DigCCurr I Final Report Cover Sheet

Preserving Access to Our Digital Future:
Building an International Digital Curation Curriculum

Project

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Principle Investigator	Dr. Helen R. Tibbo
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Co-Principle Investigator	Dr. Christopher (Cal) Lee

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Contents	Executive Summary About DigCCurr I Key Activities Results Appendices
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DigCCurr I Final Report, 2006-09:

Results and Recommendations from the Digital Curation Curriculum Development Project and the Carolina Digital Curation Fellowship Program

Draft
March 1, 2010

Carolyn Hank
On behalf of the DigCCurr I Project Team

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About the Project Team

Dr. Helen R. Tibbo (PI) is a Professor at the School of Information and Library Science (SILS) at the University of North Carolina at Chapel Hill (UNC), teaching in the areas of archives and records management, digital preservation and access, electronic retrieval, and reference. She has extensive experience planning and conducting practitioner-oriented education and dissemination events with "Digitization for Cultural Heritage Information Professionals," 2002-2004; "NHPRC Electronic Records Research Fellowship Symposia," 2004-2007; DigCCurr2007 symposium; DigCCurr2009 symposium; and DigCCurr II Professional Institute, "Curation Practices for the Digital Object Lifecycle," 2009-2010. Dr. Tibbo is also PI on DigCCurr II, "Extending an International Digital Curation Curriculum to Doctoral Students and Practitioners;" ESOPI-21, "Educating Stewards of Public Information in the 21st Century"; and CDCG, "Closing the Digital Curation Gap." She was a co-PI with collaborators from the University of Michigan and the University of Toronto for a Mellon Foundation-funded project to develop standardized metrics for assessing use and user services for primary sources in academic archives. This work is now extended to government archives with support from NHPRC. Dr. Tibbo is on the Editorial Board of the Digital Curation Centre's (DCC) Digital Curation Manual and the ISO Working Group developing an international standard for audit and certification of digital repositories. She is President-Elect of the Society of American Archivists (SAA), where she is also a Fellow and has previously served on SAA Council.

Dr. Christopher (Cal) Lee (Co-PI) is Assistant Professor at the School of Information and Library Science at the University of North Carolina, Chapel Hill. He teaches classes for graduate and undergraduate students, as well as continuing professional education workshops in archival administration, records management, digital curation, understanding information technology for managing digital collections, and the construction of digital repository rules. His primary area of research is the long-term curation of digital collections. He is particularly interested in the professionalization of this work and the diffusion of existing tools and methods (e.g., digital forensics, web archiving, automated implementation of policies) into professional practice. His research projects have included CAMiLEON, which examined migration vs. emulation as digital preservation strategies; an in-depth case study of the development of the Reference Model for an Open Archival Information System (OAIS); VidArch, which investigated the curation of collections of digital video; DigCCurr and DigCCurr II, which have designed curriculum materials and set of field experiences to prepare students for careers in digital curation; and Educating Stewards of Public Information for the 21st Century (ESOPI-21), which is a joint initiative with the School of Government at UNC to prepare public sector professionals. Dr. Lee is also one of the leaders of an effort to design and built a long-term institutional repository at UNC. A major focus of his work is personal digital archives. He is editing and providing several chapters to a forthcoming book entitled, *I, Digital: Personal Collections in the Digital Era*. He is also spearheading the international Personal Digital Archives Working Group (PDAWG). Dr. Lee served as Electronic Records Project Archivist at the Kansas State Historical Society. He has an MSI (with a concentration in Archives and Records Management) and PhD from the School of Information at the University of Michigan.

Carolyn Hank (PM) is a doctoral candidate at SILS at UNC and teaches in the areas of digital preservation and access, digital curation, and human information interactions. She served as program manager for the UNC Digital Curation/Institutional Repository Committee (2005-2008), and PI on the research studies, "Building from Trust: Using the RLG/NARA Audit Checklist for Institutional Repository Planning and Deployment;" "Blogger Perceptions on Digital Preservation;" and "Challenges, Curricula, and Competencies: Researcher and Practitioner Perspectives for Informing the Development of a Digital Curation Curriculum." Her dissertation research looks at scholars who blog, and how blog characteristics and bloggers' behaviors, preferences and perceptions impact digital preservation. Prior to entering the doctoral program at SILS, she worked in the Office of Research at OCLC.

Acknowledgements

We would also like to recognize all of the contributors to DigCCurr2007 and DigCCurr2009, including our presenters and volunteers, and, for DigCCurr2009, our program committee, reviewers, and Proceedings' editorial team.

Also, thank you to members of the International Digital Curation Education Action Working Group (IDEA) for sharing expertise in digital curation graduate education and professional training. A particular thanks to Joy Davidson of the Digital Curation Centre (UK) for her work on behalf of IDEA.

Abbreviations

ARM   Concentration of Study in Archives and Record Management

CAR   Curation and Archives Research group

CDCF   Carolina Digital Curation Fellowship program

CDCG   Closing the Digital Curation Gap, IMLS-LG-05-09-0040 (2009-2011)

Co-PI   Co-Principle Investigator

DigCCurr I   Preserving Access to Our Digital Future: Building an International Digital Curation `
                   Curriculum, IMLS RE-05-06-0044-06 (2006-2009)

DigCCurr II   Extending an International Digital Curation Curriculum to Doctoral Students and
                   Practitioners, IMLS RE-05-08-0060-08 (2008-2012)

DigCCurr2007   DigCCurr2007: An International Symposium in Digital Curation, April 18-21, 2007

DigCCurr2009   DigCCurr2009: Digital Curation Practice, Promise and Prospects, April 1-3, 2009

DCE   Digital Curation Exchange

ESOPI-21   Educating Stewards of Public Information in the 21st Century, IMLS RE-05-09-0085-
                   09 (2009-2012)

HATII   Humanities Advanced Technology and Information Institute, University of Glasgow

ibiblio   ibiblio: The Public's Library and Digital Archive

                   International Digital Curation Education Action Working Group

IMLS   Institute of Museum and Library Services

ITS   Information Technology Services' Teaching and Learning Division, University of North
                   Carolina at Chapel Hill

MSIS   Master of Science in Information Science

MSLS   Master of Science in Library Science

NARA   National Archives and Records Administration

Odum   Odum Institute for Research in Social Science

PI   Principle Investigator

PM   Project Manager

SILS   School of Information and Library Science, University of North Carolina at Chapel Hill

UL   University Libraries, University of North Carolina at Chapel Hill

UNC   University of North Carolina at Chapel Hill

Executive Summary

This report is a summary of the "Preserving Access to Our Digital Future: Building an International Digital Curation Curriculum" (DigCCurr I) project at the School of Information and Library Science (SILS) at the University of North Carolina at Chapel Hill (UNC). Funded by the Institute of Museum and Library Services (IMLS), DigCCurr I ran from July 1, 2006 through December 31, 2009. The intended audience of this report includes:

- Members of the project's Advisory Board;
- Collaborators at DigCCurr I Partner organizations, including the National Archives and Records Administration, and local partners at the University of North Carolina at Chapel Hill – the University Libraries; Odum Institute for Research in Social Science; Information Technology Services' Teaching and Learning Division; and ibiblio.org;
- Institute of Museum and Library Services staff;
- International Digital Curation Education Action Working Group (IDEA) members; and
- Other educators, professional trainers, administrators, and stakeholders interested in digital curation curriculum development and practice.

This broad objective was supported through work in four main areas: 1) digital curation curriculum development and implementation; 2) development and administration of the Carolina Digital Curation Fellowship (CDCF) program; 3) fostering and building an evolving, international network of leading digital curation educators, researchers and practitioners; and 4) raising awareness of the need for and nature of digital curation and curriculum requirements through extensive internal and external project promotion.

Key accomplishments in support of DigCCurr I's goals, organized by these four focus areas, include:

Curriculum

- Devised and published the "Matrix of Digital Curation Knowledge and Competencies," a tool for thinking about, planning for, identifying and organizing curriculum around six dimensions.
- Devised and published the "High Level Categories of Digital Curation Functions," a framework for categorizing and identifying 24 high-level functions, their associated sub-functions, and four meta-level functions.
- Developed and taught two new courses in digital curation – Understanding Information Technology for Managing Digital Collections, and iRODS Rule Construction. Additionally, developed and taught three special topic seminars in digital curation, and revised one established course to reflect aspects of the Matrix of Digital Curation Knowledge and Competencies. Further, devised and implemented an interim evaluation form for assessing learning objectives and contribute to overall evaluation of course content.
- Devised a module template for curriculum components, and drafted 13 distinct modules.

- Developed a Certificate in Digital Curation, to be awarded in conjunction with a Master of Science in Library Science or Master of Science in Information Science.

Practical Experience

- Cultivated relationships with five campus organizations, representing 10 departments, to identify digital curatorial needs and facilitate placement of nine Fellows on behalf of the Carolina Digital Curation Fellowship program
- Over a two-year period, supervised fourteen digital curation practicums at these practice settings.
- Created publicly available documentation to facilitate practical experience, including learning contracts and evaluation forms.

Network

- Established a 17-member Advisory Board comprising key international figures in digital curation and digital preservation from Australia, Canada, Italy, the Netherlands, New Zealand, the United Kingdom and the United States, representing academic libraries, national archives, data centers, universities and information technology corporations.
- Co-developed and coordinated the International Digital Curation Education Action Working Group (IDEA). To date, nearly 90 educators and professional trainers have joined the IDEA network.
- Facilitated student exposure to the network, both through the classroom and outreach events. To date, 146 students have enrolled in SILS' classes developed and/or revised under the project. Additionally, 44 students served as volunteers at DigCCurr I events, providing them unique opportunities to interact with an international audience of digital curation professionals. The Carolina Digital Curation Fellows also took numerous opportunities to present their work to audiences of professionals. One particularly notable example was John Blythe serving as an invited speaker, along with Dr. Lee, at the Digital Lives conference in London in February 2009.

Awareness

- Created four publicly available project-related websites: the DigCCurr project website; DigCCurr2007 and DigCCurr2009 symposia Websites; and JCDL 2008 Workshop website.
- Initiated construction of the Digital Curation Exchange, an online utility for sharing and disseminating resources among the digital curation education community, including curricular materials.
- Welcomed nearly 600 attendees to the DigCCurr2007 and DigCCurr2009 symposia.
- Coordinated more than twenty guest lectures by international leaders in digital curation.
- Presented at nearly 50 conferences and other venues, raising awareness of issues and developments in digital curation education and practice to a broad audience.

Multiple data collection activities informed the activities and products listed above, including: an extensive literature review; extensive review of existing teaching materials, including, course syllabi and professional training materials; interviews with our expert Advisory Board; two surveys of digital curation educators, researchers and practitioners; review of digital curation-related job postings; course evaluations; and Carolina Digital Curation Fellowship program evaluations.

