December 15, 2015

MEMORANDUM

TO:       Brian Butler
           Dean, College of Information Studies

FROM:     Elizabeth Beise
           Associate Provost for Academic Planning and Programs

SUBJECT:  Proposal to Modify the Master of Information Management - Technology
           Development Specialization (PCC log no. 15016)

           The proposal to modify the Master of Information Management, Technology
           Development Specialization, has been administratively approved. A copy of the proposal is
           attached.

           The change is effective Spring 2016. Please ensure that the change is fully described in
           all relevant descriptive materials.

           MDC/
           Enclosure

           cc:  Andrew Harris, Chair, Senate PCC Committee
                Barbara Gill, Office of Enrollment Management
                Reka Montfort, University Senate
                Erin Taylor, Division of Information Technology
                Pam Phillips, Institutional Research, Planning & Assessment
                Anne Turkos, University Archives
                Linda Yokoi, Office of the Registrar
                Alex Chen, Graduate School
                Ann Weeks, College of Information Studies
College/School:
Please also add College/School Unit Code-First 8 digits: 01203500
Unit Codes can be found at: https://hypprod.umd.edu/Html_Reports/units.htm

Type of Action (choose one):
X Curriculum change (including informal specializations)  ○ New academic degree/award program
☐ Curriculum change for an LEP Program  ○ New Professional Studies award iteration
☐ Renaming of program or formal Area of Concentration  ○ New Minor
☐ Addition/deletion of formal Area of Concentration  ○ Request to create an online version of an existing program
☐ Suspend/delete program

Summary of Proposed Action:
The College of Information Studies (Maryland’s iSchool) plans to modify the informal Technology Development specialization, one of the MIM program’s technology focused specializations, to reflect the addition of a Systems Design and Analysis course requirement (INST603), as well as an incremental refinement to the list of specialization electives.

Departmental/Unit Contact Person for Proposal:
PROPOSAL FOR
MODIFICATION OF SPECIALIZATION (INFORMAL)
UNIVERSITY OF MARYLAND AT COLLEGE PARK, MARYLAND
TECHNOLOGY DEVELOPMENT SPECIALIZATION FOR
MASTERS OF INFORMATION MANAGEMENT DEGREE

COLLEGE OF INFORMATION STUDIES
DEAN JENNIFER PREECE

SPECIALIZATION TECHNOLOGY DEVELOPMENT
FOR DEGREE PROGRAM MASTER OF INFORMATION MANAGEMENT

Proposed Initiation Date: SPRING 2016
I. ABSTRACT

The Master of Information Management (MIM) degree program at the College of Information Studies (iSchool) offers informal specializations to help students identify ways of combining MIM electives to prepare for different careers. These informal specializations, which reflect domains of information management expertise, serve as pathways through the available elective courses.

The Technology Development specialization, one of the MIM program’s technology focused specializations, focuses on the development, implementation, and maintenance of systems that support information management in organizational settings. The coursework in the Technology Development specialization is designed to provide an understanding of the technical, design, and managerial issues which arise during the creation and implementation of information systems.

This proposal seeks to modify the informal Technology Development specialization to reflect the addition of a Systems Design and Analysis course requirement (INST603), as well as an incremental refinement to the list of specialization electives. The proposed course lists changes are summarized on the next page in Table 1.
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<tr>
<th>Information Architecture Foundation course</th>
<th>Current Specialization Courses</th>
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<tr>
<td>Information Architecture</td>
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<td>Systems Design and Analysis</td>
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<td>• INST 603 Systems Design and Analysis</td>
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<td>Technology Development electives</td>
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<td>• INFM 722 Copyright, Privacy and Security Issues in Digital Information</td>
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<td>• LBSC 680 Principles of Records and Information Management</td>
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<td>• INST 743 Development of Internet Applications</td>
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<td>• INST 737 Digging into Data</td>
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<td>• INST 741 Social Computing Technologies and Applications</td>
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<td>• INST 767 Big Data Infrastructure</td>
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Table 1: Proposed Changes to Technology Development Specialization Courses
II. OVERVIEW and RATIONALE

The Master of Information Management (MIM) degree program at the College of Information Studies (iSchool) offers informal specializations to help students identify ways of combining MIM electives to prepare for different careers. These informal specializations, which reflect domains of information management expertise, serve as pathways through the available elective courses.

