong>Information structure</strong></td>
<td>.1 be able to design the conceptual data schema for a new info. system;</td>
<td>- establishing and meeting the requirements for individual searches;</td>
</tr>
<tr>
<td></td>
<td>Lectures 1.1-3.1, 4.1-5.1</td>
<td>.2 be able to analyze the conceptual data schema of an existing information system;</td>
<td>- selecting information systems to be acquired;</td>
</tr>
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<td></td>
<td></td>
<td>.3 be able to apply this understanding to indexing and query formulation.</td>
<td>- designing information systems to meet performance criteria.</td>
</tr>
<tr>
<td>4</td>
<td><strong>Retrieval performance measures</strong></td>
<td>.1 understand retrieval performance measures and be able to apply them to: the</td>
<td>- searching: formulating simple Boolean queries; using knowledge of search algorithms for effective</td>
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<tr>
<td></td>
<td>Lecture 3.2</td>
<td>specification of individual search requirements; the determination of optimal search</td>
<td>searching;</td>
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<td></td>
<td></td>
<td>effort; the evaluation of search results; and the evaluation of an information system</td>
<td>- designing efficient storage structures, incl. the use of hierarchical inheritance.</td>
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<td>as a whole.</td>
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<tr>
<td>5</td>
<td><strong>File organization and search algorithms</strong></td>
<td>.1 understand basic principles of file organization, storage structures, and index</td>
<td></td>
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<tr>
<td></td>
<td>Lecture 5.1</td>
<td>structures</td>
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<td></td>
<td></td>
<td>.2 understand search algorithms, including ranked retrieval.</td>
<td></td>
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<tr>
<td>Main theme</td>
<td>Objectives: You should</td>
<td>Information professional task supported</td>
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<tr>
<td><strong>6</strong> Information structure and usability. Document design Lectures 5.2-6.2</td>
<td>.1 understand the relationship between information structure/representation and usability; .2 be able to apply principles of document design and text structure to the creation and selection of good documents.</td>
<td>- designing systems that can generate tailor-made documents; - preparing customized answers; - delivering search results in a useful layout; - evaluating documents.</td>
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</tr>
<tr>
<td><strong>7</strong> Linguistic techniques: syntactic and semantic analysis Lecture 6.1</td>
<td>.1 be aware of linguistic techniques and their applications in info. retrieval (IR). .2 understand the basics of parsing sentences and semantic analysis, including word sense disambiguation. .3 understand anaphora and its effect on retrieval and fact extraction.</td>
<td>- replacing labor-intensive human processing of vast amounts of text with automated techniques for text processing based on linguistics. Many commercial products available. - understanding free-text search systems; - understanding systems that extract from text just the data the user needs; - understanding automated translation - increasingly important with globalization, and very important in the Web.</td>
<td></td>
</tr>
<tr>
<td><strong>8</strong> Descriptive cataloging of documents Lectures 7.1-7.2</td>
<td>.1 understand the application of general information structure principles to the descriptive cataloging of documents; .2 be aware of the variety of codes for bibliographic description; and .3 be able to catalog consulting AACR2.</td>
<td>- understanding and applying traditional descriptive cataloging; - describing and organizing electronic documents — in an organization's collection of documents/records or in the huge document collection on the World Wide Web (metadata).</td>
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</tr>
<tr>
<td><strong>9</strong> Vocabulary control Lectures 8.1-8.2</td>
<td>.1 understand the problems and principles of vocabulary control and be able to apply these principles to indexing and searching.</td>
<td>- designing systems that help users cope with vocabulary confusion through controlled vocabulary or query term expansion; - doing good searches without such support.</td>
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</tr>
<tr>
<td><strong>10</strong> Functions of classification Lectures 8.2, 9.2, 11.2</td>
<td>.1 understand the functions of classification in information retrieval systems, especially request-oriented indexing and inclusive searching. .2 Understand the functions and importance of classification for a wide range of other tasks.</td>
<td>- applying request-oriented indexing for improved system performance; - exploiting the vast intellectual capital available in classifications for functions beyond bibliographic retrieval, at the same time increasing compatibility and synergy between different information functions.</td>
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</tr>
<tr>
<td><strong>11</strong> Structure of subject classification: Facet structure and hierarchy Lectures 8.1-14.2</td>
<td>.1 understand the principles of the structure of subject classification, in particular facet organization and hierarchy; .2 be able to apply these principles to the analysis of existing schemes and to indexing and query formulation.</td>
<td>- indexing (cataloging); - analyzing a search topic and formulating the query, using hierarchic expansion; - designing systems that assist users in search topic clarification and in query formulation; - developing classifications / thesauri. See also functions of classification above.</td>
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</tbody>
</table>
### Objectives: You should

1. be aware of the variety of classification schemes, thesauri, etc. and be acquainted with major American schemes: Yahoo (or DMOZ) Classification, Dewey Decimal Classification, Library of Congress Classification, Library of Congress Subject Headings.

### Information professional task supported

- provides a door into a vast array of sources of knowledge about concepts and terminology, knowledge that lets you apply the general principles of facet structure and hierarchy to high-quality indexing (cataloging) and searching.
# Syllabus table of contents

## Multiple perspectives on the big picture

<table>
<thead>
<tr>
<th>Reference list of detailed objectives and practical applications</th>
<th>2 - 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>This two-page spread shows what you will learn in the course and why. Refer to this throughout the course to keep the big picture in mind.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>The nature of the course</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>A summary of the overall perspective, the content, and the progression from principles to applications, and from theory to practice in the four parts of the course</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>The structure of the course</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>An overview diagram showing how the parts of the course relate to each other and an overview of each part</td>
<td></td>
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</table>

## Materials and conduct of the course

<table>
<thead>
<tr>
<th>Materials for the course</th>
<th>8 - 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>An overview diagram and a list of the course materials</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Conduct of the course</th>
<th>10 - 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>A discussion of learning and teaching methods, course requirements, and grading. Includes description of the free-writes at the end of each day and a statement on disability, religious observance, and academic integrity.</td>
<td></td>
</tr>
</tbody>
</table>

## Calendar (pink pages)

<table>
<thead>
<tr>
<th>Calendar overview</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provides an outline of the course</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>List of assignments</th>
<th>14</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Calendar</th>
<th>15 - 46</th>
</tr>
</thead>
<tbody>
<tr>
<td>One sheet for each week. Each class meeting is divided into two 75-minute lectures numbered 1.1, 1.2, 2.1, 2.2, etc. For each week the calendar gives readings, assignments due, and assignments assigned (marked with «).</td>
<td></td>
</tr>
</tbody>
</table>

## Calendar overview by part of course

(Read only if you need another look at the structure of the course)
### The nature of the course

<table>
<thead>
<tr>
<th>Broad course, prepares for wide range of jobs</th>
<th>The course considers <strong>all kinds of information systems and a wide range of concepts and techniques</strong>. Emphasis is on <strong>concepts</strong> rather than specific skills to provide a solid <strong>basis for life-long learning</strong> as required by ever-changing practice. The course introduces some topics as windows into new areas so you can discover interests you want to pursue in more depth later. The course prepares you for pursuing a wide range of interests. It generalizes insights gained in the library world over decades or even centuries and makes them useful for other contexts, such as expert systems, digital libraries, content management systems, or the World Wide Web, where they are desperately needed. <strong>Library cataloging is included as an example of general principles.</strong></th>
</tr>
</thead>
</table>
| Content: structure & representation of information | Information and knowledge structure serves two purposes:  
(1) **finding and applying information** (as in the Semantic Web); often involves logical inference or statistical processing to derive an answer or have a system take action.  
(2) **presenting information** in a structure and format the user can assimilate and understand so that she can put the information to use. Thus, we must consider the structure of information in the user's mind. This is crucial for learning and instruction.  
**Information Architecture** and **Instructional Design**, each from its own perspective, use the study of Information Organization and contribute to it. |
| Four parts: From principles to applications | 1. **Basic nature and structure of information and knowledge**  
2. **The nature of information systems & principles of information retrieval**, which are applied and made more concrete in Parts 3 and 4  
3. **Designing and managing documents and records**  
4. **Classification for information organization and subject access** |
| Theory for improved practice | The course presents theory in the service of improved practice. You will  
- be able to apply course concepts to practical problems;  
- understand the principles that underlie current practice and thus be able to do a job intelligently;  
- have a sound basis for changing current practice for new requirements. |
The structure of the course

1 Basic nature and structure of information and knowledge
First introduction to Entity-Relationship (E-R) modeling

2 Nature of information systems
Principles of information retrieval
Elaboration of Entity-Relationship (E-R) modeling
General principles for retrieval:
A Types of entities: all (persons, documents, products, events, etc.)
B Search criteria: all kinds
   (creator, date created, owner, subject, skills, uses, etc.)