Several recommendations for digital curation curriculum development and implementation resulted from these investigative and development activities:

- Digital curation education programs should integrate technical and professional knowledge and skills across the digital asset lifecycle. It should also blend theory and classroom learning with hands-on professional experience.
- Programs should be flexible and scalable, with the capacity to address the need for specialization in various functions, environments, and material types.
- Further, programs should be collaborative since digital curation needs occur across a variety of disciplines and organizational settings; programs should avoid tying curriculum to specific institution types.
- Programs should emphasize practical experience, ranked as the most important attribute when considering job applicants for digital curation professional positions, followed by technical skills.[1]
- Practical experience should involve hands-on work with digital objects with actual consequences, rather than just conceptual work.
- Optimally, students should participate in at least two practical experiences, taking place in different field settings with different learning objectives.
- To be effective and sustainable, programs should build on the work of others.
- Further, programs should build from and for modules, where appropriate, rather than entire courses and, in line with earlier recommendation, emphasize core, generalizable modules.

Work begun under DigCCurr I will continue and be sustained though a number of avenues. Locally, the pending adoption of a Certificate in Digital Curation, coupled with the 2008 debut of the Archives and Records Management Concentration, ensures that digital curation curriculum will continue to be developed, revised and offered at SILS. Nationally and internationally, further development of digital curation curriculum will continue through SILS' leadership in the IDEA, as well as other projects funded by IMLS, beginning in 2008: DigCCurr II: Extending an International Digital Curation Curriculum to Doctoral Students and Practitioners (2008-2012); ESOPI 21: Educating Stewards of

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[1] Tibbo, H.R., Hank, C., & Lee, C.A. (2008). Challenges, Curricula, and Competencies: Researcher and Practitioner Perspectives for Informing the Development of a Digital Curation Curriculum. In *Archiving 2008: Final Program and Proceedings, June 24-27, 2008, Bern, Switzerland*, 234-238. Springfield, VA: Society for Imaging Science and Technology.

Public Information in the 21st Century (2009-2012); and CDCG: Closing the Digital Curation Gap (2009-2011). Lastly, further development and use of the Digital Curation Exchange will serve to promote digital curation awareness and curriculum development through supporting resource sharing and community building among an international network of vested digital curation educators and trainers.

Dr. Helen R. Tibbo
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March 1, 2010

About DigCCurr I

There's tremendous growth in digital curation professional opportunities in today's information-intensive environment. To fill these professional roles, there is need for education to prepare professionals for digital curation work in a variety of information organizations. The "Preserving Access to Our Digital Future: Building an International Digital Curation Curriculum" (DigCCurr I) project at the School of Information and Library Science (SILS) at the University of North Carolina at Chapel Hill (UNC) was devised to contribute to this immediate need.

Funded by IMLS (RE-05-06-0044-06), DigCCurr I commenced on July 1, 2006, concluding December 31, 2009. The project was administered by Drs. Helen Tibbo, Principle Investigator (PI); Cal Lee, Co-PI; John Schaefer, Project Manager (PM), 2006-2007; and Carolyn Hank, PM, 2007-2009. This report presents an overview of DigCCurr I key activities, accomplishments, and recommendations for future work in digital curation curriculum development and implementation.

The success of the DigCCurr I project has contributed to IMLS-funding for several current digital curation curriculum projects at UNC:

- DigCCurr II: Extending an International Digital Curation Curriculum to Doctoral Students and Practitioners, IMLS RE-05-08-0060-08 (2008-2012);
- ESOPI-21: Educating Stewards of Public Information in the 21st Century, IMLS RE-05-09-0085-09 (2009-2012); and
- Closing the Digital Curation Gap, IMLS-LG-05-09-0040 (2009-2011).

Further, DigCCurr project staff, in collaboration with the Digital Curation Centre and DigitalPreservationEurope, contributed to the development of the International Digital Curation Education Action Working Group (IDEA), a growing, global network of digital curation educators and professional trainers. Work in furthering the recommendations described in this report will be carried out under the activities of these IMLS-funded projects and the IDEA.

Key Activities

DigCCurr I activities for the three-year grant period had four foci: 1) developing and making publicly available a graduate-level curricular framework, course modules, and experiential components to prepare students for digital curation work in various environments; 2) developing and managing the Carolina Digital Curation Fellowship (CDCF) program, preparing graduate students for digital curation-related professional appointments; 3) developing and fostering a collaborative network of digital curation educators and practitioners at a local, national, and international level; and 4) raising awareness of digital curation curriculum needs and developments, facilitated by hosting two public symposia, promoting DigCCurr I at internal and external events, and through publications. Table 1 provides an overview of major activities by year. More detailed information on work in these four areas is provided in the remainder of this section.

Table 1: Major Project Activities by Year

YEAR	ACTIVITIES
2006	- Began intensive literature and pedagogical review of digital curation curriculum needs. - Initiated interviews with 17-member Advisory Board. - Initiated capturing and coding SILS course syllabi. - Initiated recruitment of applicants for 2005-2007 CDCF program. - Began coordinating CDCF practicum components with local partners at UNC. - Initiated DigCCurr2007 symposium planning. - Published project Website.
2007	- DigCCurr2007 International Symposium - First meeting of Advisory Board - Administered and managed CDCF program - Advisory Board interviews and analysis completed. - Survey study completed, administered to attendees of DigCCurr2007. - Initiated capturing and coding of digital curation job postings. - Vetted initial drafts of two emerging curriculum framework products. - Two new course offerings: Special topic seminars in digital curation (INLS 890-150 & 696). - Continued construction of curriculum. - Continued analysis of data collected through research activities.
2008	- Through funding from local partners, supported four additional Fellows. - Second survey research study completed, administered to past attendees of DigCCurr2007. - Beta release of Digital Curation Exchange (DCE). - Establishment of IDEA. - Two new course offerings: Understanding Information Technology for Managing Digital Collections (INLS 465); and Digital Curation: Applications and Challenges (INLS 890-046). - Continued construction of curriculum. - Continued analysis of data collected through research activities. - Continued management of CDCF program.
2009	- DigCCurr2009 International Symposium. - Publication of DigCCurr2009 Proceedings (ISBN: 978-0-578-02215-4). - Second meeting of Advisory Board. - New course offering: iRODS Rule Construction (INLS 490-161). - Development and vetting of Certificate in Digital Curation. - Public release of DCE. - Continued construction of curriculum. - Continued analysis of data collected through research activities. - Continued management of CDCF program. - Graduation of five Fellows who entered program in 2007.

1) Digital Curation Curriculum Development

A primary project goal was the identification of themes, structures, and functions for informing a successful, graduate-level digital curation curriculum. Developing the digital curation curricular framework, while begun in earnest in 2006, continued to be iteratively developed and revised throughout the funding period. Guiding questions in the development of the curriculum included:

1) What knowledge and competencies do professionals need to do digital curation work?
2) What should students learn in the classroom?
3) What should students learn through field experiences?

Multiple data sources informed curriculum development and other project activities. At the outset of the project, DigCCurr I team members (Tibbo, Lee and Schaefer) attended the week-long Cornell University Library Workshop on Digital Preservation. This was a very helpful entry into our evolving curriculum development activities, contributing to considerations for the curriculum's overall framework and providing extensive content and bibliographies. Subsequently, an intensive literature review, looking at studies of educational needs, lifecycle models, curation functions, and other relevant readings, was on-going throughout the project. A current list of literature resources consulted is maintained on the project's internal wiki, while an excerpted list is openly available on the project Website.

Also on-going was an extensive review of course syllabi and existing curricula from accredited information and library science (ILS) programs offering specializations in digital preservation and/or data curation, and review of other ILS courses and courses in the field of computer science. We also reviewed content from professional training programs.

Data collected from two content analysis studies and three survey research studies informed curriculum development and refinement. The content analysis studies examined digital curation-related job postings and SILS syllabi. To date, 336 job postings and 50 syllabi have been captured and coded. More detail on the survey research studies is provided below:

> **Interviews with Advisory Board**
> We conducted 17 telephone interviews with Advisory Board members. The interviews gathered Board members' perceptions and insights in several areas: 1) defining digital curation and fundamental functions and activities; 2) main topics required for a digital curation curriculum and, specifically, characteristics for effective experiential learning; and 3) types of digital curation professional roles and preferred professional competencies. Transcripts of the recorded interviews were analyzed using NVivo. Findings from these interviews helped to inform the development of several DigCCurr I outputs, including the Matrix of Digital Curation Knowledge and Competencies and the High Level Categories of Digital Curation Functions, as well as course development, CDCF program management, and subsequent data collection activities.

Questionnaire I: DigCCurr2007 Symposium Survey (April 28-20, 2007)

This paper-based survey was distributed to DigCCurr2007 attendees in the conference packets provided at registration. The questionnaire was designed to assess attendees' perceptions on digital curation issues at their home institutions, in general, and in the development of a graduate-level digital curation curriculum, specifically. The survey instrument comprised five open-ended questions. Completed surveys were returned by 37 attendees.

Questionnaire II: Challenges, Curricula and Competencies: Researcher and Practitioner Perspectives for Informing the Development of a Digital Curation Curriculum

This Web-based survey was administered to attendees of DigCCurr2007 (n=224). It comprised 25 closed- and open-ended questions, collecting respondent perceptions in three key areas: 1) digital curation challenges at respondents' home institutions; 2) necessary digital curation curriculum components; and 3) essential digital curation professional competencies. A total of 55 completed surveys were accepted for analysis, resulting in a 25% response rate. Results from this study provided further insight for mapping the needs of the practice setting to deficiencies in the classroom setting. Overall, the findings showed affirmation for our developing curriculum from our previous studies.

Additional data sources included evaluations from new course offerings, symposium evaluations, and CDCF program interim and year-end evaluations and learning contracts.

Key Products

Listed below are key curriculum resources produced under DigCCurr I, including curricular guidance documents, new or revised syllabi, and evaluation forms. While significant accomplishments were completed, we anticipate further building and refining of these curricular outputs under other IMLS-funded digital curation projects at SILS. See the **Results** section of this report for elaboration.

1) **Matrix of Digital Curation Knowledge and Competencies.** The matrix is organized into six dimensions, representing digital curation-related factors, topics, and/or issues: 1) Type of Resource; 2) Functions and Skills; 3) Professional, Disciplinary or Institutional/Organizational Context; 4) Mandates, Values, and Principles; 5) Prerequisite Knowledge; and 6) Transition Point in Information Continuum. The matrix is intended to serve as a tool for organizing, comparing and planning for curriculum content. Developed by Co-PI Lee, the matrix was iteratively refined; the most recent version was made available June 17, 2009 (version 13).

