

First Steps in Starting a Master of Science Program in Health Informatics and Information Management

by Susie Tolar Harris, PhD, MBA, RHIA, CCS; Paul David Bell, PhD, RHIA, CTR; and James Anthony Woodward

Abstract

The American Health Information Management Association (AHIMA) made a strategic decision in the 2000s to advocate for increased numbers of health information management (HIM) professionals educated at the graduate level. Many universities are developing master's-degree programs in health informatics (HI) and HIM as a result. Our university established the Master of Science in Health Informatics and Information Management (MS HIIM) program in 2013 in response to this initiative. In this article (part one of a three-part series), we discuss the background of the decision to propose the degree program and provide a description of the proposed program. We then provide a thorough examination of both the proposal itself and the proposal process to establish the program. In this examination, we review the program description and requirements, the market analysis undertaken to justify the proposal, the proposed curriculum, strengths of the program proposal, and the diverse skill sets required of faculty for such a program. We also discuss the steps taken to start the program after the proposal was accepted, including the establishment of a leadership team and its members' responsibilities. In addition, we review our marketing and recruiting efforts and events. In part two of this article series, we will discuss the lessons learned after program startup and the resulting actions taken to optimize the program. In part three we will discuss the program's accreditation goals and steps to obtain accreditation. Nine master's-degree programs in HI and/or HIM are currently accredited by CAHIIM, which is the accreditation our program is seeking.

This article is based on a presentation, "Steps in Starting the Master of Science Degree in Health Informatics and Information Management at a University," which was given at the 2014 Assembly on Education Annual Meeting in Chicago, IL.

Keywords: health informatics program; health information management program; master's program; creation; curriculum

Background

Health information management (HIM), long the domain of the paper health record, rapidly evolved in the 2000s into a high-demand knowledge-based industry that requires well-trained specialists in health informatics and health information management (HIIM).¹ These specialists are needed to help collect, store, and disseminate electronic health data that can then be turned into information and ultimately knowledge to achieve both high-quality and cost-efficient healthcare delivery.² During this rapid evolution, the Office of National Coordinator for Health Information Technology cited the leadership role that HIIM professionals must play in transitioning healthcare from a paper-based to an electronic

knowledge-based endeavor. As the focus of healthcare increasingly shifts toward patient-centered team-based care, provision of this care frequently involves interactions among healthcare staff and decision making with patients. Furthermore, the ONC points out that “soft skills are now more highly valued as interpersonal interactions among health care staff and in decision making with patients become more frequent.”³ Consequently, the training and skills required for HIIM professionals include not only technical information skills and healthcare knowledge, but also change management methodologies and effective communication skills.⁴

The American Health Information Management Association (AHIMA), in 2007, published *Vision 2016: A Blueprint for Quality Education in Health Information Management*, which recognized that the drive to adopt electronic health record (EHR) systems requires HIIM professionals who can plan, design, and analyze EHRs across interlocking and partnering national healthcare enterprises, state agencies, regional health information exchanges, and federal agencies.⁵ The Healthcare Information and Management Systems Society (HIMSS) 2014 Workforce Survey reported the continuing lack of qualified individuals to fill the open management positions in HIIM.⁶ AHIMA’s update to Vision 2016, dubbed “Reality 2016,” underscored the need for more highly educated and qualified HIM professionals. To realize the goal of having more highly educated health information professionals, AHIMA recommended increasing the number of HIM professionals holding master’s-level degrees by increasing the number of master’s-level HIM degree programs.⁷ The transition of entry-level positions in HIM from the baccalaureate level to the master’s-degree level will give HIM professionals the needed skills to advance in “leadership roles within the healthcare industry.”⁸

In 2009, anticipating this need, the faculty in the Health Services and Information Management (HSIM) Department in the College of Allied Health Sciences at our university decided to meet the challenge to educate a top and middle management workforce in the HIIM sector by offering a Master of Science in Health Informatics and Information Management (MS HIIM) degree. By the fall of 2013, the master’s degree program was established and ready to accept on-campus and distance students for part-time or full-time study.

Literature Review

To find prior discussion of the establishment of graduate programs in the HIIM field, literature searches were conducted in four databases—CINAHL, MEDLINE, OneSearch, and Google Scholar—using the key terms *health informatics program*, *health information management program*, *master’s program*, *creation*, and *curriculum*. While the review revealed a paucity of articles on this topic, two notable examples relating to the development of master’s-level programs in health informatics were found.