3 Designing and managing documents and records
Applies E-R modeling to creating document templates (internal structure of documents) and metadata (data about documents)
Specific focus in retrieval:
A Types of entities: documents
B Search criteria: descriptive
   (creator, date created, owner, etc.)

4 Classification for information organization and subject access
Applies E-R modeling to analyzing subject classification:
Facets and hierarchy
Specific focus in retrieval:
A Types of entities: all
B Search criteria: subject (subject, feelings evoked, skills, uses, etc.)

5 Review
Lecture notes
(pink dividers)

Assignments
(gold dividers)
Deliverables marked in footer

Syllabus, incl. Calendar
(pink)

Text
Soergel, *Organizing Information*

Readings
(green dividers)
Required: In reading packet
Optional: Included or on reserve

Materials for the course
| Syllabus, lecture notes and assignments (One packet, from instructor, ca. $40) | Calendar (pink). “Information Central”, gives for each lecture:  
- the theme(s) of the lecture  
- the readings (do beforehand to prepare for the lecture)  
- the assignments (do afterwards to apply and reinforce the concepts). |
|---|---|
| Lecture Notes (pink dividers)  
- Intended to help you follow along during the lecture, not to replace it |
| Assignments (yellow dividers)  
- Descriptions of tasks / deliverables and worksheets (marked in footer)  
- Assignment materials (explanations, examples, materials to work with)  
- Word templates for assignment deliverables (emailed, ) |
| Text | Soergel, Dagobert  
Organizing information. Principles of database and retrieval systems.  
Used copies may be available ($20-40), new copies from instructor ($80) |
| Readings | Reading packet (white). fr. instructor, ca. $60 for copying and copyright fees  
Required and some optional readings, arranged by lecture, green dividers.  
Model Catalog (first reading): MARC records illustrating descriptive and subject cataloging. **Used throughout, examples for Assignments 9 and 13**  
Electronic version emailed.  
Published Jointly by the American Library Association (ALA), the Canadian Library Association (CLA), and the Chartered Institute of Library and Information Professionals (CILIP). © 2005. Complete text with annual updates from 2003 through 2005, 750 pages  
Available from www.alastore.ala.org/, click on Cataloging and Classification  
Entirely new version: RDA, av. now electronic, www.rdatoolkit.org, both in Baldy14A.  
Other useful book (on UBlearns):  
Optional readings go deeper or cover advanced topics. Some are included in the reading packet and the lecture notes+assignments, all are in Baldy 14A, some emailed as pdf. |

Put these materials into two 1.5" or 2" three-ring notebooks:  
1) Lecture Notes and Assignments, 2) Readings. Alternatively, put everything for one lecture together.

Always bring the day’s lecture notes, assignments, & readings (incl. the text). To save time, mark the proper place.
## Conduct of the course

| Course meetings | There are two 75-min. lectures/class periods each day, labeled 1.1, 1.2, ... Lecture and discussion, review of text, examples, in-class exercises. Free-write at the end of the day (see p. 18). In Weeks 1, 8, 9, and 10 classes are held as small-group sessions to deal with key topics that require more interaction. Small-group sessions are the most important classes, they are not extras and not optional; there will be a sign-up sheet for scheduling To prepare for lectures and small group sessions:

- **In the Lecture Notes, read the objectives, notes on practical significance, and discussion questions.** Previewing the lecture outlines will help in following the class. Do the readings.

- **Think about the discussion questions.** Be prepared to ask questions about course materials and assignments and enter into discussion.

- **Read the assignments assigned that day;** you may need clarification. Do the required readings, or you will be lost in class. Always bring the applicable lecture notes, assignments, and readings (including the text). To save time, mark the proper place. |

| Assignments | 13 assignments (typically 2 -3 hrs) to practice the course concepts. Unless stated otherwise in the assignment, assignments can be done in teams of 2 -3 with one copy handed in, except individual essays. Assignments are for learning; they must be handed in and are graded for feedback. But what really counts (for taking further courses and ultimately in the work place) is what you have learned through doing the assignment and reading the answer sheet (see Grading below.) Do not overdo the assignments; the answer sheets are generally more complete than what is expected from your answers. Assignments 9 and 13 are required to receive a grade in the course; you can work on them in teams but you must hand them in individually. If it would save you a trip, email assignments to the GA with a copy to me (attachments preferred, multiple pieces combined into a single file). Students who skip the assignments will not master the concepts or integrate them in their knowledge and thus will fall behind. |
### Other work

**Midterm (take-home, closed-book, 90 min)** for feedback. Sample questions on pages following Lecture 7.2 in the lecture notes.

**Term paper / end-of-term essay.** (See form following Assignment 6)
A reflective essay on a theme of your choice, guideline 4,000-5,000 words:
- **make connections** between ideas gleaned from the readings, assignments, and class discussions;
- consider implications and applications;
- identify issues, questions, problems for further study.
This can be a personal essay that reflects your personal experience and views. Starting with Lecture 1 and continuing throughout the course, jot down ideas and connections as they occur to you.
Short description due March 2nd.

You are encouraged to form **study groups** and arrange meetings with the instructor or the GA.

**You are welcome to email questions to the instructor.**

### Course requirements

All requirements must be fulfilled to receive a grade in the course

**Final (in class, closed-book, 3 hours)** covering concepts from all lectures, readings, and assignments, **except** specifics from Assignments 9 and 13.
Sample questions in Lectures 15.1 and 15.2.

**You may bring two pages of notes** (1 sheet two-sided or 2 sheets one-sided).

**Term paper / end-of-term essay**

**Satisfactory completion of Assignment 9** (Descriptive cataloging practice) and **Assignment 13** (Subject cataloging and searching practice), showing knowledge of these topics. These assignments are required because they are not covered in the final.

### Grading

The instructor will consider all available evidence of a student’s understanding and ability to apply course concepts to practical problems.

**The final exam and the end-of-term essay are the primary sources of evidence for grading, with more emphasis on the better of the two.**

- If the final and paper result in a grade of A, that is the grade.
- If final and paper result in a grade below A, the following will be considered as subsidiary evidence that might improve the grade:
  - midterm (whose main purpose is feedback),
  - the assignments (whose main purpose is learning),
  - comments and questions in class, in study group sessions with the instructor, or in other interactions with the instructor,
  - (at the student’s option) the free-writes (see p. 18).

If you have done good work all semester, you should not be anxious about the grade. If a student has put forth adequate effort but still has not achieved a grade of B, I will provide guidance for further study which is intended (but not guaranteed) to lead to the understanding needed for a satisfactory grade.
Free-writes

At the end of the day, 5 minutes are set aside for a free-write (use the form in the lecture notes). This is an opportunity

• to reflect – what you learned, what was most important, what was most interesting, what was extraneous;
• to ask questions – ask for more explanation, how is a concept connected to other concepts, why is a concept important, how can it be applied, why is a reading important;
• offer critique and suggestions;
• say anything else you want to.

Of course you can jot down any of these thoughts on the free-write sheet during the class.

You may put your name and mailbox number on the sheet in which case it will be returned, with a copy kept by the student assistant.

The instructor will not see the free-writes, nor will the GA. They will be summarized every week by a student assistant (not the GA), and the instructor will see only that summary. The instructor will answer questions in class or through email.

If there is doubt about your grade, the instructor will ask for permission to read your free-writes and consider them as evidence in grading (only if you put your name on the sheet).

Academic Integrity

"When an instance of suspected or alleged academic dishonesty by a student arises, it shall be resolved according to the procedures set forth herein. These procedures assume that many questions of academic dishonesty will be resolved through consultative resolution between the student and the instructor." Full statement at www.grad.buffalo.edu/policies/academicintegrity.php

Religious Holidays

It is a policy throughout the State University system that: "on those religious holidays when members of a faith typically observe the expectation of church or synagogue that they be absent from school or work, campuses will avoid the scheduling of such events as registration, the first day of classes, or student convocations, and individual students will be excused from class without penalty if expressly requested." (From SUNY Policy Manual, 1975, Section No. 091.3.) If such a requested absence results in a student's inability to fulfill an academic requirement of a course scheduled on that particular day, the instructor should provide an opportunity for the student to make up the requirement without penalty.