2) **High Level Categories of Digital Curation Functions.** This document identifies twenty-four high-level function categories (e.g., production, transfers, ingest), in reference to the Matrix's *Functions and Skills* section. It also identifies four meta-level functions to be applied across any of these twenty-four high-level functions. Presented with each listed function is a draft

definition and associated first-level sub-functions (e.g., harvest, synchronization, and deselection). Developed by Co-PI Lee, these high-level categories were iteratively refined; the most recent version was made available September 6, 2008 (version 14).

3) **Certificate of Digital Curation**. We devised a certificate of Specialization in Digital Curation for SILS. It is to be awarded in conjunction with either the Master of Science in Library Science (MSLS) or Master of Science in Information Science (MSIS). Successful completion of the MSIS or MSLS degree from SILS requires 48 hours of approved graduate course work. The Certificate requires nine additional hours in digital curation-related courses, for a total of 57 credit hours. Work in developing the Certificate was informed by the guidance document, *Advising Notes for Carolina Digital Curation Fellows*, along with recommended course sequencing, devised by Co-PI Lee in September 2007. (See Appendix A). Additionally, a concentration in Archives and Records Management (ARM) was developed at SILS. The SILS Faculty and Administrative Board approved the ARM concentration in Spring 2008, and the advising materials related to digital curation coursework were made available to students beginning Fall 2008.

   The Certificate is currently under internal review by the SILS Faculty and Administrative Board. Once approved, we will submit to the UNC Graduate School for further review. We anticipate students will be able to begin work toward this Certificate in the Fall 2010 term.

4) **INLS 465: Understanding Information Technology for Managing Digital Collections**
   Developed and taught by Co-PI Lee, this three-credit elective course examines, "the evolution of information science; information representation, organization and management; information in social organizations; search and retrieval; human information seeking and interaction; policy, ethics and scholarly communications."[2] While initially offered as a special topics course when introduced in Fall 2008, this course was unanimously endorsed by the SILS faculty in Spring 2009 to be added to the SILS course catalog as a regular course offering. This is a significant accomplishment in that it establishes the importance, need and quality of our digital curation-related course offerings at SILS. The second offering of INLS 465 is currently underway (Spring 2010 semester).

   Enrollment by semester: 12 (Spring 2010); 12 (Fall 2008)

5) **INLS 490-161: iRODS Rule Construction.** This new course offering was developed and taught by Co-PI Lee and three SILS faculty – Richard Marciano (DigCCurr Advisory Board member), Reagan Moore, and Arcot Rajasekar. Initially offered as a one-credit, special topic, elective course when offered in Spring 2009, it was restructured as a 3-credit course for the Spring 2010 semester. This class prepares students to, "develop and implement policies for digital repositories and curation of digital collections. This includes formulation of policies that can

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[2] See http://sils.unc.edu/programs/courses/descriptions.html

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be enacted through computer-actionable rules, adapting existing rules and developing new rules. The rules will be developed for the integrated Rule-Oriented Data System (iRODS), which organizes distributed data into a shared collection. Rules are used to automate collection administration, or enforce policies, or validate assessment criteria. Students will work in groups to define policies and identify rules for particular digital curation situations."[3]

Enrollment by semester: 11 (Spring 2010); 14 (Spring 2009)

6) **INLS 460 and 890: Special Topic Seminars in Digital Curation**
Over the course of the three-year reporting period, three special topic seminars in digital curation were offered:

Seminar in Digital Curation (INLS 890-150). This 3-credit, doctoral-level, elective course was developed and led by PI Tibbo, in collaboration with Drs. Seamus Ross, Michael Moss and Ian Anderson from the Humanities Advanced Technology and Information Institute (HATII) at the University of Glasgow. The seminar was open to students from SILS and HATII, who participated simultaneously via videoconferencing services. Students explored a range of issues central to digital curation and trustworthy repositories, including appraisal, audit and certification, standards, metadata, intellectual property rights, risk management, preservation strategies, and reuse of data.

Enrollment, for SILS, by semester: 5 (Spring 2007)

Digital Curation: Applications and Challenges (INLS 890-046). This 3-credit, elective course was co-developed and taught by PIs Tibbo and Lee. The course explored a range of issues central to digital curation and trustworthy repositories, including the history and definition of digital curation; lifecycle management of digital assets; digital collection building; codifying relationships and agreements with contributors and partner institutions; audit and certification; standards development; related aspects of organizational behavior; project and risk management; preservation strategies; and policy settings and external policies relevant to repository management.

Enrollment by semester: 13 (Spring 2008)

Carolina Digital Curation Fellows Introductory Seminar (INLS 696). A one-credit seminar exclusively for the Fellows was designed and administered by PIs Tibbo and Lee and PM Hank. The objective was to provide Fellows an introductory understanding of digital curation, including historical reference and key principles. The seminar met approximately every other week during the Fellows' first semester at SILS, meeting for two hours with approximately two hours of preparatory work assigned for each session.

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[3] See http://sils.unc.edu/programs/courses/descriptions.html

Further, the seminar provided opportunity for Fellows to discuss their unique practicum experiences and share new discoveries with their cohort and academic advisors in a supportive and collaborative group setting.

Enrollment by semester: 5 (Fall 2007)

7) **Digital Preservation and Access (INLS 752).** This 3-credit, elective course, developed by PI Tibbo nearly a decade ago and offered annually, serves as a valuable entry point in introducing students to key digital curation concepts and principles. The syllabus was revised by PM Hank for the Fall 2009 semester, mapping the class sessions and learning objectives to the Matrix of Digital Curation Knowledge and Competencies.

   Enrollment by semester: 24 (Fall 2009); 14 (Fall 2008); 20 (Fall 2007); and 16 (Fall 2006).

8) **Interim Course Evaluation**
   For new course offerings, we devised an interim (mid-semester) course evaluation form, developed in consultation with staff from the UNC Center for Faculty Excellence. The form was developed to assess students' perceptions on content, delivery, and satisfaction of learning objectives. Additionally, these mid-terms evaluations were developed to complement regular end-of-semester evaluations administered by SILS, in compliance with UNC policy.

9) **Module Template**
   Building from the work of the NSF-funded Digital Library Curriculum (DLC) project, a joint project of SILS and Virginia Tech, we derived a module template for packaging digital curation curriculum content. The modules are intended to present digital curation curriculum content, represented in the Matrix, in a way that supports integration into existing course lectures. The template is organized by: scope; learning objectives; elements of matrix addressed; level of effort required; relationship with other modules; prerequisite knowledge and/or skills required; introductory remedial instruction; body of knowledge; resources; required reading; recommended reading; suggested reading for instructors; exercises/learning activities; and glossary.

Further, in support of the goal to make curricular products publicly available, as well as the goal to foster an international network of digital curation educators and collaborators, the construction of the Digital Curation Exchange (DCE) was begun under this grant, and continues under DigCCurr II (IMLS RE-05-08-0060-08) and CDCG (IMLS LG-05-09-0040). The intent of the DCE is twofold: 1) to serve as a portal to all SILS digital curation activities and DigCCurr I products, including curriculum guidance documents, syllabi, and modules, as well as initiatives at other institutions, nationally and abroad; and 2) through Web 2.0 capabilities, to further collaborative partnerships, network building, resource sharing – including syllabi and other learning materials – and communications among professionals, educators, and students in the area of digital curation. Outputs resulting from DigCCurr I will be made available through the DCE as well as the project Website.

2) Carolina Digital Curation Fellowship Program

Fellows

The CDCF program provided two-years of support (2007-2009) for five graduate students interested in research and work in data and digital curation. The Fellows combined coursework with a digital curation practicum assignment in a UNC academic library, archive, or data center, leading to a MSIS or MSLS. The Fellowships provided:

1) A work assignment in a data or digital repository;
2) A stipend of $13,500 per year for two years;
3) In-state tuition and health coverage; and
4) Mentorship by senior academic library, archives, and data center administrators.

Working with the SILS public relations and communications office, we advertised the Fellowships on the SILS website and externally through a variety of listservs and promotion at conferences. Five applicants were awarded Fellowships.

Based on the success of the program in the Fellowship's inaugural year (2007-08), three of the practicum settings – University Libraries (UL); Information Technology Services' Teaching and Learning Division (ITS); and the Odum Institute for Research in Social Science (Odum) – provided funding to support four additional Fellows for the 2008-09 academic year. This was an unexpected and very welcome outcome. Three incoming SILS students were awarded Fellowships, as was a current MSIS student. In total, the project directly, or through local partner funding, supported nine Fellows, five for a two-year period (2007-2009) and four for a one-year period (2008-2009).

Local Partners

Between 2007-2009, four UNC-CH organizations served as local partners, hosting our Carolina Digital Curation Fellows:

1) University Library: Documenting the American South and Digital Production Center (Carolina Digital Library and Archives); Carolina Digital Repository; Southern Historical Collection; and University Archives
2) Odum Institute
3) ibiblio.org
4) UNC Information Technology Services

One staff member was identified at each location to serve as the Fellow's primary supervisor. Following a review of the Fellows' background and interest areas, supervisors came to consensus on selecting Fellows for placement in their respective repositories. While it was the original intent to rotate the 2007-2009 Fellows among the practicum settings following the first year of the Fellowship, preferences of both the Local Partners and the Fellows, as well as a review of their learning objectives and evaluation reports, were taken into consideration. Determinations of the original Fellows' 2008-09 placements were made in cooperation with the Local Partners and Fellows. The

2007-2009 Fellows stayed at the same organization during their two-year Fellowship, though two Fellows switched to different departments within their organizations for year two.

Support and Management

Academic advising and practicum coordination was managed by PIs Tibbo and Lee and PM Hank. PIs Tibbo and Lee served as Fellows' academic advisors and as Master's paper supervisors for four of the five 2007-2009 Fellows. In addition to one-on-one advising, other events were established throughout the course of the Fellowship to support the Fellows in their academic and experiential pursuits, including:

- 1-credit introductory seminar on digital curation for Fellows (Fall 2007);
- Opening Reception, to welcome Fellows, further acquaint these Fellows to their practicum setting supervisors, and promote program among the SILS and UNC community (Fall 2007);
- A two-part resume writing and review workshop to prepare Fellows for the job market; additionally, supervisors served as reviewers, along with DigCCurr I team members and other UL staff (Spring 2009);
- Informal focus groups with Fellows and Supervisors throughout the CDCF program to assess progress (Fall 2007-Spring 2009); and
- Supporting and, when applicable, facilitating Fellows' opportunities to present on their CDCF experience at regional and international conferences, including the 5th International Digital Curation Conference (London, UK); DigCCurr2009: Digital Curation Practice, Promise & Prospects (Chapel Hill, NC); 2009 Librarian's Association at UNC-CH (LAUNC-CH) Annual Conference (Chapel Hill, NC); 2009 First Digital Lives Research Conference (London, UK); and 2008 LAUNC-CH Annual Research Forum (Chapel Hill, NC).

