

IST 676 Foundations of Digital Data Fall 2012 (tentative)

Instructor: Jian Qin
Office: 235 Hinds
Phone: (315)443-5642

Time: on your own schedule
Place: 676 Virtual classroom in Blackboard
Email: jqin@syr.edu

Course Description

This course focuses on the concept of the digital data and digital library (DL) along a number of dimensions: (1) definitional dimension (what is and what is not digital data and digital library), (2) technical dimension (designing and building digital libraries that store, organize, and manage digital data), (3) service dimension (infrastructure and services supporting the use of digital data and digital libraries for various purposes), and (4) social/political/legal dimension (what external forces will shape digital libraries). The course will examine matters including representation of information in digital libraries, existing and emerging mechanisms for retrieval, and the political and legal forces that may shape the digital library environment. Students will incorporate these lessons into a term-long project – the planning and design of their own digital libraries.

This course will give students a thorough grounding for understanding, evaluating and working with a wide variety of digital libraries. This is a distance course with individual assignments that give students opportunities to investigate some of the specific issues surrounding digital libraries. Guest lectures, class exercises and discussions, short papers and a term-long project will provide experiences and learning opportunities for pursuing topics in greater depth and gaining proficiency in understanding and communicating technical and pragmatic issues surrounding digital libraries. Students will be provided with a format for designing their own digital libraries, using lessons learned in class readings, lectures and discussions. Students completing this course will possess their own project plan for a digital library that will be suitable for implementation either in other IST courses, or in their professional settings.

Course Objectives

Students in IST 676 will:

1. gain an understanding of what digital data and Digital Libraries (DLs) are and their emerging roles in our learning and research environment
2. become versant in the vocabulary of DLs
3. assess the social, economic, and technological environment in which DLs succeed or fail
4. acquire knowledge and understanding of major issues that constitute the basis of DLs
5. develop an understanding of current technologies through hands-on experience
6. study and evaluate major national and international DL projects
7. prepare students to work productively and creatively in the DL environment, and
8. give students the opportunity to plan a digital library.

Recommended Textbooks and Readings

Witten, I.H. & Bainbridge, D. (2010). How to Build a Digital Library. Second Edition. Burlington, MA: Morgan Kaufmann Publishers. ISBN: 9780080890395; 0080890393

Lesk, Michael. (2005). *Understanding Digital Libraries*. 2nd ed. New York: Elsevier.

Kresh, Diane (ed.). (2007). *The Whole Digital Library Manual*. Chicago: ALA. ISBN: 0838909264; 9780838909263

Kruk, S.R. & McDaniel, B. (Eds). *Semantic Digital Libraries*. Berlin: Springer. (eBook link in SU library: <http://summit.syr.edu/vwebv/holdingsInfo?bibId=2650608>)

Coursework

Tasks (4 x 5 points = 20%)

Assignments (3 x 10 points = 30%)

Final project (35%)

Participation in and contribution to class discussions (15%)

Academic Integrity

The academic community of Syracuse University and of the School of Information Studies requires the highest standards of professional ethics and personal integrity from all members of the community. Violations of these standards are violations of a mutual obligation characterized by trust, honesty, and personal honor. As a community, we commit ourselves to standards of academic conduct, impose sanctions against those who violate these standards, and keep appropriate records of violations. The academic integrity statement can be found at: <http://www.ist.syr.edu/courses/advising/integrity.asp>

Student with Disabilities

In compliance with section 504 of the Americans with Disabilities Act (ADA), Syracuse University is committed to ensure that “no otherwise qualified individual with a disability...shall, solely by reason of disability, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity...” If you feel that you are a student who may need academic accommodations due to a disability, you should immediately register with the Office of Disability Services (ODS) at 804 University Avenue, Room 308 3rd Floor, 315.443.4498 or 315.443.1371 (TTD only). ODS is the Syracuse University office that authorizes special accommodations for students with disabilities.

Conduct of discussions

Participation in class discussions is expected, exactly as it would be on the job. If an emergency or illness occurs, have someone notify your team and the course instructor as soon as possible--even if you are out of town. Too many absences are sufficient cause to lower the final course grade. Exceptions will be made for emergencies and other extenuating circumstances provided they are verified by appropriate documentation that is received no later than 1 week after the absence(s).

It is expected that students will behave professionally both in language and attitude when posting or responding to discussions. Public disparagement of your fellow students in this course is unacceptable and may result in disciplinary action. Additionally, discussions should model your ability to think critically about course topics and articulate ideas clearly. Responses should be detailed and explanatory. Simple unconstructive replies such as “I agree (or disagree) with the previous post” will not be considered valid unless elaborated upon. If you have any concerns regarding the suitability of a post, please contact the instructor.