Accommodations for students with disability

Please work with UB Disability Services to receive the support that enables you get the most out of your education. I am also looking forward to working with you to make the course a good experience. "Government regulations require that university policies, practices, and procedures not discriminate on the basis of disability. Disability Services coordinates reasonable modifications so that individuals with
disabilities can access and benefit from all programs, services, and activities of the university.
www.ub-disability.buffalo.edu/servc.php

### Outline and calendar. Overview

#### Part 1. Foundations. Knowledge and knowledge representation

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>1.1-1.2 Jan. 19</em></td>
<td>Intro. and overview. Information systems and information structure. <strong>Small Groups 0</strong></td>
</tr>
<tr>
<td>2.1-2.2 Jan. 26</td>
<td>The nature of knowledge and knowledge representation</td>
</tr>
</tbody>
</table>

#### Part 2. Information retrieval: General principles and methods

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Feb. 2</td>
<td>The structure of information systems.</td>
</tr>
<tr>
<td>3.2</td>
<td>Objectives and performance measures for information systems</td>
</tr>
<tr>
<td>4.1 Feb. 9</td>
<td>An integrated information structure model</td>
</tr>
<tr>
<td>4.2</td>
<td>Data schemas and formats</td>
</tr>
<tr>
<td>5.1 Feb. 16</td>
<td>Access to information: data structure &amp; search modes. Retrieval as prediction. Ranking</td>
</tr>
</tbody>
</table>

#### Part 3. The nature, design, and management of documents and records

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2 Feb. 16</td>
<td>Document function, structure, analysis, and design. Knowledge (re)presentation in text and images. Text linguistics.</td>
</tr>
<tr>
<td>7.1-7.2 Mar. 2</td>
<td>Cataloging and metadata. Bibliographic control: description, entries and access</td>
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</tbody>
</table>

*Take home midterm exam distributed. Due for Small Groups 2: March 22 -24*

#### Part 4. Classification and subject access

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1 Mar. 8-10</td>
<td><strong>Small Groups 1</strong>. Explorations in subject access. Continuing Ass.10. (to be scheduled)</td>
</tr>
<tr>
<td>8.2</td>
<td>Small Groups 1. Vocabulary control. Lexical relationships. Index language functions</td>
</tr>
<tr>
<td>9.1 Mar. 22-24</td>
<td><strong>Small Groups 2</strong>. Index language structure 1: conceptual (to be scheduled)</td>
</tr>
<tr>
<td>10.1 Mar. 29-31</td>
<td><strong>Small Groups 3</strong>. On constructing a hierarchy from facet combination (to be scheduled)</td>
</tr>
<tr>
<td>10.2</td>
<td>Brief discussion of Assignment 13 Subject cataloging and searching practice</td>
</tr>
<tr>
<td>11.1 April 6</td>
<td>Index language structure 2: database organization</td>
</tr>
<tr>
<td>11.2</td>
<td>Indexing and system performance (conceptually also belongs to Part 2)</td>
</tr>
<tr>
<td>12.1-12.2 Apr. 13</td>
<td>Discussion and in-class exercise: DDC. Short Media Streams Demo</td>
</tr>
<tr>
<td>13.1-13.2 Apr. 20</td>
<td>Introductory discussion and in-class exercise: Yahoo, LCC, Media Streams</td>
</tr>
<tr>
<td>14.1 Apr. 27</td>
<td>Exploration of classification schemes and thesauri</td>
</tr>
<tr>
<td>14.2</td>
<td>Concluding discussion and comparison of classification schemes and thesauri</td>
</tr>
</tbody>
</table>

#### Conclusion

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.1-15.2 May 4</td>
<td>Final review - optional (Reading Day)</td>
</tr>
<tr>
<td><strong>May 11</strong></td>
<td>Final exam</td>
</tr>
<tr>
<td>Monday May 16</td>
<td>Term paper due. Last day for handing in Assignment 9 and Assignment 13</td>
</tr>
</tbody>
</table>
List of Assignments

<table>
<thead>
<tr>
<th>No</th>
<th>Assignment</th>
<th>Assigned</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hypermedia exploration: Perseus (Lecture 1.2; 2.5 hours)</td>
<td>Jan. 19</td>
<td>Feb. 2</td>
</tr>
<tr>
<td>2</td>
<td>Bibliographic retrieval system exploration: MEDLINE (Lecture 1.2; 3 hours)</td>
<td>Jan. 19</td>
<td>Feb. 2</td>
</tr>
<tr>
<td>3</td>
<td>Online catalog search exercise (Lecture 1.2; 1.5 hours)</td>
<td>Jan. 19</td>
<td>Feb. 2</td>
</tr>
<tr>
<td>4</td>
<td>Analytical description of an information system (Lecture 3.1; 3 h)</td>
<td>Feb. 2</td>
<td>Feb. 9</td>
</tr>
<tr>
<td>5</td>
<td>Developing a conceptual data schema (Lecture 4.2; 1.5 hrs)</td>
<td>Feb. 9</td>
<td>Feb. 16</td>
</tr>
<tr>
<td>6</td>
<td>Restructuring a semantic network (Lecture 5.1; 1 hour)</td>
<td>Feb. 16</td>
<td>Feb. 23</td>
</tr>
<tr>
<td>7</td>
<td>Bibliographic retrieval system exploration: MEDLINE (Lecture 1.2; 3 hours)</td>
<td>Jan. 19</td>
<td>Feb. 2</td>
</tr>
<tr>
<td>8</td>
<td>Problems of entry (Lecture 7.2A; 1.5 hours)</td>
<td>Mar. 2</td>
<td>Mar. 23</td>
</tr>
<tr>
<td>9</td>
<td>Descriptive cataloging practice (Lecture 7.2A; 4 hrs)(flex. due date)</td>
<td>Mar. 2</td>
<td>Mar. 23+</td>
</tr>
<tr>
<td>10</td>
<td>Indexing of three documents and prep for Lecture 8.1 (2 hrs) (do before Small Groups 1)</td>
<td>Mar. 2</td>
<td>Mar. 8 - 10</td>
</tr>
<tr>
<td>11</td>
<td>Request-oriented indexing (Lecture 8.2B, 2 hours)</td>
<td>Mar. 9</td>
<td>Mar. 23</td>
</tr>
<tr>
<td>12</td>
<td>Conceptual analysis and synthesis (Lecture 9.2) (total 7 h)</td>
<td>Mar. 23</td>
<td>Do by Mar. 29-31, hand in Apr. 6</td>
</tr>
<tr>
<td></td>
<td>12.1 Semantic factoring (1.5 hours)</td>
<td></td>
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<tr>
<td></td>
<td>12.2 Building a hierarchy of elemental concepts (1.5 h)</td>
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<tr>
<td></td>
<td>12.3 Hierarchy from facet combination (2 hours)</td>
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<tr>
<td></td>
<td>Complete (start) before Small Groups 3, except 12.3b</td>
<td></td>
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</tr>
<tr>
<td>13</td>
<td>Subject cataloging and searching practice (Lecture 10.2)</td>
<td>see each</td>
<td>see each</td>
</tr>
<tr>
<td>13.1</td>
<td>Dewey Decimal Classification (DDC) (6 hours)</td>
<td>Apr. 6</td>
<td>Apr. 13</td>
</tr>
<tr>
<td>13.2</td>
<td>ERIC Thesaurus (3 hours)</td>
<td>Apr. 13</td>
<td>Apr. 20</td>
</tr>
<tr>
<td>13.3</td>
<td>Libr.of Congress/Sears Subject Headings (LCSH) (5 h)</td>
<td>Apr. 13</td>
<td>Apr. 20</td>
</tr>
<tr>
<td>13.4</td>
<td>Yahoo: Yahoo (or DMOZ) classification (6 hours)</td>
<td>Apr. 20</td>
<td>May 4</td>
</tr>
</tbody>
</table>

**Take-home midterm, covers Weeks 1 - 7 (1.5 hrs)**
| Term paper | Jan. 19 | May 16 |
Outline and Calendar

Week 1. January 19

Lecture  Part 1. **Foundations. Knowledge and knowledge representation.**

Both class periods will be in small groups. Time slots and sign-up to be announced

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
</table>
| 1.1 | **Introduction: Information Professionals in the 21st century** (30 min)  
**Overview of the course** (35 min) |
| 1.2 | **Information systems and information structure** (70 min)  
Lecture |

over
**Week 1. January 19, continued**

### To prepare

**Read beforehand**

**General introductory readings** (electronic copy sent by email or on the Web)

Soergel, Dagobert.
- *Information retrieval*
- *Information organization*

Berkshire Encyclopedia on Human-Computer Interaction. 2004

Berners-Lee, Tim; Hendler, James; Lassila, Ora

*The Semantic Web. A new form of Web content that is meaningful to computers will unleash a revolution of new possibilities*

Scientific American. 2001 May (UBlearns)

**Lecture 1.1**

Special Libraries Association

*Competencies for Information Professionals of the 21st Century*

[www.sla.org/content/learn/comp2003/index.cfm](http://www.sla.org/content/learn/comp2003/index.cfm) (electronic copy of excerpts sent)