Documentation

Forms and guidance documents for Fellows and their Supervisors were developed to facilitate the CDCF program component:

1) CDCF Practicum Handbook, rev. 2007-09;
2) CDCF Practicum Agreement form, reflecting goals and learning objectives for the practicum assignment period;
3) Fellows' Interim Evaluation form;
4) Supervisors' Interim Evaluation form;
5) Fellows' Annual Evaluation form; and
6) Supervisors' Annual Evaluation form.

These forms were valuable in helping us to monitor the Fellows' progress and evaluate the program's efficacy. These documents, made publicly available for adaptation in line with DigCCurr I objectives, have been adapted locally by the SILS Professional Field Experience program, and for use in the ESOPI-21 project's practicum component.

Evaluation

Data sources for evaluation were drawn from interim and annual evaluations as well as various channels of informal feedback. Fellows reported gaining valuable work experience in their respective settings. Below is an excerpt of curatorial tasks, tools, and applications Fellows' worked with in their Practicum settings, reflective of the CDCF program's objective for applied learning. This list was derived from a review of Fellows' practicum agreement and evaluation forms:

> Format Migration · DRAMBORA · METS · Persistent Identifiers · JHOVE DSpace · Automated Metadata Extraction · Standards · Dataverse Network Netarchive Suite · Media Migration · CONTENTdm · Instructional Design User Engagement · Policy Development · Fedora ·UNIX · PREMIS · MODS Ingest Workflow Design · Web Archiving · Open Library · Perl · Appraisal Sakai · Institutional Repository Planning · Checksums · DocBook · DDI

The Fellows' feedback on their experience demonstrated an appreciation for combining coursework with hands-on experience in real-life practice settings. Further, their comments were reflective of the necessary technical and organizational infrastructures required to support digital curation, and the challenges and opportunities in identifying and satisfying unmet digital curatorial needs in the work setting. Several Fellows commented on the challenge in communicating across multiple stakeholder groups, both among staff at their respective settings as well as when interfacing with the public. Some excerpted comments drawn from Fellows' evaluations and learning contracts are provided below:

> *"In this practicum setting, I was able to carry out the entire spectrum of digital curation on a small scale, from researching best practices, to trying out different tools and writing suggested policies."*

> *"This department is in dire need of staff support, and I feel that there are many opportunities for future fellows here. It's a good setting for recognizing the need to steward born-digital materials, since a good number of departments are calling and asking for guidance on this topic."*

> *"I was working with a 10 year old collection of jpeg files and I learned firsthand how important early interception is to archiving. It was too late to suggest that the creator create tiff images from his pictures, the images only existed as jpegs, they had been compressed, so some detail was lost."*

> *"Readings and class discussions have pointed to the necessity and importance of collaboration in the digital curation process … My experience underscored the difficulties in establishing such a team effort."*

Additionally, Fellows' commented specifically on how their CDCF experience – both in and out of the classroom – reinforced their decisions to pursue professional work in this area, as well as shaping their future research agendas.

As demonstrated through several Local Partners' investment in taking on additional Fellows in the second year of the CDCF program, evaluative feedback from Supervisors was extremely positive. Echoing sentiments expressed in the Fellows' evaluations, Supervisors also commented on unmet needs within their respective settings. Provided here are excerpts from Supervisors' reflections on their assigned Fellow and their overall CDCF experience:

> *"Thrilled with Fellow. Effective, serves purposes we haven't been able to get to."*

> *"If we could accept more, we would happily accept more … Many unmet needs across many projects. "*

> *"Her work will be invaluable as we develop necessary policies and procedures for capture and storage of historically valuable university Websites."*

> *"(Fellow's) placement has been a great motivator for us … to start talking across departments about how to handle digital materials. His work has sparked discussions between those of us processing materials and our collectors and now, I believe, we all realize that it is essential that we work together to acquire and preserve these items."*

Our Local Partners expressed much appreciation for the Fellowship program, and the desire for its continuation. With the expiration of DigCCurr I, Local Partners looked to extend the Fellows' practicum assignments with their own financial backing. With the current climate of reduced budgets, these efforts are further reflective of the value of the CDCF program. Odum has continued to fund their 2008-2009 Fellow as an RA during the 2009-2010 academic year. Additionally, University Libraries provided summer funding for their 2008-09 Fellow.

Graduation Rate

The five Fellows' who entered SILS in August 2007 graduated in 2009, with three MSLS degrees and two MSIS degrees conferred. The definitive product resulting from their Master's work, the required Master's Paper, reflects the Fellows' work in and understanding of digital curation issues, opportunities, and challenges. The Master's Paper, "provides a culminating experience for master's degree students, who engage in independent research or project effort and develop a major paper reporting the research or project under the supervision of a faculty member."[4] Below are the titles of the 2007-2009 Fellows' Master's Papers, demonstrating their accrued and advanced understanding of digital curation:[5]

- John Blythe, "Digital Dixie: Processing Born Digital Materials in the Southern Historical Collection." Katherine M. Wisser, Advisor.

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[4] See http://sils.unc.edu/programs/msis/masterspaper.html

[5] Papers available online through SILS' Information and Technology Resource Center's Master's Paper Index: http://sils.unc.edu/itrc/mpi/

- Lisa Gregory, "The Practice and Perception of Web Archiving in Academic Libraries and Archives." Christopher A. Lee, Advisor.
- Samantha Guss, "The Effects of Institutional Review Boards in Social Science Data Archiving in Digital Repositories." Helen R. Tibbo, Advisor.
- Jennifer Mantooth, "Digital Preservation Activities and Attitudes in American and Canadian Academic Libraries." Christopher A. Lee, Advisor.
- Mark Swails, "Conceptions of Emulation, Migration, and Related Concepts in Digital Preservation Literature." Helen R. Tibbo and Carolyn Hank, Co-Advisors.

For the 2008-2007 Fellows, the three who entered SILS in Fall 2008 are scheduled to graduate on-time in May 2010. The other Fellow was awarded an MSIS in December 2009, and subsequently enrolled in the SILS Ph.D. program.

3) Network of Digital Curation Educators and Practitioners

The DigCCurr I goal to develop and foster a collaborative network of digital curation educators and practitioners at a local, national, and international level was realized through two specific initiatives: 1) the establishment of the DigCCurr Advisory Board; and 2) participation in the founding and operation of the IDEA.

Advisory Board

Collaboration amongst leaders in digital curation education and practice was fostered through our 17-member Advisory Board, comprised of leading digital curation educators, researchers, and practitioners from Australia, Canada, Italy, the Netherlands, New Zealand, the UK, and the US. Two meetings took place over the course of the reporting period, held in conjunction with DigCCurr2007 and DigCCurr2009, respectfully. Advisory Board members participated in both symposia as speakers, panelists, and chairs. Several Advisory Board members submitted full papers.

The first meeting of the Advisory Board took place April 21-22, 2007, with the second held April 4, 2009. The intent of these meetings was to share perceptions, concerns, and recommendations for digital curation curriculum, and solicit feedback on draft curriculum guidance documents and course syllabi. These exchanges, captured through extensive note-taking, were used in the construction and revision of key project documentation, including the Matrix of Digital Curation Knowledge and Competencies; High Level Categories of Digital Curation Functions; and the Certificate of Digital Curation.

IDEA

The DigCCurr I project directly contributed to developing IDEA, a collaborative, international network of digital curation educators, professional trainers, and practitioners vested in developing and maintaining sustainable digital curation curriculum programs. IDEA was inaugurated at a meeting of educators and professional trainers, including PI Tibbo, in May 2008. Since then, four meet-ups – four

workshops and one birds-of-a-feather type session – have been held in the UK and US, with the sixth, a workshop, to take place in Denver, Colorado on March 5, 2010.

The primary objective of IDEA is the development of an international digital curation training and education roadmap. Specifically, the mission of IDEA is to:

1) Minimize duplication of effort in the provision of digital preservation training and education programs;
2) Describe, promote and contextualize current training and education offerings;
3) Identify and exploit collaborative training and education opportunities;
4) Maximize interdisciplinary training and education opportunities;
5) Develop a shared digital preservation training infrastructure to enable reuse of training and education materials; and
6) Ensure synergy between emerging curation and preservation education programs with professional development training courses. [6]

UNC, represented by DigCCurr I project staff, has been an integral member of IDEA since its inception, along with the Digital Curation Centre (UK) and DigitalPreservationEurope. We have served as co-organizers of IDEA events, including hosting the third IDEA workshop, April 1, 2009 in conjunction with DigCCurr2009. To date, 93 educators and professional trainers from the US, Canada, UK and Europe have been identified by IDEA organizers, and 60 have attended one or more IDEA events.

Other Activities

Fostering a diverse, international community of digital curation educators and professionals was further informed by other related activities, particularly in regard to two specific DigCCurr I foci areas: curriculum development and promotion at internal and external events:

A) Stewardship of E-Manuscripts: Advancing a Shared Agenda[7]
The international workshop, "Stewardship of E-Manuscripts: Advancing a Shared Agenda," was coordinated by Co-PI Lee, along with Tom Hyry, Yale University, and Richard Szary, UNC. It was held March 31, 2009, in conjunction with DigCCurr2009. Attended by 21 invited participants from Australia, Austria, the UK and the US, the focus of this half-day workshop was to discuss the state of research and practice relating to personal digital archives. The primary objectives were to: 1) share strategies for and experience with the selection, acquisition, arrangement, description, preservation, and access to personal materials in digital form; and 2) discuss current needs and future directions

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[6] Taken from the IDEA Declaration, drafted by Joy Davidson of the Digital Curation Centre on October 2, 2009. For more information, see IDEA Website at: http://ideaworkgroup.org/index.html
[7] For workshop Website, see: http://ils.unc.edu/callee/emanuscripts-stewardship/.

for development in this area. These objectives contributed to the workshop's ultimate goal for creating a shared agenda for future research and development.

B) Digital Library Curriculum[8]

DigCCurr I project staff collaborated with staff from the Digital Library Curriculum (DLC) project. This collaboration manifested itself in several ways, including extensive discussions on the synergies and differences between digital curation and digital library curricula; joint presentations at conferences; and through sharing curriculum materials – we derived our module template from the one developed for the DLC. We will continue to foster this relationship as we advance our digital curation curriculum activities and general digital curation research initiatives at SILS. Further, under the guidance of PM Hank and Co-Investigator Pomerantz, we are currently preparing a jointly authored paper for submission to a special issue on digital curation education for *the Journal of Education for Library and Information Science*, with anticipated publication in 2011.