Computer Literacy Skills

Graduate students are expected to meet the minimum and recommended information technology literacy skills required of students in all School of Information Studies master's programs. Please refer to: <http://istweb.syr.edu/prospective/graduate/literacyreq.asp> for the "Computer Literacy Requirements" document.

Schedule

| Week | Topics | Readings | Activities and Dues |
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| W1 8/27 | Evolution of digital libraries <ul style="list-style-type: none"> History and context Concepts Attributes of digital libraries | Week 1 readings | Task 1: Mapping digital library definitions (due 9/2) |
| W2 9/3 | Building blocks of digital libraries: digital data <ul style="list-style-type: none"> Text resources Images Multimedia File formats, transformation, migration | Week 2 readings | |
| W3 9/10 | Building collections of digital data <ul style="list-style-type: none"> User needs assessment Planning for development Digitization Document and e-publishing/preservation markup | Week 3 readings | Task 2: Understanding digital data (due 9/16) |
| W4 9/17 | Organizing digital data in digital libraries <ul style="list-style-type: none"> Metadata Ontologies, classification, categorization Best practices | Week 4 readings | |
| W5 9/24 | Storing and distributing digital data via digital libraries <ul style="list-style-type: none"> Storage medium and technology Networks DL architecture vs. system architecture | Week 5 readings | Assignment 1: My digital library topic (due 9/30) |
| W6 10/1 | Architecture: Tools for building digital libraries <ul style="list-style-type: none"> DSpace (http://www.dspace.org) Fedora (http://fedora-commons.org/) Dataverse (http://thedata.org/software) HUBzero (http://hubzero.org/) | Week 6 readings | |
| W7 10/8 | Interaction design and usability <ul style="list-style-type: none"> How users interact with digital libraries Process of interaction design Interaction and usability: case studies <ul style="list-style-type: none"> Action Science Explorer demo: http://www.cs.umd.edu/hcil/ase/#video International Children's Digital Library: http://en.childrenslibrary.org/ World Digital Library: | Week 7 readings | Task 3: Designing interaction (due 10/14) |

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| | http://www.wdl.org/en/ <ul style="list-style-type: none"> • VIVO at Cornell (http://vivo.library.cornell.edu/) • NSDL (http://www.nsd.org) • American Social History Online (http://www.dlfaquifer.org/) • National Snow and Ice Data Center (NSIDC) Photo & Image Gallery (http://nsidc.org/gallery/) • Digital Library for Physics and Astronomy (http://adswww.harvard.edu/) | | |
| W8 10/15 | Services for users <ul style="list-style-type: none"> • Searching, navigating, browsing • Recommender system • Digital reference • Personalization | Week 8 readings | Assignment 2: Midterm review of project plan (due 10/21) |
| W9 10/22 | Services for digital libraries <ul style="list-style-type: none"> • Indexes and catalogs • Registries • Harvesting | Week 9 readings | |
| W10 10/29 | Preservation <ul style="list-style-type: none"> • Overview • Web archiving • Digitized resources • Born-digital resources • Sustainability | Week 10 readings | Assignment 3: The Biggest Problem (11/4 midnight) |
| W11 11/5 | Management <ul style="list-style-type: none"> • Project management • DL management case studies • Cost/economic issues • Social issues | Week 11 readings | |
| W12 11/12 | Evaluation <ul style="list-style-type: none"> • Methods • Usability evaluation • Retrieval evaluation • Quality evaluation | Week 12 readings | Task 4: Critiques on digital evaluation metrics and methods (due 11/18) |
| W13 11/19 | Digital library research <ul style="list-style-type: none"> • Future of DLs • DL research initiatives • Education of digital librarians | Week 14 readings | |
| W14 11/26 | No class during the Thanksgiving holiday week. | | |
| W15 12/3 | Wrap-up | | Final project (12/3 midnight) |