*Occupational Outlook Handbook. Librarians*

[http://stats.bls.gov/oco/ocos068.htm](http://stats.bls.gov/oco/ocos068.htm)

**Lecture 1.2 no readings**

### Assignments assigned

**Expanding on Lecture 1.2**

- Assignment 1, Hypermedia exploration: Perseus and Freebase (due Feb 2) (2.5 hours)
- Assignment 2, Bibliographic retrieval system exploration: MEDLINE (due Feb 2) (3 hours)
- Assignment 3, Online catalog search exercise (due Feb 2) (1.5 hours)
Week 2. January 26

Part 1. Foundations. Knowledge and knowledge representation, continued

<table>
<thead>
<tr>
<th>2.1 and 2.2</th>
<th>The nature of knowledge and knowledge representation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lecture</td>
</tr>
</tbody>
</table>

To prepare, read beforehand:

Lectures 2.1 and 2.2

Lecture objectives etc. (pink sheet)

Text Chapter 1. *Introduction: information systems for problem solving*

Text Chapter 2. *The nature of information*

Text Section 9.3 *Criteria for the design and evaluation of data schemas* (p. 150-152)


   Chapter 2 *The formation of mathematical concepts*, p. 9-21

   Chapter 3 *The idea of a schema*, only p. 22-29

   Chapter 5 *Symbols*, p. 46-55

A general introduction to the structure of knowledge and its representation, applicable to any subject, not just mathematics.

2. Lindsay and Norman. *Human information processing*. Intro to psychology.

   Chapter 10. The structure of memory (semantic networks, DS), p. 374-401


No Assignments Due

No assignments assigned
**Week 3. February 2**

**Part 2. Information retrieval: General principles and methods**

| 3.1 | The structure of information systems  
In-class exercise: Analytical description of an information system |
| 3.2 | Objectives and performance measures for information systems (60 min)  
Lecture |

**To prepare, read beforehand**

**For Lecture 3.1**

Lecture objectives etc. (pink sheet)  
Text Chapter 5. *The structure of information systems* (for discussion)

**For Lecture 3.2**

Lecture objectives etc. (pink sheet)  
Text Chapter 6. *Systems analysis*  
Text Chapter 7. *Assessment of users' problems and needs*  
Text Chapter 8. *Objectives and performance measures for ISAR systems* (for discussion)

**Assignments due**

Assignment 1, Hypermedia exploration: Perseus and Freebase (2.5 hours)  
Assignment 2, Bibliographic retrieval system exploration: MEDLINE (3 hours)  
Assignment 3, Online catalog search exercise (1.5 hours)

**Assignments assigned**, read description beforehand

**Based on Lecture 3.1**

• Assignment 4, Analytical description of an information system (due Feb 9) (3 hours)
**Week 4. February 9**

**Part 2. Information retrieval: General principles and methods, continued**

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td><strong>An integrated information structure model</strong>&lt;br&gt;Lecture explaining p. 14 - 47 of the reading; these pages serve as lecture notes&lt;br&gt;Ideas from this lecture/reading will be used and clarified throughout the course</td>
</tr>
<tr>
<td>4.2</td>
<td><strong>Data schemas and formats</strong>&lt;br&gt;In-class exercise: Developing a conceptual schema (45 minutes)&lt;br&gt;Questions and answers / discussion of Chapter 9</td>
</tr>
</tbody>
</table>

**To prepare, read beforehand**

**Lecture 4.1**

Lecture objectives etc. (pink sheet)

1. Soergel, *Design of an integrated information structure interface*, Prologue and p. 1 - 13<br>(The rest of this reading serves as the notes for the lecture.)

**Optional**

2. Soergel, *A language for the description of foods* (included)<br>More examples for the Entity-Relationship approach and hierarchical inheritance

**Lecture 4.2**

Lecture objectives etc. (pink sheet)

Text Chapter 3. *The structure of information*

Text Chapter 9. *Data schemas and formats* (including Appendix) (for discussion)

**Model Catalog** (useful to look at)

**Assignments due**

Assignment 4, Analytical description of an information system (3 hours)

**Assignment assigned** (read description beforehand)

- Assignment 5, Developing a conceptual data schema (due Feb 16) (1.5 hours)
Week 5. February 16

Part 2. Information retrieval: General principles and methods, continued

| 5.1 | Access to information: data structure and search modes (85 min.)
|     | Retrieval as prediction (probabilistic retrieval)
|     | Review of Boolean retrieval (Text Chapter 10)
|     | In-class exercise: Ranking of retrieved objects
|     | Review of search modes and data structures (Text Chapter 11)
|     | In-class exercise: Restructuring a semantic network |

Part 3. Nature, design, and management of documents and records

Lect. 5.2, 6.1, 6.2. Document function, structure, analysis, and design

| 5.2A | Knowledge (re)presentation in text and images. Text linguistics (35 min) |
| 5.2B | Text analysis overview and examples (30 min) |
|      | In-class exercise: Extracting data from text, especially resolving anaphoric references |
To prepare, read beforehand

Lecture 5.1
Lecture objectives etc. (pink sheet)
Text Chapter 10. Elementary query formulation
Text Chapter 11. Data structures and access

Model Catalog (useful to look at)

Lecture 5.2A
Lecture objectives etc. (pink sheet) for Lectures 5.2 - 6.2 and for Lecture 5.2A

Optional
2 Crombie, W., orig. author; Soergel, D., adapter. Semantic relations between propositions. 1985 and 1998. 7 p. (included)

Lecture 5.2B
Lecture objectives etc. (pink sheet)

Optional
1 Xerox linguistic software (Web announcement) and Temis / Luxid www.luxid.com (Included. Illustrates practical importance of text analysis and NLP)

Assignments due
Assignment 5, Developing a conceptual data schema (1.5 hours)
Assignment assigned (read description beforehand)

- Assignment 6, Restructuring a semantic network (due Feb23) (1 hour)

- Prepare description of term paper using the form found after Assignment 6 (due Mar 2)

Optional: Exercise on database definition and querying using MS Access
www.dsoergel.com/571/670SoergelMSAccessAssignment.pdf

Week 6. February 23


Lect. 5.2, 6.1, 6.2. Document function, structure, analysis, and design, continued

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>6.1A</td>
<td>Natural language processing. Syntactic and semantic parsing (45 min) Lecture</td>
</tr>
<tr>
<td>6.1B</td>
<td>Document macrostructure and inter-document relationships (40 min) Lecture</td>
</tr>
<tr>
<td>6.2A</td>
<td>Document design. Formatting documents for understanding by people (50 min) Lecture</td>
</tr>
<tr>
<td>6.2B</td>
<td>Formatting documents for interpretation by computers. Markup languages. (15 min) Very brief introduction; covered in 506. Some materials in the appendix (on the Web)</td>
</tr>
</tbody>
</table>

To prepare, read beforehand

Lecture 6.1A

- Lecture objectives etc. (pink sheet)
  - Chapter 1. Introduction to natural language understanding, p. 1-17.

Optional

- *NLP Meets the Jabberwocky: Natural Language Processing in Information Retrieval* by Susan Feldman
  - ONLINE, May 1999
  - Copyright © Information Today, Inc. (UB Library e-journals)

Lecture 6.1B Lecture objectives etc. (pink sheet)

Lecture 6.2A

- Lecture objectives etc. (pink sheet)

3 Keyes, Elizabeth. 

4 Soergel, D., compiler. *Some useful document design guidelines.*
Week 6. February 23, continued

Optional

Recommended for school library media specialists

Optional (read before or after)

**Content management suite from Interwoven** (included)
Data sheets from Web site www.interwoven.com/products
Included for the ideas, no endorsement of product or company.
If you download the .pdf Data sheets, you can use the zooming function of Adobe Acrobat to actually see the small pictures.