C) New Course Offerings

DigCCurr I project staff took advantage of SILS' established, broad network of digital curation educators and practitioners, both locally and internationally, to create a collaborative classroom environment. This contributed to furthering an international network of digital curators, particularly in fostering relationship among students, and between students and leading digital curation educators, researchers, and practitioners. As mentioned earlier in this report, SILS' Spring 2007 Seminar in Digital Curation, led by PI Tibbo, was open to graduate students at SILS and HATII at the University of Glasgow. Students engaged in the course simultaneously using the UNC Collaboration Center's videoconferencing and communications equipment. In another example, the inaugural offering of the iRODS Rule Construction class comprised SILS students and practitioners from several libraries and digital archives from across the Chapel Hill-Raleigh-Durham area. SILS' students and participants from these organizations worked collaboratively in small groups throughout the semester, completing applied, hands-on learning assignments.

D) Student Inclusion

We also took additional steps to expose SILS' graduate students to members of this evolving, international network of digital curation educators, researchers, and practitioners through volunteer opportunities. Over the course of the project, a total of 44 students served as volunteers across four events: 1st Advisory Board Meeting (5); 2nd Advisory Board Meeting (2); DigCCurr2007 (20); and DigCCurr2009 (17).

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[8] For the Digital Library Curriculum project Website, see: http://curric.dlib.vt.edu/

4) Promoting Digital Curation Curriculum

Raising awareness of digital curation curriculum needs and developments was facilitated by hosting two public symposia – DigCCurr2007 and DigCCurr2009 – and promoting DigCCurr I project findings and outcomes through internal and external events and publications.

DigCCurr2007

DigCCurr2007: An International Symposium in Digital Curation, was held April 18-20, 2007 in Chapel Hill, NC.[9] Planning began at the outset of the project funding period (July 2006). The symposium theme, "What Digital Curators Need to Know and What They Do," sought to inform understanding on the skills and capabilities required for professional appointments in digital curation, and provide a venue for early practitioners in this area to demonstrate what they are actually doing in their work. Highlights from the Symposium include:

- Nearly 300 attendees and more than 100 speakers from ten countries.
- Panelists and presenters from a variety of information environments, including national, federal, academic and research libraries; archives; data centers; information schools; information technology companies; and government funding agencies.
- Five concurrent and three plenary sessions on a range of topics, including "What is Digital Curation;" "What Do Digital Curators Do and What Do They Need to Know;" "Mechanisms for Influencing Data Curation Practices;" and "Digital Curation in Practice."

The call for paper proposals solicited 750-word abstracts to facilitate selection. Additionally, prominent leaders in digital curation education and practice were identified and invited to participate, including members of the DigCCurr I Advisory Board. Abstracts, papers and presentation slides, when made available, were posted to the symposium Website. In all, 35 abstracts, 31 papers, and 44 presentations are available online.[10]

DigCCurr 2009

DigCCurr2009: Digital Curation Practice, Promise & Prospects, was held April 1-3, 2009 in Chapel Hill, NC.[11] We had 262 registrants. Attendance highlights include:

- **Strong international presence**. Of the total attendees, there were 42 attendees (16% of total registrants) from 10 non-US countries – Australia, Austria, Canada, Czech Republic, Germany, Greece, Italy, The Netherlands, South Africa, and the UK.

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[9] For a review of DigCCurr2007, see: Day, M. (2009). Report from the DigCCurr2007 International Symposium on Digital Curation, Chapel Hill, NC, April 18-20, 2007. *International Journal of Digital Curation, 1*(2), 102-111.
[10] For the DigCCurr2007 Website, see: http://www.ils.unc.edu/digccurr2007/
[11] For an extensive review of DigCCurr2009, see: Ball, A., & Day, M. (2009). Report from the Digital Curation Curriculum symposium (DigCCurr) 2009. *International Journal of Digital Curation, 4*(1), 138-151.

- **Strong national presence**. In addition to North Carolina and the District of Columbia, there were attendees from 29 states.
- **Strong student presence**. There were 48 students (18% of total registrants) in attendance, including 17 student volunteers and 31 paying attendees.

In comparison to DigCCurr2007, we expanded the call for DigCCurr2009 to include full-text submissions for papers, panels, posters and demonstrations. Further, we identified and recruited fifty international leaders in digital curation education, research and practice to peer review all DigCCurr 2009 submissions. Overall, we received 53 full-text submissions from 12 countries: 30 papers; 13 panels; and 10 posters; all were reviewed by at least two reviewers. Ultimately, we accepted 9 posters, 12 panels, and 25 papers. Following acceptance, we identified content gaps in the tentative Symposium program and extended invitations to invited speakers, resulting in the addition of four panels – Funder Perspectives; Change Management; Gaps and Persistent Challenges; and Personal Digital Archiving. Additionally, we coordinated two demonstration sessions to complement Symposium programming, resulting in ten invited participants demonstrating twelve digital curation tools.

In total, DigCCurr2009 featured over 120 speakers from eight countries. The Symposium program included 18 panels, 27 papers, 13 demos and 9 posters. A 221-page Proceedings (ISBN 978-0-578-02215-4) was published, featuring the full text of papers, panel and demo summaries, and poster abstracts.[12] The complete Proceedings are available for a nominal fee in print or as a free download. As of the date of this report (March 1, 2010), the Proceedings have been downloaded 3,088 times.

Symposium Evaluation. Overall, 48 DigCCurr2009 evaluations were returned, which constituted a 20% response rate. This is a fairly good response rate when we control for all eligible attendees (n=241), excluding 21 registrants since s/he were involved in conference planning and logistics, including DigCCurr I project staff and student volunteers. The evaluation consisted of five open-ended questions concerning attendees' perceptions of the Symposium.

Several themes arose across all responses. Attendees were very appreciative of the extensive networking opportunities DigCCurr2009 provided, with particular mention of the diversity in roles (e.g., practitioner, researcher, educator, and administrator) and affiliations (e.g., archives; academic libraries; schools and training programs; government organizations; funding agencies; and data centers). Many commented on the extent and quality of the program and presenters, noting the value in exposure to multiple angles and viewpoints, including theoretical perspectives, current and ongoing research initiatives, and real-world applications of digital curation within a variety of environments. Provided below are excerpts from a selection of evaluations:

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[12] Tibbo, H.R., Hank, C., Lee, C.A., & Clemens, R. (Eds.) (2009). *Proceedings of DigCCurr2009: Digital Curation: Practice, Promise, and Prospects, April 3-5, 2009, Chapel Hill, NC*. Chapel Hill, NC: School of Information and Library Science, University of North Carolina at Chapel Hill. Available online at http://stores.lulu.com/DigCCurr2009.

"The collection of people from all walks of digital management – libraries, museums, information technology, etc. I found this also very apparent in the variety of the program – which I found to be quite nice. I think we can take so very many lessons away from these different scenarios.

"I appreciated the 'big picture' approach to digital curation as a whole discipline and the ability to learn about how this field is beginning to cause an intersection in the library, records management and computer technology fields."

"So much of my job focuses on running the library's digital lab that I don't often get a chance to spend a lot of time learning about new developments in the field. It was good to spend time thinking about the big picture and future directions."

"Finally being at a conference that challenged my skill level with a knowledge and integration of traditional L & IS principles with recognition of IT planning, strategy and complex skill sets."

"Willingness for dialogue and discussion. Boldness of projects presented. Participants are actually doing, not just theorizing about the possibilities of maybe doing something in the distant future."

"This was a great conference … Not very often does one get such a high ratio of sound to noise."

Overall, attendees' comments reflect the need for a diverse program in digital curation. We were effective in ensuring a program with multiple perspectives and viewpoints, across a range of activities that occur within the digital curation lifecycle. Nearly all respondents expressed sincere interest in attending a similar conference in the future. A few marked unsure, with several explicitly noting uncertainty over future travels funds.

Internal Promotion

Over the course of the project, we have promoted DigCCurr I extensively to the local community, including: SILS' students, faculty, and staff; our Local Partner organizations; and others across campus through appointment to UNC-wide committees, including the Carolina Digital Repository, and as collaborators on a variety of regionally and nationally funded research initiatives. Through our existing collaborations, as well as collaborations further developed with the arrival of new SILS faculty in August 2008 – Drs. Reagan Moore, Richard Marciano and Arcot Rajasekar, and their subsequent establishment of the Data Intensive Cyber Environments (DICE) Center at UNC – we have firmly established SILS' position as a global leader in digital curation curriculum and research.

External Promotion

Our external dissemination of project information and elicitation of community feedback was extensive. Since 2007, we have presented at dozens of regional, national, and international conferences and symposia, including IS&T's Archiving 2007, 2008, and 2009; ASIS&T 2007 and 2008; JCDL 2007 and 2008; ALISE 2008 and 2009; SAA 2007, 2008, and 2009; and iPRES 2007 and 2009, among others. A list of DigCCurr I team members' presentations and papers is beyond the scope of this section, though a detailed listing is maintained on the project Website, with links to paper and presentation materials when available. Provided here is a summary, by the numbers, of DigCCurr I team members' external promotion of the project:[13]

Conferences and Symposia (40 Total):

- Delivered **14** papers;
- Participated in **8** panel or roundtable sessions;
- Presented **5** posters;
- Chaired, moderated and/or provided commentary for **6** panel and paper sessions;
- Presented at **5** workshops; and
- Conducted **2** tutorials.

Other Events (8 Total):

- Provided instruction at **2** institutes/summer schools;[14]
- Presented at **1** professional meeting;
- Delivered **2** invited guests lectures; and
- Presented **3** webcasts in digital curation via the UNC YouTube channel, with a total of 2,259 views, as of the date of this report.[15]

Results

In our original proposal we scheduled completion dates for curricula development activities and outcomes. As reported in our second interim report to IMLS in July 2007, we came to realize that curriculum development will extend beyond this grant as we continue to implement and grow the curriculum at SILS. While we have established a firm foundation for a curriculum through the DigCCurr I project, these efforts need to be continuous. The need for an on-going environmental scan reflects both the dynamic nature of digital curation research and practice, as well as the introduction of new classes and new faculty members at SILS. For example, the arrival of Drs. Moore, Marciano

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[13] Excluded here are presentations made by Fellows in the CDCF program.

[14] One of these is the DigCCurr Professional Institute (Chapel Hill, NC: June 21-26, 2009). Project team members (Tibbo, Lee, and Hank) participated in multiple sessions. While this is a DigCCurr II initiative, several of these presentations were based on work begun under DigCCurr I.