The Technology Development (TD) specialization, offered within the Master of Information Management (MIM) degree program within the College of Information Studies (iSchool), focuses on the knowledge and skills students needed to analyze, develop, design, and maintain systems that support information management and decision-making processes in organizational settings. This specialization helps to prepare students for a variety of positions, such as systems analyst, senior developer, and chief technology officer (CTO).

The specialization introduces core technology design and application concepts, including the principles that underlie sound information architecture in its context; procedures and tools for evaluating, planning, and implementing information architecture; approaches and key development elements to building dynamic websites for underlying databases; applications that provide connectivity between different layers of the site architecture; strategic ways to use and implement social computing technologies; and developing strategies to successfully apply that technology in a variety of domains.

Through the recommended coursework, students gain hands-on experience with technology deployment and development techniques, enabling organizations to build and sustain long-term competitive advantages based on technology performance and innovations. In assignments, projects, and activities, students practice working with these techniques and tools to create information resources that can be used in individual and organizational decision-making and problem-solving processes.

According to current program statistics, approximately 18% of students in the MIM degree program have followed the Technology Development specialization since fall 2013, and approximately 20% of fall 2015 applicants have indicated that they are planning to follow the Technology Development specialization if admitted into the program.

To better help this percentage of MIM students benefit from the technology course offerings within the iSchool, the MIM Program Committee, with approval from the iSchool’s Program, Curricula, and Courses Committee (PCC), worked with Faculty to modify the specific courses included in the guidelines for the Technology Development specialization. The modified specialization makes better use of available in the program technology courses to meet the specialization’s learning objectives (see Appendix A) and prepares students for successful careers in the technology field.
III. CURRICULUM AND CHANGES TO SPECIALIZATION

The Master of Information Management (MIM) degree (36 credits) requires students to successfully complete four required core courses (12 credits) and two project courses (an internship course and a capstone project course, 6 credits). The remaining 18 credits are designated as electives. While students in the MIM program are free to satisfy the elective requirement however they choose, they are encouraged to select (or design) a career-relevant specialization that provides them a depth of knowledge in one or more domains of information management expertise.

To help students benefit from the range of courses available within the iSchool (see Appendix C for course descriptions), the MIM program provides a variety of informal specializations (see Appendix B for the full list and descriptions). The specialization guidelines provide students additional information they use when selecting a set of electives that best meet their needs, given their particular backgrounds, interests, and goals.

The Technology Development specialization included the following modifications:

- Adding a required course in system design and analysis.
  - INST 603 – Systems Design and Analysis
- Modifying the list of available Technology Development electives, including new courses on data analysis (noted with an *):
  - INFM 743 – development of Internet Applications
  - INFM 747 – Web-enabled database
  - INFM 750 – from Data to Insights*
  - INST 627 – Data Analytics for Information Professionals*
  - INST 702 – Advanced Usability Testing
  - INST 733 – database design
  - INST 734 – Information retrieval systems
  - INST 735 – Computational Linguistic I
  - INST 736 – Computational Linguistic II
  - INST 737 – Digging into data
  - INST 741 – Social Computing Technologies and Applications
  - INST 767 – Big Data Infrastructure*

IV. IMPACT

The proposed changes to the Technology Development specialization minimally impact the MIM degree program and the iSchool, generally. These changes grew out of already existing program courses, arising when it became clear that the currently used specialization curriculum was not sufficient to cover the material. All of these course have been taught by a member of the Faculty approved to teach by the Graduate School. The only measurable impact of the course changes will be on advisors and MIM program staff, who will need to field student questions regarding the change. No additional staff, resources, or facilities will be needed.
Student impact is also expected to be minimal. As informal guidelines, the Technology Development specialization is not a constraining requirement. Students can complete the MIM program with any combination of program relevant electives. Whether they follow the existing guidelines or the modified ones, they still satisfy the requirements for the MIM degree.
APPENDIX A: Data Analytics Specialization Learning Objectives

The specialization is designed to help assemble a set of MIM electives in which students will:

- Understand the nature and importance of the systems analysis and design process for organizational success and operational effectiveness.
- Identify and model basic business processes and requirements.
- Plan implementation and support strategies for a given system, and designing database structures based on business requirements.
- Conceptualize and design basic user interfaces for communicating with systems, identifying necessary stages and tools of software development for a given system design.
- Demonstrate mastery of concepts, models, and information structures for organizing and providing access to information assets in Web environments.
- Demonstrate knowledge of the capabilities and limitations of current methods for evaluating, planning, and implementing, and maintaining information architecture solutions.
- Demonstrate proficiency in creating and applying models, processes, and tools that introduce or improve the information architecture of a Web site.
- Understand the basic approaches and key development elements to building dynamic websites.
- Acquire, install and maintain a web and a database servers, as well as applications that provide connectivity between different layers of the site architecture; build basic web interfaces for communicating with underlying databases.
- Recognize ways to use social computing technologies and develop strategies to successfully apply those in a variety of domains.
- Learn commonly used data manipulation and analytic tools.
- Acquire current techniques and algorithmic approaches to extract information from real-world datasets.
- Design and implement databases as well as understand techniques for deriving value from business data.
- Understand the core technologies supporting data science and business intelligence.
- Understand how business data are collected and organized in data warehouses.
- Transform large data sets into actionable information in an easy-to-understand format to support organizational decision making through the use of advanced analytical tools.
- Manage the quality, security, and privacy of data relevant to an organization to enhance its value.
- Assess alternative approaches and infrastructures for implementing big data analytics.
- Evaluate the appropriate methods and tools for data analysis in specific organizational contexts, including selecting a modeling approach, building a model using appropriate tools, validating the model, and deploying the model for prediction and analysis.
APPENDIX B: Master in Information Management Program Overview

Program Description
The Master of Information Management (MIM) program prepares students to be leaders in the use of information and technology in an organization. Drawing from management, computer science, information systems, and information science, the MIM program provides students with the skills and knowledge to successfully meet users' information needs, lead efforts to develop organizations' information management capabilities, develop and deploy emerging technologies, and manage high-value information resources.

The MIM program integrates elements of management, computing, and information science to address critical social, economic, legal, and policy challenges associated with supporting information use by individuals and organizations. Its goals include:

- Preparing professionals for leadership positions that bridge the gap between technology-oriented staff, functional personnel, and management.
- Addressing the growing need for skilled information professionals who can strategically manage information and technology assets to fulfill critical information needs in organizations.
- Providing leadership in the information management field through the study of ethical, political, social, and technical issues related to information management in modern society.
- Assisting organizations in the formation of information policies, development and application of information systems and services, and the use of information management technologies and methods.

The MIM curriculum consists of 36 credits (12 courses) of graduate-level coursework in information management and related subjects, including a balanced mix of required and elective courses.

All MIM students must complete four core courses, which provide a foundation of skills and knowledge related to information, technology, user analysis, and management. These courses allow students to determine which aspects of information management they find most interesting and useful. The MIM core courses cover such information management topics as information definition, information privacy and ethics, technology development and deployment concepts, management principles in organization, as well as efficient user design techniques and strategies.

The learning in the MIM program is not confined to the classroom. Most MIM courses involve substantial applied components in the form of individual and group projects, in-class exercises, and mini workshops. In addition to courses covering necessary information management theory, there are two project courses—a Capstone Project and internship—representing the zenith of the program’s practice-oriented focus.
After completing the MIM core courses, all students are required to complete a set of electives that provides depth of knowledge in one or more areas of information management expertise.

To help students satisfy their specialization requirement, the MIM program offers a variety of specialization guidelines. These guidelines provide students with examples of ways their MIM elective coursework can be organized to meet their educational and professional goals.

The following pre-designed specializations are identified:

- **Community Analytics and Policy** specialization focuses on the nature of developing local data infrastructures designed to promote civic engagement at the community level and the roles that libraries can play in supporting that engagement; the nature of open data and information; the ability of the public to be informed about local issues through open government and data; the ways in which information professionals can serve as key community-based intermediaries between governments, the public, and local issues; the curation and management of digital assets, particularly datasets; the ability to create and foster data-driven communities of practice; and the role of the political process and information policy in shaping the development of community data.