Additional Readings

| Week | Topic | Readings |
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| 1 | Evolution of digital libraries | <p>Wattenberg, F. (1998). A National Digital Library for Science, Mathematics, Engineering, and Technology Education. D-Lib Magazine, 4(9). http://dx.doi.org/cnri.dlib/october98-wattenberg</p> <p>Griffin, S. M. (1998). NSF/DARPA/NASA Digital Libraries Initiative: A Program Manager's Perspective. D-Lib Magazine (July/August). http://dx.doi.org/cnri.dlib/july98-griffin</p> <p>Greenstein, D. & Thorin, S. E. (2002). The Digital Library: A Biography (No. 109). Washington, DC: Council on Library and Information Resources. http://www.clir.org/PUBS/reports/pub109/pub109.pdf</p> |
| 2 | Digital objects | <p>Kahn, R. & Wilensky, R. (2006). A framework for digital object services. International Journal on Digital Libraries, March 2006. http://www.doi.org/topics/2006_05_02_Kahn_Framework.pdf</p> <p>The International DOI Foundation. (2008). The DOI Handbook. http://www.doi.org/handbook_2000/intro.html</p> |
| 3 | Building digital collections | <p>Chowdhury, G.G., & Chowdhury, S. (2003). Chapter 6, Digitization. (pp. 103-119) In Introduction to Digital Libraries. London: Facet Publishing.</p> <p>Cornell University Library. (2000). Moving theory into practice: Digital imaging tutorial. http://www.library.cornell.edu/preservation/tutorial/contents.html</p> <p>NISO. (2007). A framework of guidance for building good digital collections. Chapter "Collection." http://framework.niso.org/node/8</p> <p>Smith, A. (1999). Why Digitize? Washington, DC: Council on Library & Information Resources. http://www.clir.org/pubs/abstract/pub80.html</p> |
| 4 | Organizing digital information | <p>Weibel, Stuart. (1995). Metadata: The Foundations of Resource Description. D-Lib Magazine, 1(1). http://www.dlib.org/dlib/July95/07weibel.html</p> <p>Duval, E., Hodgins, W., Sutton, S., & Weibel, S. L. (2002). Metadata Principles and Practicalities. D-Lib Magazine, 8(4). http://www.dlib.org/dlib/april02/weibel/04weibel.html</p> <p>Liddy, E. (2005). Metadata: A Promising Solution. EDUCAUSE Review, 40(3): 10-11. http://www.educause.edu/apps/er/erm05/erm0536.asp</p> <p>Dublin Core Metadata Initiative. Using Dublin Core. http://dublincore.org/documents/usageguide/</p> <p>Metadata Encoding & Transmission Standard (METS) 1. http://www.loc.gov/standards/mets/</p> |

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| 5 | Architecture | <p>Arms, W. Y. (1995). Key Concepts in the Architecture of the Digital Library. <i>D-Lib Magazine</i>, 1(1). http://dx.doi.org/cnri.dlib/july95-arms</p> <p>Kahn, R., & Wilensky, R. (1995). A Framework for Distributed Digital Object Services. http://dx.doi.org/cnri.dlib/tn95-01</p> <p>Gonçalves, M. A., France, R. K. & Fox, E. A. (2001). MARIAN: Flexible Interoperability for Federated Digital Libraries. In: <i>Research and Advanced Technology for Digital Libraries: [Proc. of] 5th European Conference, ECDL-01, Darmstadt, Germany: 4-9 Sept. 2001 (pp. 173-186)</i>. Berlin: Springer. http://www.nudl.org/papers/ICDE2001.pdf</p> <p>McNab, R. J., Witten, I. H., Boddie, S. J. (1997). A Distributed Digital Library Architecture Incorporating Different Index Styles. In: <i>Advances in Digital Libraries. (Discusses MG and MR, related to the Greenstone system.)</i> http://www.cs.waikato.ac.nz/~ihw/papers/RM-IHW-SB-Adistributeddl.pdf</p> |
| 6 | Architecture II: Case studies | <p>DSPACE Architecture Review Group. (2007). <i>Toward the next generation: Recommendations for the next DSpace Architecture</i>. http://dspace.org/images/stories/PDFs/dspace-recs.pdf</p> <p>Lagoze, C., Arms, W., Gan, G., Hillmann, D., Ingram, C., Krafft, D., Marisa, R., Phipps, J., Saylor, J., Terrizzi, C., Hoehn, W., Millman, D., Allan, J., Guzman-Lara, S., & Kalt, T. (2002). <i>Core Services in the Architecture of the National Digital Library for Science Education (NSDL)</i>. http://arxiv.org/pdf/cs/0201025v1</p> <p>Mitchell, S., Mooney, M., Mason, J., Paynter, G.W., Ruschewski, J., Kedzierski, A. & Humphreys, K. (2003). <i>iVia Open Source Virtual Library System</i>. <i>D-Lib Magazine</i>, 9 (1). http://www.dlib.org/dlib/january03/mitchell/01mitchell.html</p> |
| 8 | User Behavior Interaction | <p>Case, D. O. (2002). Information needs and information seeking. In <i>Looking for Information: A Survey of Research on Information Seeking, Needs, and Behavior</i>. Amsterdam: Academic Press, 64-78.</p> <p>Bates, M. J. (2002). The cascade of information interaction in the digital library interface. <i>Information Management and Processing</i>, 38: 381-400. http://www.gseis.ucla.edu/faculty/bates/articles/cascade.html</p> <p>Wilson, T. D. (1997). Information behaviour: An interdisciplinary perspective. <i>Information Processing & Management</i>, 33(4), 551-572.</p> <p>Xie, I. & Cool, C. (2009). Understanding Help-Seeking within the context of searching digital libraries. <i>Journal of American Society for Information Science and Technology</i>. 60(3), 477-494. http://www.sois.uwm.edu/xie/IrisArticles/Articles/understanding_help_seeking.pdf</p> |
| 9 | DL user services | <p>Dempsey, L. (2006). The (digital) library environment: Ten years after. <i>ARIADNE</i>, issue 46, February. http://www.ariadne.ac.uk/issue46/dempsey/intro.html</p> <p>Pomerantz, J. (2003). Integrating Digital Reference Service into the Digital Library Environment. In R. D. Lankes, S. Nicholson & A. Goodrum (Eds.), <i>The Digital Reference Research Agenda</i> (pp. 23-47). Chicago: Association of College and</p> |