[15] University of North Carolina at Chapel Hill YouTube Channel: http://www.youtube.com/uncchapelhill

and Rajasekar in August 2008 benefited our digital curation curriculum development in several ways. This includes establishment of the Data Intensive Cyber Environments (DICE) Center, contributing to a growth in digital curation-related research initiatives and opportunities at UNC, and the introduction of a new course, iRODS Rule Construction (INLS 490-161).

This new course offering, along with others developed under this grant – e.g., Understanding Information Technology for Managing Digital Collections (INLS 465) and Digital Curation: Applications and Challenges (INLS 890-161) – have met with success. As mentioned earlier, following the initial offerings, INLS 490-191 and INLS 465 are offered a second time during the Spring 2010 semester. Additionally, another special topic seminar in digital curation is on the schedule for Fall 2010. These subsequent offerings and the inclusion of INLS 465 in the SILS' course catalog reflects both the demand for digital curation-related coursework at SILS and the quality of these new additions to SILS' curriculum.

This demand is also felt, as we made clear in our original proposal, at other graduate programs in information and library science. The quality and utility of our digital curation curriculum framework documents is evidenced by their use and application by educators at other institutions, made known to DigCCurr I project team members through informal communications (e.g., via email and conversations at conferences and other events). Two specific examples of effectiveness and application include use by IDEA and the International Research on Permanent Authentic Records in Electronic Systems (InterPARES 3) project. The Matrix of Digital Curation Knowledge and Competencies is a key resource and tool in IDEA workshop activities and the development of an emerging research roadmap for digital curation education and professional training. InterPARES 3 is using the Matrix and the High-Level Categories of Digital Curation Functions as project outputs.[16]

Success in achieving the project goal – to prepare students for work in digital curation – is supported by feedback provided through course evaluations. Below are excerpts from a sample of interim course evaluations administered on behalf of the project:

> "I like the exposure to the variety of topics -- feel like I'm learning a vocabulary I knew little about. When I encounter issues/ideas we've mentioned in class elsewhere I feel like I have a good point of reference for understanding other material." INLS 465

> "I am learning a lot about repositories and how iRODS can be used to set up one. Lectures and readings are very informative."INLS 490-161

> "The practical nature of the materials is very useful. I feel like my tech fluency (or at least comprehension) is improving significantly." INLS 465

> "Learning a better way to peel a banana." INLS 890-161

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[16] For the project Website, see: http://www.interpares.org/ip3/ip3_index.cfm

> "I feel as if this course is precisely filling the goal of being able to converse more intelligently about system-level functions." INLS 465

Further success is demonstrated by the job placements of our 2007-2009 Fellows. For the four reporting, all have found full-time employment, with three permanent placements and one term-limited placement, in academic libraries and a state archive. Job titles (e.g., Digital Services Librarian, Data Services Librarian, and Digital Projects Liaison) and primary responsibilities are reflective of the practices and goals for digital curation.[17]

Planned Deliverables

In line with DigCCurr I's intent for an openly-accessible curricular framework, project outputs are available for public access and, where noted, distributed under the Creative Commons Attribution-Noncommercial-Share Alike 3.0 Unported License. In lieu of appendices, provided here are links to those project outputs that are publicly available. Since the Certificate of Digital Curation is still undergoing internal review, we have included it as Appendix B.

DIGCCURR I WEBSITES

DigCCurr Project Website
http://www.ils.unc.edu/digccurr/index.html
All resources described below are listed and linked to the DigCCurr project website. Further, where appropriate, direct links are provided for those resources hosted outside the ils.unc/digccurr domain.

DigCCurr2007: An International Symposium in Digital Curation
www.ils.unc.edu/digccurr2007

DigCCurr2009: Digital Curation Practice, Promise and Prospects
http://www.ils.unc.edu/digccurr2009/

Education for Digital Stewardship: Librarians, Archivists or Curators?
Workshop of the 2008 Joint Conference on Digital Libraries
http://www.ils.unc.edu/jcdl2008/

CURRICULUM

Matrix of Digital Curation Knowledge and Competencies
http://www.ils.unc.edu/digccurr/digccurr-matrix.html

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[17] For more Information on the Fellows, including bios and resumes, see Fellows' page on project Website: http://ils.unc.edu/digccurr/fellows.html

High-Level Categories of Digital Curation Functions
http://www.ils.unc.edu/digccurr/digccurr-funct-categories.pdf

Certificate of Digital Curation
[See Appendix B]

Syllabi
http://www.ils.unc.edu/digccurr/products

- INLS 465: Understanding Information Technology for Managing Digital Collections
- INLS 490-161: iRODS Rule Construction
- INLS 890-046: Digital Curation: Applications and Challenges
- INLS 752: Digital Preservation and Access
- INLS 696: Carolina Digital Curation Fellows Introductory Seminar

Interim Course Evaluation
http://www.ils.unc.edu/digccurr/products

Module Template
http://www.ils.unc.edu/digccurr/products

CDCF PROGRAM

Experiential Components
http://www.ils.unc.edu/digccurr/products.html#practicum

- Carolina Digital Curation Practicum Handbook, 2007-2009
- Carolina Digital Curation Fellowship Practicum Agreement
- Interim Evaluation (Fellow)
- Interim Evaluation (Supervisor)
- Annual Evaluation (Fellow)
- Annual Evaluation (Supervisor)

PUBLICATIONS AND PRESENTATIONS

http://www.ils.unc.edu/digccurr/products

OTHER RESOURCES

DigCCurr2009 Proceedings (ISBN 978-0-578-02215-4)
http://stores.lulu.com/DigCCurr2009

ARM: Archives and Records Management (ARM) concentration
http://sils.unc.edu/programs/armconcentration.html

OTHER PROJECTS

Under the umbrella of DigCCurr-related projects – DigCCurr II, ESOPI-21, CDCG, and IDEA – we anticipate completion and dissemination of additional outputs. These will be disseminated through the respective project's Website as well as the Digital Curation Exchange.

CDCDG: Closing the Digital Curation Gap
http://ils.unc.edu/gap/index.html

DCE: Digital Curation Exchange
http://www.digitalcurationexchange.org/

DigCCurr II: Extending an International Digital Curation Curriculum to Doctoral Students and Practitioners
http://ils.unc.edu/digccurr/aboutII.html

ESOPI-21: Educating Stewards of Public Information in the 21st Century
http://ils.unc.edu/esopi21/

IDEA: International Digital Curation Education Action Working Group
http://ideaworkgroup.org/index.html

Unplanned Deliverables

In addition to satisfying the outputs and outcomes identified in our original proposal and subsequently revised work plans, we achieved a number of other accomplishments consequent of DigCCurr I related activities:

1) **Development and Release of Digital Curation Exchange (DCE)**

2) **Digital Curation Job Posting Study**
   In support of our construction of a sound and effective digital curation curriculum, Co-PI Lee initiated an extensive examination of job postings related to digital curation. As of June 30, 2008, 336 job postings have been captured and initially coded. Analysis is on-going.

3) **Digital Curation Syllabi Study**
   While an examination of syllabi at SILS was explicit in the work plans submitted with the original grant, the examination was extended, under direction of Co-PI Lee, to syllabi at other ILS programs, computer science programs, and training materials. To date, 50 syllabi have been captured and coded. Analysis is on-going to identifying opportunities for incorporating

and/or expanding existing components that may be applied to our digital curation curriculum framework, including topics, lectures, readings, and assignments.

4) **Development of Archives and Records Management Concentration (ARM)**
The Concentration of Study in Archives and Record Management at SILS, available to students as of Fall 2008, provides students with the knowledge and skills required to work in archives, special collections, historical societies, records management units within organizations, and various other curatorial environments. PIs Tibbo and Lee serve as conveners and administrators of the program.

5) **Creation of the Curation and Archives Research group (CAR)**
Initiated by Co-PI Lee in 2007, CAR was developed in response to the strong cohort of Ph.D. students at SILS pursuing research in archives, digital preservation, and/or digital curation. The group, comprised of PhD students and under the advisement of PIs Tibbo and Lee, meets approximately every three weeks throughout the academic year.

6) **Preparing Future Faculty**
Ph.D. students participated in curriculum development and teaching, either all or part of selected courses, under the direction and mentorship of PIs Tibbo and Lee. These opportunities arose as a by-product of DigCCurr I, with funding to support Ph.D. involvement, when available, being provided by other funding sources.

On-Going Deliverables

While we made significant progress in achieving two additional deliverables, these were not completed within the funding period. Work toward achieving these deliverables, as established in DigCCurr I planning activities over the past year, will continue under current initiatives:

1) **State-of-the-Art Literature Review**
We did not publish a literature review on digital curation education early on in this project as there simply was very little literature to include. This landscape has changed to some degree in the past four years. PI Tibbo, Co-Investigator Pomerantz, and PM Hank are submitting an article for a forthcoming special issue of the *Journal of Library and Information Science* Education on digital library and digital curation education. This will include a literature review as well as a comparison of the NSF-funded DLC project and the IMLS-funded DigCCurr I results. See also Joyce Ray's 2009 overview of educational projects.[18]

One of the first steps of this project was to review the educational landscape. This information was included in several conference presentations and at IDEA working meetings

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[18] Ray, J. (2009). Sharks, digital curation, and the education of information professionals. *Museum Management and Curatorship, 24*(4), 357-368.

through the on-going development of a digital curation registry undertaken on behalf of the IDEA. A bibliography is included on the DigCCurr website.

2) M**odule Development**
Work in this area is ongoing, following a protocol for developing and vetting modules devised under DigCCurr I. To date, the following modules have been drafted and vetted; these modules are currently undergoing revision:

- Curation Issues Throughout the Lifecycle
- History of Digital Curation
- Evaluation of Digital Curation Functions and Repository Services
- Standards Development
- Codifying Relationships and Agreements
- Digital Collection Building
- Implications of Organizational Theory and Organizational Behavior Research for Digital Curation
- Digital Curation and Preservation Infrastructures
- Processes and Strategies for Setting Policies
- Project Management
- Managing Risk: Organizational and Technological Readiness

Additional modules currently in development or planned are derived from courses created or revised under the DigCCurr I project, as summarized in the **Digital Curation Curriculum Development** section of this report, or from existing SILS' courses (e.g., Electronic Records Management). Additionally, it is anticipated that modules will be made available based on the content delivered at the June 2009 and May 2010 DigCCurr Professional Institutes, held in support of the DigCCurr II project.

The completed modules will be posted to the DCE. We are also working with DLC project staff to make their digital library curriculum modules available via the DCE as well as other digital curation educators through the IDEA group.

As mentioned earlier, a draft is currently underway for a co-authored JELIS article examining the relationship between digital library and digital curation curriculum.