Tremblay et al. (2016) presented a case study on the creation of the Health Informatics and Analytics graduate program in their university’s College of Business.⁹ It is important to note that their master’s program did not include a HIM piece. Therefore, while their case is a useful analysis of the program development process, their description lacked a discussion of how a program could incorporate HIM with health informatics (HI). On the other hand, Dorsey et al. (2015) described the evolution of a joint master’s program in HI and HIM.¹⁰ They also outlined challenges to the implementation of their master’s-level program and reported on its assessment model. However, their description did not include a discussion of program accreditation.

Unlike the previous articles that described the creation and development of master’s-level HI and/or HIM programs, the present article will be the first in a three-part series presenting an in-depth examination of how a master’s-level HIIM program was created. Moreover, subsequent installments in this series of articles will include discussion of how the program was optimized as well as how the program accreditation process was navigated.

Program Description

The MS HIIM is a transdisciplinary academic program at the intersection of computer and information science and technology, health services administration (the overarching discipline), and HIM, a subspecialty of healthcare administration. The program is designed to prepare individuals to become informaticians or information management professionals who can work proficiently with clinicians and health services administrators to develop clear and effective health information strategies for their healthcare organizations, as well as carry out these strategies using a variety of applications. In addition to learning the technical aspects of healthcare data and information management, students will learn how to develop strong management skills crucial for planning, designing, implementing, and evaluating a variety of systemwide health information systems, including EHRs, clinical decision support systems, and computerized provider order entry systems. The proposed MS HIIM program prepares individuals for managerial, supervisory, and executive roles as well as other leadership positions in health information systems.

A clear HIIM strategy helps healthcare organizations ensure secure access to information, enhance decision making, maintain financial balance, and improve the quality of patient care and patient outcomes. HIIM professionals are skilled in collecting, managing, interpreting, and analyzing patient data. Additionally, HIIM professionals receive the training necessary to assume leadership positions related to these functions. These professionals support and interact with all levels of an organization that employ patient data in decision making, including clinical, financial, and administrative functions. Traditionally, HIM professionals worked with paper-based data, typically in record systems contained within a single organization. However, the healthcare environment is rapidly adopting information technology to manage healthcare data across entire regions with dozens of healthcare organizations. Therefore, HIM professionals must advance their training to understand and apply principles of HI in order to be effective managers of healthcare data and information.

The MS HIIM program aims to fill this need for advanced training. The focus of the MS HIIM program is not to train students as computer technicians or programmers, but rather to educate and train them to understand the strengths and weaknesses of computer technology and information systems. Furthermore, students in the MS HIIM program will learn how to implement and manage information systems in a dynamic and complex healthcare environment.

The goals of the program are to (1) prepare more advanced HIIM professionals to meet the expanding needs of a southeastern US state; (2) train HIIM professionals competent in the knowledge-based, data-driven healthcare environment; (3) develop leaders capable of leading the implementation of health information technologies to add value to patient care; and (4) provide continuing education opportunities for practicing healthcare providers and administrators or information technology professionals.

The degree program is offered both on campus and through distance education; therefore, it is delivered in two modes: face-to-face and online. Delivering the curriculum in both modes meets the needs of distinct learning styles and life situations of the prospective students, both traditional college graduates and working adults. Faculty in the department are experienced in utilizing blended learning methodologies in order to standardize the program and ensure that the learning experience is equally effective for both on-campus face-to-face and distance online students. All of our current undergraduate and graduate certificate programs are delivered in both modes concurrently to on-campus and distance education students. The university has established information technology infrastructure (e.g., Blackboard learning management system, Mediasite in-classroom video recording) to ensure comparable learning experiences between the two student groups. Therefore, the department is well prepared to provide educational opportunities in both modes. The university has graduated on-campus students since 1968. In addition, the university has been successfully delivering courses online since 2000 for the HIM undergraduate program and since 2003 for the health services management (HSM) undergraduate program.

Admission Requirements

Table 1 shows the requirements included in our proposal for a student to be considered for admission to the program.

Curriculum

Based on standards published by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM), the program has 48 required credit hours, which include 36 hours of core courses and 12 hours of concentration courses in one of three options: thesis, nonthesis, and RHIA/HIM. Figure 1 shows the three options along with the required courses.