Lecture 6.2B
Lecture objectives etc. (pink sheet)

Lectures 5.2 - 6.2 (read after)

Optional

Assignments due
Assignment 6, Restructuring a semantic network (1 hour)

Assignment assigned (read description beforehand)
• Assignment 7, Applying linguistic techniques to retrieval problems (due Mar 2) (2 hrs.)
Week 7. March 2


Lectures 7.1A - 7.2B. Metadata. Bibliographic and record control

<table>
<thead>
<tr>
<th>7.1A</th>
<th>General introduction to metadata (10 min.) Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1B</td>
<td>Bibliographic and record control. General issues (40 min) Lecture</td>
</tr>
<tr>
<td>7.1C</td>
<td>Bibliographic and record control. Description. (25 min) Describing texts and documents in a more general context Lecture</td>
</tr>
<tr>
<td>7.2A</td>
<td>Bibliographic and record control: Entries and access (40 min) In-class exercise: Problems of determining author entry</td>
</tr>
<tr>
<td>7.2B</td>
<td>Metadata, Resource Description Framework (RDF), Dublin Core (DC) (35 min) Lecture</td>
</tr>
</tbody>
</table>

Cataloging clinic for Assignment 9 - schedule with GA (Times will be announced)

To prepare, read beforehand

Lectures 7.1A - 7.2B

Lecture objectives etc. (pink sheet)

1 What is FRBR?: A Conceptual Model for the Bibliographic Universe. Barbara Tillett. Available at the following website: http://www.loc.gov/catdir/cpso/whatfrbr.html

Optional

1 Functional Requirements for Bibliographic Records: Final Report
Available at www.ifla.org/VII/s13/frbr/frbr.pdf

Intro at http://books.google.com/books?id=W1BFVbU_ozYC in Baldy 14A

Lecture 7.1C

1 Descriptive Cataloging. Sample codes
Includes Excerpts from AACR2, Part 1: Brief introduction to APA rules; and Sample list of citation styles supported by Library Master
Get a general idea. Do not read the whole document in detail; know where things are so you can refer to the document in later cataloging exercises.

2 Statement of international cataloguing principles. IFLA 2009
The **Model Catalog** is helpful as a source of examples.

### Readings, continued

**Lecture 7.2A**

**Read afterwards:**

1. *Excerpts from AACR2, Part 2* (Familiarize yourself with the general layout and some major rules) (The reading package contains merely a list of sections to look at; use the AACR2 book in Baldy 14A.)

2. *Lubetzky's conditions for author entry* (from Needham, Organizing knowledge in libraries, 1971), rearranged by D. Soergel

### Assignments due

**Assignment 7**, Applying linguistic techniques to retrieval problems (2 hrs.)

Note: Assignment 3, Online catalog search (assigned Jan 19, due Feb 2) prepares for these lectures

**Description of term paper** using the form found after Assignment 6

### Assignment assigned (read description beforehand)

- Assignment 8, Problems of entry (due Mar 23) (1.5 hours)
- Assignment 9, Descriptive cataloging practice (due Mar 23 or later) (4 hours)
- Assignment 10, Index three documents, prepare for Lecture 8.1 (Mar 8 - 10) (2 hours)

(This assignment is preparation for Small Groups 1, Lecture 8.1)
Week 8. March 8 - 10 (Small Groups 1, 4 hours)
Several time slots (including class time), final scheduling based on sign-up.
Replaces class on Mar 9; if your time slot is not the class time, do not come to class on Mar 9

Part 4. Classification and subject access

<table>
<thead>
<tr>
<th>8.1</th>
<th>Explorations in subject access</th>
<th>Continuing Assignment 10.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2 hrs.</td>
</tr>
</tbody>
</table>

| 8.2A | Vocabulary control | A special case of authority control (20 min.) |
|      |                   | Text Chapter 12 review |

Lexical relationships: Paradigmatic relationships (synonymy, antonymy, hyponymy) and homonymy/polysemy (10 min.)
Lecture

| 8.2B | Index language functions | (60 min.) |
|      | Lecture                   |           |
|      | In-class exercise: Request-oriented indexing |           |
### Week 8. October 19 - 22, continued

#### To prepare, read beforehand

**Part 4**

Objectives etc. (pink sheet)

#### Lecture 8.1

Small Groups 1 objectives etc. (pink sheet). Look over all pages for Small Groups 1 in the Lecture notes

#### Lecture 8.2A

Lecture objectives etc. (pink sheet)

Text Chapter 12. *Terminological control* (for brief discussion)

#### Lecture 8.2B

Lecture objectives etc. (pink sheet)

Text Chapter 13. *Index language functions* (for discussion)

2. Soergel, *Functions of a thesaurus / classification / ontological KB* (optional, included)

#### Assignments due

Assignment 10, Indexing of three documents (2 hours)

*This assignment is preparation for Small Groups 1, Lecture 8.1.*

#### Assignment assigned (read description beforehand)

- Assignment 11, Request-oriented indexing (due Mar 23) (2 hours) (based on Lect. 8.2B)

#### MIDTERM

*Take-home, closed-book midterm exam handed out* (due Mar 23) (1.5 hours)

May type or handwrite
Week 9. March 22 - 24 (Small Groups 2)
Several time slots (including class time(s)), final scheduling based on sign-up.
Replaces class on Mar 23; if your time slot is not the class time, do not come to class on Mar 23.

Part 4. Classification and subject access, continued

| 9.1 | Index language structure 1: conceptual |
|     | In-class exercise                      |
|     | Conceptual analysis and synthesis: Semantic factoring and hierarchy building |

| 9.2 | Application of index language structure to searching |
|     | In-class exercise: Retrieval of documents in a sample collection |
|     | In-class exercise: Retrieval access to the documents from Assignment 11 |

To prepare, read beforehand

Lecture 9.1
- Lecture objectives, etc. (pink sheet)
- Text Chapter 14. *Index language structure 1: conceptual* (for discussion)

Lecture 9.2
- Lecture objectives, etc. (pink sheet)

Assignments due
Assignment 8, Problems of entry (1.5 hours) (can be handed in later)
Assignment 9, Descriptive cataloging practice (4 hours) (can be handed in later)
Assignment 11, Request-oriented indexing (2 hours)
Midterm Examination

Assignment assigned (read description beforehand)
- Ass. 12, Conceptual analysis and synthesis
  (do 12.1 and 12.2 and at least start-12.3a before Small Gr. 3, Mar 29 - 31, hand all in Apr 6)
- Assignment 12.1, Semantic factoring (1.5 hours)
- Assignment 12.2, Building a hierarchy of elemental concepts (1.5 hours)
- Assignment 12.3, Hierarchy from facet combination (2 hours)
Week 10. Mar 29 - 31, Small Groups 3
Several time slots (including class time), final scheduling based on sign-up.
Replaces class on Mar 30; if your time slot is not the class time, do not come to class on Mar 30

Part 4. Classification and subject access, continued

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>10.1</td>
<td>Constructing a hierarchy from facet combination (1 hour 40 min)</td>
</tr>
<tr>
<td>10.2</td>
<td>Brief discussion of Assignment 13 Subject cataloging and searching practice (20 min)</td>
</tr>
</tbody>
</table>

To prepare,

Lecture 10.1, Small Groups 3

Complete Assignment 12.1 and 12.2 and at least start 12.3a beforehand

Lecture 10.2

Lecture objectives, etc. (pink sheet)

General introduction to Assignment 13, p. 141 in the Assignments (yellow)
Look over Assignment 13 materials

Assignments due

Ass. 12, Conceptual analysis and synthesis
(doit 12.1 and 12.2 and at least start 12.3a before Small Groups 3, hand all in Apr 6)
Assignment 12.1, Semantic factoring (1.5 hours)
Assignment 12.2, Building a hierarchy of elemental concepts (1.5 hours)
Assignment 12.3, Hierarchy from facet combination (2 hours)
**Assignments assigned** (read description beforehand)

**Assignment 13. Subject cataloging and searching practice**

- Assignment 13.1, Dewey Decimal Classification (DDC) (6 hours)
  
  Start Apr. 6, complete by Apr. 13, be ready with questions for class discussion

- Assignment 13.2, ERIC Thesaurus (3 hours)
  
  Start Apr. 13, complete by Apr. 20, not covered in class

- Assignment 13.3, Library of Congress/Sears Subject Headings (LCSH) (5 hours)
  
  Start Apr. 13, complete by Apr. 20, not covered in class

- Assignment 13.4 Yahoo: Yahoo (or DMOZ) classification (a semi-faceted classification) (6 hours)
  
  OR LCC: Library of Congress Classification (LCC) (6 hours)
  
  OR MediaStreams (for indexing of movie scenes)
  
  OR Your choice in consultation with instructor

  For Yahoo and LCC, we will start going through the worksheet, index a document, and formulate a query on Apr. 20 so that everyone has at least some idea of these schemes.

  For the option you choose, complete the rest of the assignment by May 4.

  Optional: In preparation for Yahoo, look at http://dir.yahoo.com/

Absolute deadline for Assignment 13 to receive a grade in the course is May 16.

Assignment 13.4 LCC requires the use of printed volumes of which there are only a few copies and of online-access from computers in the Baldy 14A lab.