Future Directions

DigCCurr I activities have greatly contributed to SILS' leadership in digital curation curriculum development. To sustain the momentum begun under DigCCurr I, PIs Tibbo and Lee will incorporate the following activities to their regular teaching, research, and service activities, either independent of or in-line with current grant-funded projects:

1. Continue to evaluate SILS curriculum and identify opportunities for incorporating and expanding existing components of the digital curation curriculum framework, including topics, lectures, readings, and assignments.
2. Continue to evaluate curriculum at other LIS programs and elsewhere, including courses in the field of computer science.
3. To prepare SILS' students for professional appointments in digital curation, continue to investigate and facilitate educational and experiential opportunities through SILS' Professional Field Experience program and in support of the recommendations within the Certificate of Digital Curation.
4. Continue analysis of project data generated under DigCCurr I, including: 1) analysis of existing SILS curriculum, reflecting offerings from Fall 2003 through the Spring 2008 semester; and 2) analysis of digital curation-related job postings.
5. From continued analysis, prepare articles for publication.
6. Continue to mentor, train and advise Ph.D. students, preparing them for faculty appointments with a specialization in digital curation.
7. Continue to develop and foster collaborative partnerships with local and regional educators, researchers, and practitioners.
8. Specifically, as leaders in IDEA, continue to participate in the development, vetting, and promotion of IDEA activities and products. Planned products currently in development include an international registry listing of digital curation professional training and educational opportunities organized around the Matrix of Digital Curation Knowledge and Competencies.

Appendix A: CDCF Program Advising Notes and Course Sequencing

Advising Notes for Carolina Digital Curation Fellows (September 7, 2007)

This document provides general advising notes for students in the School of Information and Library Science (SILS) at UNC, Chapel Hill, who are interested in pursuing careers in digital curation. It's most immediate purpose is to guide the course selections of the Carolina Digital Curation Fellows, who are funded by the DigCCurr Project, which continues to develop guidance on courses and field experiences.

If you add up the credit hours for the classes, you will find:

Course Area	Number of Credit Hours
A. Required for SILS Degree	24 (MSIS) or 24.5 (MSLS)
B. Foundational Knowledge - Intro to Archives (INLS 556) and Understanding IT (INLS 890-xxx)	6
C. Major Digital Curation Functions (in addition to A)	15.5 (MSIS) or 15/1.5.5 (MSLS)
D. Digital Curation Seminars	4
Total:	**49/49.5 (MSIS) or 49.5 (MSLS)**

1. You can pursue either the MSIS or MSLS degree.

Preparation for a career in digital curation is NOT associated specifically with either one of the Masters' degrees at SILS.

2. Foundational Knowledge - Archives and Records Management (INLS 556) and Understanding Information Technology for Managing Digital Collections (INLS 890-141)

Although it's not required for either the MSIS or MSLS degree, you should consider INLS 556 to be one of the classes you need to complete in your first year, for all of the reasons listed in #2 above. You should also plan to take Understanding Information Technology for Managing Digital Collections (INLS 890-141).

3. If you're pursuing the MSLS degree, take INLS 520 in place of INLS 521.

SILS allows students seeking the MSLS degree to take INLS 520 (Organization of Information) in place of INLS 521 (Organization of Materials), provided it makes sense for their intended career path and

they obtain advisor approval. Both classes are about how to classify and organize materials, but they differ somewhat in content and focus.

4. Take the following classes, in order to address major functions/skills of digital curation.

The following list represents 18/18.5 credit hours (MSIS) or 18.5 credit hours (MSLS), but 3 or 3.5 (respectively) of those hours will have been completed as part of the core requirements for the MSIS (INLS 582) or MSLS (INLS 501) degree.

- **Reference, Access and User Services** - at least one of the following:

  - **Access, Outreach, and Public Service in Cultural Heritage Repositories (INLS 754)** - Explores user needs, information seeking behaviors, and provision of access to primary source materials in archives, manuscript repositories, and museums. User education and outreach are major focuses. (3 Credits)

  - **Information Resources and Services (INLS 501)** - Analysis, use, and evaluation of information and reference systems, services, and tools with attention to printed and electronic modes of delivery. Provides a foundation in search techniques for electronic information retrieval, question negotiation, and interviewing. (3.5 Credits, including required lab section)

- **Electronic Records Management (INLS 525)** - Explores relationships between new information and communication technologies and organizational efforts to define, identify, control, manage, and preserve records. Considers the importance of organizational, institutional and technological factors in determining appropriate recordkeeping strategies.

- **Digital Preservation and Access (INLS 752)** - Focuses on best practices for the creation, provision, and long-term preservation of digital entities. Topics include digitization technologies; standards and quality control: digital asset management; grant writing; and metadata.

- **Digital Libraries: Principles and Applications (INLS 740)** - Research and development issues in digital libraries, including collection development and digitization; mixed mode holdings; access strategies and interfaces; metadata and interoperability; economic and social policies; and management and evaluation.

- **Archival Appraisal (INLS 755)** - Explores the history, theories, techniques, and methods that archivists use to identify documents and other materials of enduring value for long-term preservation.

- **Systems Analysis (INLS 582)** - Introduction to the systems approach to the design and development of information systems. Methods and tools for the analysis and modeling of

system functionality (e.g., structured analysis) and data represented in the system (e.g., object-oriented analysis) are studied.

5. Digital Curation Seminars

- **Carolina Digital Curation Fellows Introductory Seminar (INLS 696)** - This one-credit course is designed specifically to provide background and discussion for the incoming fellows.

- **Digital Curation: Applications and Challenges (INLS 890-046)** - Overview and exploration of major digital curation issues not otherwise covered by courses at SILS.

Carolina Digital Curation Fellows: Examples of SILS Course Selections

This document should be consulted in combination with "Advising Notes for Carolina Digital Curation Fellows."

Specific Course Constraints of Note:

- Electronic Records Management (INLS 525) – Spring 2008, Spring 2009
- Digital Libraries (INLS 740) – Spring 2008
- Digital Preservation and Access (INLS 752) – Fall 2008
- Access, Outreach, and Public Service in Cultural Heritage Repositories (INLS 754) – Spring 2009
- Archival Appraisal (INLS 755)– Spring 2008
- Digital Curation: Applications and Challenges (INLS 890-046) – Spring 2008
- Understanding Information Technology for Managing Digital Collections (INLS 890-141) – Fall 2008

Example 1 (MSIS)

Courses Fulfilled		Fall 2007		Fall 2008	
INLS 461	x	Course	Credits	Course	Credits
INLS 500	x	INLS 461 (Info Tools)	3	INLS 582 (Systems Analysis)	3
INLS 501/754		INLS 509 (Info Retrieval)	3	INLS 752 (Digital Preservation and Access)	3
INLS 509	x	INLS 520 (Org Info)	3	INLS 780 (Research Methods)	3
INLS 520	x	INLS 696 (Fellows Seminar)	1	INLS 890-141 (Understanding IT)	3
INLS 525	x		10		12
INLS 556	x	**Spring 2008**		**Spring 2009**	
INLS 582	x	INLS 556 (Intro to Archives)	3	INLS 500 (Info Interactions)	3

		Course	Credits	Course	Credits
INLS 585	x	INLS 755 (Archival Appraisal)	3	INLS 525 (Electronic Records Management)	3
INLS 696	x	INLS 740 (Digital Libraries)	3	INLS 754 (Access, Outreach)	3
INLS 740	x	INLS 890-046 (Digital Curation)	3	INLS 992 (Master's Paper)	3
INLS 752	x		12		12
INLS 755	x				
INLS 780	x	**Summer 2008**			
INLS 890-046	x	INLS 585 (Mgt for Info Profs)	3		
INLS 890-141	x		3		
INLS 992	x			**TOTAL**	**49**

Example 2 (MSIS)

Courses Fulfilled		Summer 2007		Summer 2008	
INLS 461	x	**Course**	**Credits**		
INLS 500	x	INLS 500 (Info Interactions)	3		
INLS 501/754	x	INLS 572 (Internet Apps)	3		
INLS 509	x		6		
INLS 520	x	**Fall 2007**			
INLS 525	x	**Course**	**Credits**	**Fall 2008**	
INLS 556	x	INLS 509 (Info Retrieval)	3	**Course**	**Credits**
INLS 582	x	INLS 520 (Org Info)	3	INLS 582 (Systems Analysis)	3
INLS 585	x	INLS 556 (Intro to Archives)	3	INLS 752 (Digital Preservation and Access)	3
INLS 696	x	INLS 585 (Mgt for Info Profs)	3	INLS 780 (Research Methods)	3
INLS 740	x	INLS 696 (Fellows Seminar)	1	INLS 890-141 (Understanding IT)	3
INLS 752	x		13		12
INLS 755	x	**Spring 2008**		**Spring 2009**	
INLS 780	x	**Course**	**Credits**	INLS 525 (Electronic Records Management)	3
INLS 890-046	x	INLS 461 (Info Tools)	3	INLS 754 (Access, Outreach)	3
INLS 890-141	x	INLS 740 (Digital Libraries)	3	INLS 992 (Master's Paper)	3
INLS 992	x	INLS 755 (Archival Appraisal)	3		9
		INLS 890-046 (Dig Curation)	3		
			12	**TOTAL**	**52**

Example 3 (MSLS)

Courses Fulfilled		Fall 2007		Fall 2008	
INLS 461	x	Course	Credits	Course	Credits
INLS 500	x	INLS 461 (Info Tools)	3	INLS 513 (Resource Selection)	3
INLS 501/754	x	INLS 500 (Info Interactions)	3	INLS 752 (Digital Preservation and Access)	3
INLS 513	x	INLS 501 (Info Resources)	3.5	INLS 780 (Research Methods)	3
INLS 520	x	INLS 556 (Intro to Archives)	3	INLS 890-141 (Understanding IT)	3
INLS 525	x	INLS 696 (Fellows Seminar)	1		12
INLS 556	x		13.5	**Spring 2009**	
INLS 582	x	**Spring 2008**		INLS 525 (Electronic Records Management)	3
INLS 585	x	INLS 520 (Org Info)	3	INLS 582 (Systems Analysis)	3
INLS 696	x	INLS 740 (Digital Libraries)	3	INLS 585 (Mgt for Info Profs)	3
INLS 740	x	INLS 755 (Archival Appraisal)	3	INLS 992 (Master's Paper)	3
INLS 752	x	INLS 890-046 (Digital Curation)	3		
INLS 755	x		12		12
INLS 780	x				
INLS 890-046	x	**Summer 2008**			
INLS 890-141	x				
INLS 992	x			**TOTAL**	**49.5**

Example 4 (MSLS)