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| | | <p>Research Libraries.</p> <p>Choi, Y. (2006). Reference services in digital collections and projects. <i>Reference Services Review</i>, 34(1), 129-147.</p> <p>Penka, J. T. (2003). The Technological Challenges of Digital Reference: An Overview. <i>D-Lib Magazine</i>, 9(2). http://www.dlib.org/dlib/february03/penka/02penka.html</p> |
| 10 | DL technical services | <p>Shreeves, S. & Cole, T. W. (2003). Developing a collection registry for IMLS NLG digital collections. In: DC-2003 Proceedings of the International DCMI Metadata Conference and Workshop, Seattle, Washington, Sept. 28 - Oct. 2, 2003, 241-242. Dublin, OH: DCMI/OCLC. http://dc2003.ischool.washington.edu/Archive-03/03shreeves.pdf</p> <p>Morgan, E. (2004). An Introduction to the Search/Retrieve URL Service (SRU). <i>Ariadne</i>, no. 40. http://www.ariadne.ac.uk/issue40/morgan/</p> <p>ISO/IEC 11179:2004 Information Technology -- Metadata Registries (MDR). -- Part 1: Framework, Second ed. Geneva: International Standards Organization (ISO). http://metadata-stds.org/11179/</p> <p>Hagedorn, K. (2003). OAIster: A "no dead ends" OAI service provider. <i>Library Hi Tech</i>, 21(2): 170-181.</p> |
| 11 | Preservation | <p>Digital preservation management: Implementing short-term strategies for long-term problems. (2010) http://www.icpsr.umich.edu/dpm/dpm-eng/eng_index.html</p> <p>Sustainability of digital formats: Planning for Library of Congress collections. (2004) http://www.digitalpreservation.gov/formats/index.shtml</p> <p>IFLA. (2006). Networking for digital preservation: Current practices in 15 national libraries. http://archive.ifla.org/VI/7/pub/IFLAPublication-No119.pdf</p> |
| 12 | Management | <p>Cervone, F. H. (2007). Standard methodology in digital library project management. <i>OCLC Systems & Services</i>, 23(1): 30-34. PDF</p> <p>Chung, G. & Grimes, S. M. (2005). Cool hunting the kids' digital playground: Datamining and the privacy debates in children's online entertainment sites HICS presentation. http://www2.computer.org/portal/web/csdl/doi/10.1109/HICSS.2005.168</p> |
| 13 | Evaluation | <p>Saracevic, T. (2005). How were digital libraries evaluated? Presentation at the course and conference Libraries in the Digital Age (LIDA 2005), 30 May - 3 June, Dubrovnik, Croatia. Report: http://comminfo.rutgers.edu/~tefko/DL_evaluation_LIDA.pdf</p> <p>Saracevic, T. (2004). Evaluation of digital libraries: An overview. Presentation at the DELOS WP7 Workshop on the Evaluation of Digital Libraries, 4-5 October 2004, Department of Information Engineering, University of Padua, Italy. Report: http://www.comminfo.rutgers.edu/~tefko/DL_evaluation_Delos.pdf</p> <p>Reeves, Thomas, Apedoe, Xornam, & Hee Woo, Young. (2003). Evaluating digital libraries: A user-friendly guide. University Corporation for Atmospheric Research; National Science Digital Library. Retrieved 3/1/2007</p> |

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| | | <p>from http://www.dpc.ucar.edu/projects/evalbook/index.html Read: Chapter 1, Why evaluate? (p.1-6); and Chapter 2, Evaluating planning (p.7-21)</p> <p>Covey, D.T. (2002). Usage and usability assessment: library practices and concerns. http://www.clir.org/pubs/reports/pub105/contents.html</p> |
| 14 | DL research | |