You are encouraged to meet with the instructor in study groups to ask questions on these assignments.
### Week 11. April 6

**Part 4. Classification and subject access, continued**

| 11.1 | **Index language structure 2: database organization**  
Text Chapter 15 review  
Concluding in-class exercise: vocabulary control and hierarchical structure  
Concluding in-class exercise: conceptual analysis and synthesis |
|------|---------------------------------------------------------------|
| 11.2 | **Indexing and system performance** (50 min.)  
Text Chapter 16 review |

**Lecture 11.1 read beforehand**
- Lecture objectives, etc. (pink sheet)
- Text Chapter 15. *Index language structure 2: database organization* (for discussion)

**Lecture 11.2 read beforehand**
- Lecture objectives, etc. (pink sheet)
- Text Chapter 16. *Indexing and system performance* (for discussion)

   - Note: Some students found it easier to read this article before Chapter 16.

**Model Catalog** (useful to look at)

**Assignments due**

Ass. 12, Conceptual analysis and synthesis. Hand in all parts
Week 12. April 13

Part 4. Classification and subject access, continued

<table>
<thead>
<tr>
<th>12.1</th>
<th>Discussion and in-class exercise: DDC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Discussion of Assignment 13.1, Dewey Decimal Classification</td>
</tr>
<tr>
<td></td>
<td>In-class exercise: Advanced topics in DDC (as marked in the DDC worksheet)</td>
</tr>
</tbody>
</table>

| 12.2 | Short Media Streams demo |

To prepare, read beforehand

Lecture 12.1

Lecture objectives, etc. (pink sheet)

1 Needham, *Organizing knowledge in libraries*, Chapter 7, p. 109-131 (review of classification principles) and Chapter 8, p. 133, p.140-152 (DDC)

Have questions on DDC ready, or email to the instructor beforehand, dsoergel@buffalo.edu

Lecture 12.2

Optional readings (required if you do Assignment 13.4 Media)


   Telektronikk 4.93 (1993): 59-71
   www.dsoergel.com/571/MediaStreamsAnnotationPaper.pdf

over
### Week 12, continued

**Assignments due**
Assignment 13.1, Dewey Decimal Classification (DDC) (6 hours)

---

**Assignment assigned** (read description beforehand)

- Assignment 13.3, Library of Congress/Sears Subject Headings (LCSH) (5 hours) (due Apr 20)

Prepare requests for topics to be included in the final review.
(Can be submitted by e-mail to dsoergel@buffalo.edu until May 3, 10 am.)
Week 13. April 20

Part 4. Classification and subject access, continued

<table>
<thead>
<tr>
<th>13.1A</th>
<th>Questions on Assignment 13.2, ERIC and 13.3, LCSH</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.1B</td>
<td>Introductory discussion and in-class exercise on Assignment 13.4 Yahoo</td>
</tr>
<tr>
<td></td>
<td>We will start going through the worksheet, index a document, and formulate a query.</td>
</tr>
<tr>
<td>13.2</td>
<td>Introductory discussion and in-class exercise on Assignment 13.4: LCC</td>
</tr>
<tr>
<td></td>
<td>We will start going through the worksheet, index a document, and formulate a query</td>
</tr>
</tbody>
</table>

To prepare, read beforehand

Lecture 13.1A (the readings for Assignment 13.3 LCSH)
Chan, *Cataloging and classification*, Chapter 8 on LCSH (UBlearns and Lockwood)
Needham, Ch. 10, *The alphabetic subject catalog*, p. 199-223 (optional, included)

For further study
Chan, Lois Mai 1995
Lockwood Z695.Z8L5226 1995 (on reserve)
Perreault, Jean M. 1979

Lecture 13.1B
Lecture objectives, etc. (pink sheet)
1 Needham, *Organizing knowledge in libraries*, Chapter 8, p. 163-168 (LCC)
2 Chan, excerpts from *Immroth's guide to the Library of Congress Classification*, p.13-22. (Optional, but required if you do Assignment 13.4 LCC)

over
Week 13. November 23, continued

Assignments due
Assignment 13.2, ERIC Thesaurus (3 hours)
Assignment 13.3, Library of Congress/Sears Subject Headings (LCSH) (5 hours)
(Nothing to be handed in now, but you should have indexing and query formulation done)

Assignment assigned
- Assignment 13.4 Yahoo, Yahoo classification (a semi-faceted classification) (6 hours)
  OR LCC, Library of Congress Classification (6 hours)
  OR MediaStreams iconic classification
  OR Own choice
  (Due May 4)

Prepare requests for topics to be included in the final review.
(Can be submitted by e-mail to dsoergel@buffalo.edu until May 3 10 am.)
Week 14. April 27

Part 4. Classification and subject access, continued

| 14.1 | Exploration of classification schemes and thesauri (now often called ontologies) |
|      | Discussion of schemes covered in the reading |
| 14.2 | Concluding discussion and comparison of classification schemes and thesauri |

To prepare, read beforehand
Lecture 14.1
Lecture objectives, etc. (pink sheet)
1 Soergel, D., compiler *Exploration of classification schemes and thesauri*
Meant for exploration, not for word-to-word to reading. Get an overview and pick out some examples to understand the structure of a scheme. Explore all schemes, pick three schemes of particular interest to you and explore them in depth.

Lecture 14.2
Lecture objectives, etc. (pink sheet)
Review Assignment 13

Assignments due
Assignment 13.4 Yahoo, Yahoo classification (a semi-faceted classification) (6 hours)
OR LCC, Library of Congress Classification (6 hours)
OR MediaStreams iconic classification
OR Own choice

Hand in completed document indexing forms and query formulation forms for Assignment 13

Assignment assigned
Prepare requests for topics to be included in the final review.
(Can be submitted by e-mail to dsoergel@buffalo.edu until May 3, 10 am.)
Week 15. May 4

Review

15.1 and 15.2  Final review

To prepare

Read through lecture notes for Lectures 15.1 and 15.2:
- Sample final questions to be discussed
- Final review: Natural language processing
- Final review: Precombination vs. postcombination

Think of questions, preferably email them to the instructor ahead of time, by May 3, 10 am (dsoergel@buffalo.edu)

No assignments due

No assignments assigned
## Week 16. May 11

### Final exam and paper

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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</table>
| 16.1 and 16.2 May 11 | **Final exam** (unless arranged otherwise; contact the instructor if this date is a problem)  
The final exam is 3 hours.  
Before the clock starts, you can read through the questions and request clarification.  
After that, students who prefer to take the exam on a computer will go to a location to be announced. Email exam to dsoergel@buffalo.edu. |
| May 16     | **Term paper due.**  
**Last day for handing in Assignments 9 and 13** |
Syllabus

Calendar Overview by part of course

Read only if you need another look at the overall structure of the course
Calendar Overview by part of course

Note: This part (p. 8 - 11) is repetitive with the calendar; it gives a different arrangement which some students might find helpful.

**Part 1. Foundations. Knowledge and knowledge representation** (Lectures 1.1 - 2.2)

The course starts out with the **fundamentals**: Combining ideas from database management, artificial intelligence, and cognitive psychology, we explore the nature of knowledge and its structure and representation in information systems and in the mind. Out of this exploration evolve general principles that apply to any kind of information/knowledge.

These ideas are **applied** and made more concrete

- in three assignments that illustrate the application of information structure to searching;
- throughout the course.

<table>
<thead>
<tr>
<th>Lectures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Jan. 19</td>
</tr>
<tr>
<td>Introduction and overview. Information professionals in the 21st century</td>
</tr>
<tr>
<td>1.2</td>
</tr>
<tr>
<td>Information systems and information structure</td>
</tr>
<tr>
<td>2.1 Jan. 26</td>
</tr>
<tr>
<td>The nature of knowledge</td>
</tr>
<tr>
<td>2.2</td>
</tr>
<tr>
<td>Knowledge representation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Assigned</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Hypermedia exploration: Perseus and Freebase (2.5 hours)</td>
<td>Jan. 19</td>
<td>Feb. 2</td>
</tr>
<tr>
<td>2 Bibliographic retrieval system exploration: MEDLINE (3 hours)</td>
<td>Jan. 19</td>
<td>Feb. 2</td>
</tr>
<tr>
<td>3 Online catalog search exercise (1.5 hours)</td>
<td>Jan. 19</td>
<td>Feb. 2</td>
</tr>
</tbody>
</table>
Part 2. Information retrieval: General principles and methods (Lectures 3.1 - 5.1, also 11.2)

This part begins with an overview of the structure of information systems, systems that bring information or knowledge to the people or organizations or computer systems who need it to solve problems. This is followed by a discussion of information system objectives. The result is an overall framework for the discussion of individual information system functions and components not just in this course but in other courses as well.

Building on the conceptual foundation of Part 1, Part 2 then introduces a general information structure model that provides an integrated view of different approaches to information retrieval (IR). It then discusses data schemas and formats and the data structure and search component of IR systems, all on a general level, laying out principles to be applied to specific types of systems later in the course. The later lecture 11.2, Indexing and system performance, rounds out this part.