Courses Fulfilled		Spring 2007		Fall 2008	
INLS 461	x	Course	Credits	Course	Credits
INLS 500	x	INLS 520 (Org Info)	3	INLS 513 (Resource Selection)	3
INLS 501/754	x		3	INLS 755 (Digital Preservation and Access)	3
INLS 513	x			INLS 780 (Research Methods)	3
INLS 520	x	**Fall 2007**		INLS 890-141 (Understanding IT)	3
INLS 525	x	**Course**	**Credits**		12
INLS 556	x	INLS 500 (Info Interactions)	3	**Spring 2009**	
INLS 582	x	INLS 501 (Info Resources)	3.5	INLS 525 (Electronic Records Mgmt)	3
INLS 585	x	INLS 556 (Intro to Archives)	3	INLS 582 (Systems Analysis)	3
INLS 696	x	INLS 585 (Mg for Info Profs)	3	INLS 992 (Master's Paper)	3
INLS 740	x	INLS 696 (Fellows Seminar)	1		
INLS 752	x		13.5		9

INLS 755	x	**Spring 2008**			
INLS 780	x	INLS 461 (Info Tools)	3		
INLS 890-046	x	INLS 740 (Digital Libraries)	3		
INLS 890-141	x	INLS 755 (Archival Appraisal)	3		
INLS 992	x	INLS 890-046 (Digital Curation)	3		
			12		
		Summer 2008			
				TOTAL	**49.5**

Example 5 (MSLS)

Courses Fulfilled		Fall 2007		Fall 2008	
INLS 461	x	**Course**	**Credits**	**Course**	**Credits**
INLS 500	x	INLS 461 (Info Tools)	3	INLS 513 (Resource Selection)	3
INLS 501/754	x	INLS 500 (Info Interactions)	3	INLS 752 (Digital Preservation and Access)	3
INLS 513	x			INLS 780 (Research Methods)	3
INLS 520	x	INLS 501 (Info Resources)	3.5	INLS 890-141 (Understanding IT)	3
INLS 525	x	INLS 520 (Org Info)	3		12
INLS 556	x	INLS 696 (Fellows Seminar)	1	**Spring 2009**	
INLS 582	x		13.5	INLS 525 (Electronic Records Management)	3
INLS 585	x	**Spring 2008**		INLS 582 (Systems Analysis)	3
INLS 696	x	INLS 556 (Intro to Archives)	3	INLS 585 (Mgt for Info Profs)	3
INLS 740	x	INLS 740 (Digital Libraries)	3	INLS 992 (Master's Paper)	3
INLS 752	x	INLS 755 (Archival Appraisal)	3		12
INLS 755	x	INLS 890-046 (Digital Curation)	3		
INLS 780	x		12		
INLS 890-046	x	**Summer 2008**			
INLS 890-141	x				
INLS 992	x			**TOTAL**	**49.5**

Appendix B: Certificate of Digital Curation

Draft, February 15, 2010 (Internal Review Only)

School of Information and Library Science
Certificate of Digital Curation

A certificate of Specialization in Digital Curation from the School of Information and Library Science (SILS) is awarded in conjunction with either the Master's of Library Science or Master's of Information Science degrees from SILS. To earn this certificate a currently enrolled student must complete the following requirements.

Requirements to earn a Certificate of Specialization in Digital Curation

1. Successful completion of the MSIS or MSLS degree from SILS. This requires 48 hours of approved graduate course work.

2. Nine (9) additional credit hours, for a total of 57 credit hours (INLS 465, INLS 752, and either INLS 525 or INLS 740).

3. Successful completion of the following graduate level courses. Many of these courses are already required as part of the master's degree. Courses can be waived with the permission of the program director if equivalent previous course work can be demonstrated.

Certificate Required Courses: MSIS

Required SILS Courses *(24 Credits)*	INLS 461: Information Tools*
	INLS 500: Human Information Interactions
	INLS 509: Information Retrieval
	INLS 520: Organization of Information
	INLS 582: Systems Analysis
	INLS 585: Management for Information Professionals
	INLS 780: Research Methods
	INLS 992: Master's Paper
Required Digital Curation Courses *(9 Credits)*	INLS 465 Understanding Information Technology for Managing Digital Collections*
	INLS 525: Electronic Records Management OR INLS 740: Digital Libraries: Principles & Applications
	INLS 752: Digital Preservation and Access**

** Students who have taken similar courses to those on the required list and/or can demonstrate appropriate knowledge may apply for waivers for any of these courses and replace with another class. See the **Equivalent Classes** section for more information.*

** It is strongly recommended that students take this course, when offered, in their first semester of study.

Certificate Required Courses: MSLS

Required SILS Courses *(24 Credits)*	INLS 461: Information Tools*
	INLS 500: Human Information Interactions
	INLS 501: Information Resources & Services
	INLS 513: Resource Selection & Evaluation
	INLS 520: Organization of Information
	INLS 585: Management for Information Professionals
	INLS 780: Research Methods
	INLS 992: Master's Paper
Required Digital Curation Courses *(9 Credits)*	INLS 465 Understanding Information Technology for Managing Digital Collections*
	INLS 525: Electronic Records Management OR INLS 740: Digital Libraries: Principles & Applications
	INLS 752: Digital Preservation and Access**

** Students who have taken similar courses to those on the required list and/or can demonstrate appropriate knowledge may apply for waivers for any of these courses and replace with another class. See the **Equivalent Classes** section for more information.*
** It is strongly recommended that students take this course, when offered, in their first semester of study.

Certificate Elective Courses: MSIS & MSLS

Elective Courses: In completing the 57 graduate credit hours required for a Master's degree with a certificate of Specialization in Digital Curation, the student has the option of taking additional SILS courses. Listed below are courses recommended as elective options for students earning the Certificate of Specialization in Digital Curation.

Regularly Scheduled Courses:

INLS 523:	Database Systems I: Introduction to Databases
INLS 556:	Introduction to Archives & Record Management
INLS 560:	Non-numeric Programming for Information Systems Applications
INLS 566:	Information Security
INLS 572:	Web Development I
INLS 582:	Systems Analysis
INLS 584:	Information Ethics
INLS 623:	Database Systems II: Intermediate Databases
INLS 720:	Metadata Architectures & Applications
INLS 754:	Access, Outreach & Public Service in Cultural Heritage Institutions
INLS 755:	Archival Appraisal

INLS 757:   Principles & Practices in Archival Description
INLS 782:   Information Systems Effectiveness
INLS 795:   Professional Field Experience

Special Topics Courses:*

INLS 490:   Computer Mediated Communication
              Information Architecture
              Information Retrieval Systems Design & Evaluation
              iRODS Rule Construction
              Issues in Digital Video Retrieval
              Programming
              Seminar in Personal Information Management

INLS 890:   Project Management: Strategy & Practice
              Copyright Law in the Digital Age
              Enabling Usability of Cyberinfrastructure for Learning, Inquiry & Discovery
              Principles & Practices in Archival Description
              Seminar in Digital Curation
              Communication Skills for Information Professionals
              XML

* Typically, not offered on a regular schedule

Courses Outside of SILS: Students are also encouraged to consider taking one or more courses in fulfillment of these elective credits at another School or Department at UNC or, through the inter-institutional program, at a participating partner university. Inter-institutional program institutions are Duke University, North Carolina Central University, North Carolina State University, UNC-Charlotte, and UNC-Greensboro.

4. Additional Requirements: Master's Paper and Field Experience
The student is expected to complete a significant project in the area of digital curation. This can be satisfied by (1) successfully completing a Master's project/paper in the area of digital curation; or (2) successfully completing a professional field experience working on a digital curation-related capacity in a practice setting. The work to satisfy these requirements must be approved by the director of the SILS Digital Curation Certificate program.   Past settings for professional field experiences at the University of North Carolina at Chapel Hill include the Odum Institute for Research in Social Science; ibiblio.org; Information Technology Services; and the University Library, including the University Archives and the Carolina Digital Library and Archives. Many other opportunities exist through the Triangle, including Duke University, North Carolina State University, and regional information technology companies.

5. Equivalent Classes
Students who have taken similar courses to those on the required list may apply for waivers for these courses. For instance, if a student earned a grade equivalent to a graduate Pass (undergraduate C) or better in an undergraduate course in Information Technology that was equivalent to INLS 461 or INLS 890-141 (Understanding Information Technology for Managing Digital Collections) s/he may apply to

waive this requirement.   Also, students may substitute, with the approval of the director of the SILS Digital Curation Certificate program, a similar or more advanced course for one of the listed courses.

6. Performance in classes
Students must successfully complete their coursework. The requirements are the same as for the general Master's degree.   A student automatically becomes ineligible for the program upon receipt of one failing grade ("F"), or nine or more hours of the grade "L" (low pass). SILS policy states that students with six or more credit hours of "IN" (incomplete) or "AB" (absent from final exam) will have the number of courses for which they may register restricted in subsequent semesters. A student in this situation may not exceed nine combined credit hours of outstanding incompletes and registered credit hours.

7. Example Course Schedules to Earn Digital Curation Certificate

Example 1: MSIS student with a two-year graduation plan; required summer coursework.

MSIS Student	Fall	Spring	Summer
1st Year	INLS 461 INLS 509 INLS 582 INLS 752	INLS 465 INLS 523 INLS 572 INLS 740	INLS 500 INLS 780 INLS 795
2nd Year	INLS 520 INLS 566 INLS 585 INLS 720	INLS 490* INLS 623 INLS 782 INLS 992	* Special Topic: iRODS Rule Construction

Example 2: MSIS student with 2 ½ year graduation plan (no summer coursework necessary).

MSIS	Fall	Spring
1st Year	INLS 461 INLS 500 INLS 582 INLS 752	INLS 465 INLS 523 INLS 572 INLS 740
2nd Year	INLS 509 INLS 520 INLS 566 INLS 585	INLS 490* INLS 623 INLS 760 INLS 780
3rd Year	INLS 521 INLS 795 INLS 992	* Special Topic: iRODS Rule Construction

Example 3: MSLS student with a two-year graduation plan; required summer coursework.

MSLS Student	Fall	Spring	Summer
1st Year	INLS 461 INLS 501 INLS 520 INLS 752	INLS 525 INLS 556 INLS 582 INLS 465	INLS 500 INLS 780 INLS 795
2nd Year	INLS 523 INLS 585 INLS 513 INLS 720	INLS 490* INLS 623 INLS 755 INLS 992	* Special Topic: iRODS Rule Construction

Example 4: MSLS student with 2 ½ year graduation plan (no summer coursework necessary).

MSLS Student	Fall	Spring
1st Year	INLS 461 INLS 501 INLS 752 INLS 520	INLS 500 INLS 525 INLS 556 INLS 585
2nd Year	INLS 523 INLS 585 INLS 513 INLS 720	INLS 465 INLS 623 INLS 780 INLS 490*
3rd Year	INLS 584 INLS 795 INLS 992	* Special Topic: iRODS Rule Construction