- **Archives and Digital Curation** specialization focuses on the role of archivists, data curation managers and specialists, and other information professionals in contemporary society; linkages between analog and digital assets and how to manage diverse holdings and collection; the records life cycle from pre-creation activities through creation, use, preservation, and access; the intersection of legal, ethical, policy, and political sensitivities in managing analog and/or digital assets.

- **User Experience** specialization focuses on the design and implementation of user interfaces. It prepares individuals for positions such as UI/UX designer, usability analyst, and website developer.

- **Technology Development** specialization focuses on the development, implementation, and maintenance of systems in support of information management.

- **Data Analytics** specialization focuses on the skills needed to manipulate and mobilize data in order to support decision-making and organizational goals in a variety of sectors. This specialization prepares graduates for a variety of positions, such as data scientist, data analyst, or information analyst.

- **Strategic Management** specialization focuses on the managerial, administrative, and organizational aspects of information management.

- **Information Management Research** specialization focuses on conducting research that advances the state-of-the-art and state-of-the-practice in information technology and management. It prepares graduates for advanced study in information science doctoral programs and careers in cutting-edge corporate or entrepreneurial environments.

- MIM students who choose to design their own specializations prepare an individualized program plan. This option gives students the opportunity to
combine technical and managerial coursework to create a unique program of study customized to their interests and needs.

**MIM Program Core Courses**

**INFM 600 – Information Environments**
Graduate catalogue description: Role and function of information in organizations. Organizational environment and its influence on internal and external communication, organizational structure and management, organizational culture, information flow, organizational identity. Shared mental models and group decision making. Differences among types of organizations. Information policy.

This course explores various models and methodologies used to capture and deploy internal and external information and knowledge in a number of settings. Throughout the course, students analyze organizations in terms of information creation, flow, sharing, conservation, and application to problem solving. The course takes into account both internal and external influences on the management of information and knowledge. The course examines how information flows, and is managed, in online settings, and involves a number of examples of successful and unsuccessful online information management.

**INFM 603 – Information Technology and Organizational Context**
Graduate catalogue description: Application of communication and information technologies to support work processes, including technology-enhanced communication networks, computer-supported collaborative work, decision-support systems, interactive systems, and systems analysis. The course is also examines acquisition of information systems and their integration into the organization.

The first part of the course is designed to build a progressively richer understanding of how specific foundational capabilities are used together to both process information and create the user experience. Homework assignments are used to demonstrate mastery of specific technologies. In the part half of the course, class sessions will be devoted to more holistic consideration of how those capabilities are used together to support the activities of an organization. During this part of the semester, students complete a term project in which they demonstrate mastery of the integrated use of technologies that were mastered individually during the first half of the semester. By examining technologies first individually and then more holistically, students will have the opportunity to enrich their understanding of how specific technologies interact to help achieve the objectives of an organization.

**INFM 605 – Users and Use Context**
Users are not a generic group, but rather are specific individuals with particular needs and preferences. To be successful, information professionals must be able to understand users, the activities they perform, and the context in which activities are being performed. This course focuses on various user experience research methodologies for learning about users, use, and context. It prepares future information professionals on how to determine the most appropriate approach to gather and report data on the needs of users as part of a design process. In the course, students learn how to identify the strength and weaknesses of various methodologies typically used for gathering information from a diverse range of users with different needs and abilities, to articulate the strengths and weaknesses of the methodologies, as well as to determine which methodology is most suitable for specific types of data collection needs.

INFM 612 – Management of Information Programs and Services
Graduate catalogue Description: Administration of information programs, services, and projects, including the role of leadership in management; developing mission, vision, and goals; providing effective management for results; managing professionals; financial management; and professional conduct and ethical issues.

This course is an introduction to various aspects of management focusing on planning, organizing, leading and controlling management stages. The course covers such aspects as the evolution of management, innovative management for the changing world, management styles and leadership, managerial planning, goal setting and decision making. The course also focuses on designing adaptive organizations responding to change, global environment, diversity, and utilizing the appropriate technology to provide effective management for results in information programs and services.