<table>
<thead>
<tr>
<th>Lectures</th>
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<tbody>
<tr>
<td>3.1 Feb. 2 The structure of information systems.</td>
</tr>
<tr>
<td>3.2 Objectives and performance measures for information systems</td>
</tr>
<tr>
<td>4.1 Feb. 9 An integrated information structure model</td>
</tr>
<tr>
<td>4.2 Data schemas and formats</td>
</tr>
<tr>
<td>5.1 Feb. 16 Access to information: data structure &amp; search modes. Retrieval as prediction. Ranking</td>
</tr>
<tr>
<td>11.2 Apr. 6 Indexing and system performance</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Assigned</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Analytical description of an information system</td>
<td>Feb. 2</td>
<td>Feb. 9</td>
</tr>
<tr>
<td>5 Developing a conceptual data schema</td>
<td>Feb. 9</td>
<td>Feb. 16</td>
</tr>
<tr>
<td>6 Restructuring a semantic network</td>
<td>Feb. 16</td>
<td>Mar. 2</td>
</tr>
<tr>
<td>Short description of term paper</td>
<td>Feb. 16</td>
<td>Mar. 2</td>
</tr>
</tbody>
</table>
Part 3. The nature, design, and management of documents and records (Lect. 5.2 - 7.2)

Part 3 applies the general principles to the specific case of documents and records, from plain text on paper to multimedia Web sites. It explores how knowledge, a complex web of interrelationships among entities, is (re)presented in text and images; put differently, it explores the structure of documents and principles of document design for improved communication. It examines how text/document structure affects assimilation and understanding. It covers text types; text analysis, including natural language processing (specifically syntactic and semantic parsing) and data extraction; application of frames to the analysis of document macro structure; document design for people, expressing the internal conceptual structure through external form; and briefly mentions markup languages to make documents understandable for computers.

Part 3 then uses general information structure principles and insights into the nature of documents to elucidate the problems of describing/cataloging documents and designing library and Web catalogs – the problem of metadata, with a look to supporting users most effectively.

<table>
<thead>
<tr>
<th>Lectures</th>
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<tbody>
<tr>
<td>5.2 Feb. 16</td>
</tr>
<tr>
<td>6.1 - 6.2 Feb. 23</td>
</tr>
<tr>
<td>7.1 - 7.2 Mar. 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Assigned</th>
<th>Due</th>
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</thead>
<tbody>
<tr>
<td>7 Applying linguistic techniques to retrieval problems</td>
<td>Feb. 23</td>
<td>Mar. 2</td>
</tr>
<tr>
<td>8 Problems of entry</td>
<td>Mar. 2</td>
<td>Mar. 23</td>
</tr>
<tr>
<td>9 Descriptive cataloging of four documents</td>
<td>Mar. 2</td>
<td>Mar. 23+</td>
</tr>
<tr>
<td>10 Indexing of three documents and prep for Lecture 8.1 (Belongs to Part 4)</td>
<td>Mar. 2</td>
<td>Mar. 8-10</td>
</tr>
</tbody>
</table>
Part 4. Classification and subject access (Lectures 8.1 - 14.2)

While Parts 1 - 2 deal with the access to information and documents from all kinds of access points and Part 3 focuses on formal or “descriptive” access points, Part 4 focuses on subject access. It applies the principles of information structure and user orientation to an analysis of knowledge organization systems (KOS) – classification schemes and thesauri, taxonomies, ontologies. Part 4 relies mainly on assignments designed to help you explore such schemes to (1) reinforce understanding of the general principles and teach the skill of analyzing such schemes and (2) help you get familiar with a few widely used schemes.

<table>
<thead>
<tr>
<th>Lectures.</th>
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<tbody>
<tr>
<td>8.1 Mar. 8 - 10</td>
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<tr>
<td>8.2 Mar. 22 - 24</td>
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<tr>
<td>9.1 Mar. 22 - 24</td>
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<td>9.2 Mar. 22 - 24</td>
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<td>10.1 Mar. 29 - 31</td>
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<tr>
<td>11.1 Apr. 6</td>
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<tr>
<td>11.2 Apr. 13</td>
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<td>12.1-12.2 Apr. 13</td>
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<tr>
<td>13.1-13.2 Apr. 20</td>
</tr>
<tr>
<td>14.1 Apr. 27</td>
</tr>
<tr>
<td>14.2 Apr. 27</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Assigned</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Indexing of three documents and preparation for Lecture 8.1</td>
<td>Mar. 2</td>
</tr>
<tr>
<td>11</td>
<td>Request-oriented indexing</td>
<td>Mar. 9</td>
</tr>
<tr>
<td>12</td>
<td>Conceptual analysis and synthesis</td>
<td>Mar. 23</td>
</tr>
<tr>
<td>13.1</td>
<td>Dewey Decimal Classification (DDC)</td>
<td>Apr. 6</td>
</tr>
<tr>
<td>13.2</td>
<td>ERIC Thesaurus</td>
<td>Apr. 13</td>
</tr>
<tr>
<td>13.3</td>
<td>Library of Congress/Sears Subject Headings (LCSH)</td>
<td>Apr. 13</td>
</tr>
<tr>
<td>13.4</td>
<td>Yahoo: Yahoo (or DMOZ) classification OR LCC: Library of Congress Classification OR MediaStreams iconic classification OR Own choice</td>
<td>Apr. 20</td>
</tr>
</tbody>
</table>

**Take-home midterm exam** Mar. 9 Mar. 23
General reading

Model catalog

Required. Refer to this throughout the course.


The model catalog gives many examples of cataloging documents, including a Web site, using AACR2R (Anglo-American Cataloguing Rules. 2. edition, revised) and the MARC (MAchine Readable Cataloging) format.

It includes an outline of the MARC format for study and provides examples for

Lecture 4.2. Data schemas and formats,

Lecture 5.1. Access to information: data structure & search modes. Retrieval as prediction. Ranking (through the searching capabilities with Library Master).

Lectures 7.1-7.2. Bibliographic and record control. General issues, description, entries and access and
Assignment 9. Descriptive cataloging of four documents

Lectures 12.1-13.2 Subject cataloging and searching practice and
Assignment 13. Subject cataloging and searching practice.

Electronic version emailed. Needs to be installed following the instructions in the paper version
Lectures 1.1 and 1.2
Introduction and overview.
Information systems and information structure

General introductory readings (these were emailed beforehand)

Soergel, Dagobert.
*Information retrieval*
*Information organization*

Berkshire Encyclopedia on Human-Computer Interaction. 2004 (electronic copy sent)

Berners-Lee, Tim; Hendler, James; Lassila, Ora
*The Semantic Web. A new form of Web content that is meaningful to computers will unleash a revolution of new possibilities*
Scientific American. 2001 May (UBlearns)

For Lecture 1

Special Libraries Association
*Competencies for Information Professionals of the 21st Century*
www.sla.org/content/learn/comp2003/index.cfm (electronic copy of excerpts sent)

*Occupational Outlook Handbook. Librarians*
http://stats.bls.gov/oco/ocos068.htm
Lectures 2.1 and 2.2

The nature of knowledge and knowledge representation

Required. Read beforehand.

Lecture objectives etc. (pink sheet)

Text Chapter 1. *Introduction: information systems for problem solving*
Text Chapter 2. *The nature of information*
Text Section 9.3. *Criteria for the design and evaluation of data schemas* (p.150-152)

   Ch. 2 *The formation of mathematical concepts*, p. 9 -21
   Ch. 3 *The idea of a schema*, only p. 22-29
   Ch. 5 *Symbols*, only p. 46-55

   Ch. 10 *The structure of memory*, p. 374-401
   Ch. 11 *Memory processes*, p. 402-434


   Ch. 12 *Implicit methods for conveying structural knowledge through frames and slots*, p. 125-133

   Section 2.2.3. *Frames: Packaged Structures*, p. 48-57
Lectures 3.1 and 3.2
The structure of information systems
Objectives and performance measures for information systems

Required. Read beforehand.

Lecture objectives etc. (pink sheet)

Text Chapter 5. *The structure of information systems* (for discussion)
Text Chapter 6. *Systems analysis*
Text Chapter 7. *Assessment of users’ problems and needs*
Text Chapter 8. *Objectives and performance measures for ISAR systems*
   (for discussion)
Required. Read beforehand

For Lecture 4.1

Lecture objectives etc (pink sheet)

1  Soergel, Dagobert.  *Design of an integrated information structure interface*.  
   Prologue and Part 1 (p. 1-48) included, whole paper on the Web site

For Lecture 4.2

Lecture objectives etc (pink sheet)

Text Chapter 3. *The structure of information*
Text Chapter 9. *Data schemas and formats* (Including Appendix) (for discussion)

Optional, included. Read before or after.

More examples for the Entity-Relationship approach and hierarchical inheritance
Lecture 5.1  
Access to Information: Data structure and search modes.

Required. Read beforehand.

- Lecture objectives etc (pink sheet)
- Text Chapter 10. *Elementary query formulation*
- Text Chapter 11. *Data structures and access*

Lecture 5.2A  
Knowledge (re)presentation in text and images. Text linguistics.

Required. Read beforehand.

- Lecture objectives etc (pink sheet)

Optional, included.


Lecture 5.2b. Text analysis overview and examples

Required. Read beforehand: Lecture objectives etc (pink sheet)

Required, read before or after (you can skip details):

1. **Practical applications of linguistic technology**
   Compiled from Inxight www.inxight.com (recently acquired by Business Objects www.businessobjects.com/products/) and Temis, with a product line called Luxid www.luxid.com

Optional (UB Library e-journals). Read afterwards.

Lecture 6.1a

Natural language processing. Syntactic and semantic parsing.

Required. Read beforehand.

Lecture objectives etc. (pink sheet)

Table of contents
Ch. 1 Introduction to natural language understanding, p. 1-17.

Optional.

1 Feldman, Susan. NLP Meets the Jabberwocky: Natural Language Processing in Information Retrieval. ONLINE, 1999 May; 23(3): 62-64,66-68,70-72 (UB Library e-journals)

Lecture 6.1b.

Document macrostructure and inter-document relationships

Required. Read beforehand. Lecture objectives etc. (pink sheet)

Lecture 6.2a

Document design (information design)
Formatting documents for understanding by people

Required. Read beforehand. Lecture objectives etc. (pink sheet)


Over
Lecture 6.2a continued. Optional. Read before or after.


Recommended for school library media specialists


Lecture 6.2B

Formatting documents for interpretation by computer programs
Document markup languages

Required. Read beforehand. Lecture objectives etc. (pink sheet)

Optional. Read before or after.

1 Content management suite from Interwoven (optional, but included in packet)
   Data sheets from Web site www.interwoven.com/products
   Included for the ideas, no endorsement of product or company.
   If you download the .pdf data sheets, you can use the zooming function of Adobe Acrobat to actually see the small pictures.

Required. Read after Lectures 5.2-6.2.


Optional. Read after Lectures 5.2-6.2.

Lectures 7.1 - 7.2
Cataloging and metadata.
Bibliographic and record control: description, entries and access

Required. Read beforehand.

Lectures 7.1A-7.2B. Lecture objectives. (Pink sheet)

1 What is FRBR?: A Conceptual Model for the Bibliographic Universe. Barbara Tillett. Available at the following website: http://www.loc.gov/catdir/cpso/whatfrbr.html

Optional.


Lecture 7.1C

1 Descriptive cataloging. Sample codes. Includes excerpts from AACR2-2002, Part 1; brief introduction to APA Rules; and sample list of citation styles supported by Library Master. See Readings (Syllabus, p. 13) for publication details for AACR2 Get a general idea; do not read the whole document in detail. Know where things are so you can refer to the document in later cataloging exercises.


The Model catalog is helpful as a source of examples

Lecture 7.2A. Read afterwards:

1 Excerpts from AACR2, Part 2. Familiarize yourself with the general layout and some major rules. The reading package contains merely a list of sections to look at; use the AACR 2 book. ()

Week 7, continued

Lectures 7.1 - 7.2
Cataloging and metadata.
Bibliographic and record control: description, entries and access

Readings on RDA (Resource Description and Access), which will replace AACR2

**Required** (in packet)
Joint Steering Committee for Revision of Anglo-American Cataloguing Rules
**RDA: Resource Description and Access. Brochure**

**Optional**
Joint Steering Committee for Revision of Anglo-American Cataloguing Rules
**RDA: Resource Description and Access. Prospectus**
Revised: 19 June 2006

Coyle, Karen; Hillmann, Diane
**Resource Description and Access (RDA). Cataloging Rules for the 20th Century**
D-Lib Magazine. 13 (½); January/February 2007
www.dlib.org/dlib/january07/coyle/01coyle.html  accessed Feb. 10. 2007

Weiss, Paul J., presenter; Larkin, Molly R. T., recorder
**AACR3 Is Coming–What Is It?**
The Serials Librarian. 2006; 50 (3/4): 285-294
(UB library e-journals)
Lectures 8.1 and 8.2
Vocabulary control. Lexical relationships. Index language functions

To prepare, read beforehand.

Part 4

Objectives etc. (pink sheet)

Lecture 8.1

Small group objectives etc. (pink sheet) and all pages for Small Groups 1 in Lecture Notes.

Lecture 8.2A

Lecture objectives etc. (pink sheet)

Text Chapter 12. *Terminological control* (for brief discussion)

Lecture 8.2B

Required. Read beforehand.

Lecture objectives etc. (pink sheet)

Text Chapter 13. *Index language functions* (for brief discussion)


Optional, included (required reading for LBSC 775)

Lectures 9.1 and 9.2
Index language structure 1: conceptual
Application of index language structure to searching

To prepare, read beforehand.

Lecture 9.1 (Small Groups 2)

Lecture objectives, etc. (pink sheet)

Text Chapter 14. *Index language structure 1: conceptual* (for discussion)

Lecture 9.2 (Small Groups 2)

Lecture objectives, etc. (pink sheet)
Small Groups 3. Lectures 10.1 and 10.2

Subject cataloging and searching practice

Constructing a hierarchy from facet combination (1.5 hours)

Brief discussion of Assignment 13

Lecture 9A.1

Lecture objectives etc. (pink sheet)

General introduction to Assignment 13 (in the assignments)

Lecture 9A.2

Lecture objectives etc. (pink sheet)

Complete or at least start Assignment 12.1 - 12.3a beforehand
To prepare, read beforehand.

Lecture 10.1

Lecture objectives, etc. (pink sheet)

Text Chapter 15. *Index lang. structure 2: database org.* (for discussion)

Lecture 10.2

Lecture objectives, etc. (pink sheet)

Text Chapter 16. *Indexing and system performance* (for discussion)

Note: Some students found it easier to read this article before Ch. 16.
Lectures 12.1 and 12.2  
Discussion and in-class exercise: DDC. Short Media Streams Demo

To prepare, read beforehand.

Lecture 11.1

Lecture objectives etc. (pink sheet)

   Ch. 7  Review of classification principles, p. 109-131  
   Ch. 8  DDC, p. 133, 140-152

Have questions on DDC ready or email to the instructor beforehand. <dsoergel@buffalo.edu>

Lecture 11.2

Optional readings (at least one required if you choose Assignment 13.4 Media)

   Short version

   www.dsoergel.com/571/MediaStreamsAnnotationPaper.pdf  
   (Optional, but required if you do Assignment 13.4 Media)
Lectures 13.1 and 13.2
Introductory discussion and in-class exercise: Yahoo, LCC, Media Streams

To prepare, read beforehand

**Lecture 13.1A** (the readings for Assignment 13.3 LCSH)

Chan, *Cataloging and classification. 3. ed. 2007*, Chapter 8 on LCSH, p. 213-257 (in UBlearns)

Needham, Ch. 10, *The alphabetic subject catalog*, p. 199-223 (optional, included)

**For further study**

Chan, Lois Mai 1995
*Library of Congress Subject Headings. principles of structure and application. 3. ed.*
Lockwood Z695.Z8L5226 1995 (on reserve)

Perreault, Jean M. 1979

**Lecture 13.1B**

Lecture objectives, etc. (pink sheet)

1. Needham, *Organizing knowledge in libraries*, Chapter 8, p. 163-168 (LCC) (in UBlearns)

   (Optional, but required if you do Assignment 13.4 LCC)
Also Chan, *Cataloging and classification. 3. ed. 2007*, Chapter 14 on LCC, p. 375-409 (in UBlearns)

**Lecture 13.2**

Unless you have some experience with the Yahoo classification, go online and have a look or look over Figures 1-4 in Assignment 13.4 Yahoo.
Lecture 14.1 and 14.2
Exploration of classification schemes and thesauri

To prepare, read beforehand.

Lecture 14.1

Lecture objectives etc. (pink sheet)

1 Soergel, Dagobert, compiler. **Exploration of Classification schemes and thesauri.**
This is a compilation of sample pages from a variety of classification schemes and
thesauri designed for a variety of purposes. You can obviously not read all the pages
from beginning to end. Just explore some examples in each scheme (particularly the
underlined ones) to get a feel for each scheme.

Lecture 14.2

Lecture objectives etc. (pink sheet)

Review Assignment 13