Completion of the program takes an estimated two to two and a half years as a full-time student or three to three and a half years as a part-time student. The leadership team has begun a plan to reduce the program's hours to 39 to 42 credit hours, which will be discussed in future research.

Graduates from the MS HIIM program are trained to be able to:

- develop and manage health information systems consistent with the clinical, fiscal, administrative, ethical, and legal requirements of healthcare institutions;
- analyze, design, implement, and evaluate health information systems;
- understand and apply principles of management and business functions to a variety of healthcare settings, including private and institutional practice;
- interact and communicate with other healthcare professionals, administrators, and staff to provide healthcare data for patient care, research, quality improvement, strategic planning, reimbursement, and related managerial functions;
- evaluate the strategic and operational relevance and robustness of clinical information resources of the healthcare industry and of the public health sector;
- support research that advances the body of knowledge and standards associated with the management of health information and information systems in the electronic health environment; and
- for students in the RHIA track, achieve first-time pass rates greater than the national average for the RHIA certification exam.

Faculty

The MS HIIM core faculty consists of the graduate faculty members in the HSIM department whose expertise is relevant to the degrees and experiences. Because HSIM departmental faculty already had experience offering coursework that met the professional accrediting body's standards for the RHIA certification exam, they were able to design, develop, and deliver graduate-level courses that continue to meet these standards. Regarded industry experts with proper credentials were also recruited to serve as adjunct faculty. In addition, members of the graduate faculty at the university in any department with proper credentials, expertise, and interest to teach selected courses in HIIM were also recruited as adjunct faculty to teach appropriate courses.

The HSIM department consists of 12 faculty members (see Figure 2). Terminal degrees range from an MD degree for the department chair to health informatics, higher education, economics, and decision science degrees for other faculty members. Credentials of HSIM departmental faculty include RHIA, Certified Coding Specialist (CCS), Certified Professional in Healthcare Information and Management Systems (CPHIMS), Certified Professional in Electronic Health Records (CPEHR), and Certified Tumor Registrar (CTR).

Proposal Process for Establishment of the Program

The overall process for gaining approval to establish a new master's-level degree program is similar at a wide variety of public academic institutions in the United States. However, the process may differ in the sequence and/or number of steps in the approval process and/or in the particular on-campus bodies that review the proposal. Therefore, it was very important for us to be well acquainted with our institution's graduate program proposal process and to know who were the key stakeholders and participants with whom we would be communicating and interacting during the approval process.

Within most public state university systems, approval to establish a new master's program must be secured on campus at the institutional level as well as off campus at the institution's general administration level. At the institutional level, development of a new MS HIIM degree occurred in three phases: (1) request for inclusion in the institution's master program plan, (2) request to plan, and (3) request to establish the program. One of our first tasks in proposing the MS HIIM program was to make sure we understood the sequence of steps in the process and their associated deadlines for completion. Unless we met stated guidelines, we ran the risk of missing our target dates for approval and establishment of the proposed MS HIIM degree program. Not meeting published deadlines could have resulted in the failure to obtain approval to either plan or establish the proposed program.

Instead of describing all the steps we followed to gain approval for the program, in this article we discuss the parts of the proposal that we believe were most important in making our case for the addition of a new master's-degree program in HIIM.

Key aspects of the request to plan and the proposal to establish the new degree program must be well crafted in order to increase the likelihood that the proposal will be regarded favorably and receive the support required to plan and establish the program. For example, a well-constructed description and justification explains the rationale for the new program as well as its designed purpose. Our MS HIIM proposal explained how the proposed program meets the growing need for skilled managers and executives to guide an evolving healthcare system that is quickly adopting or modifying information technologies to manage healthcare data. Other aspects of the program description included the expected target audience for the program, how the program would be delivered (on-campus and/or online), concentrations within the degree program, and the program's educational outcomes.

The request for inclusion in the institution's master program plan should show how the proposed degree program aligns with the institution's mission and strategic plans. Furthermore, it is important that the proposal reflect how the new program aligns with the mission and strategic plan of the college or school and the immediate academic unit that will house the proposed program. In the case of the MS HIIM program, the proposal aligned well with the institution's mission to offer graduate programs that prepare students to compete and succeed in the 21st century and in the global economy. Furthermore, it aligned with the academic unit's mission to graduate individuals who are ready to help design health information systems that make health data/information available to appropriate users while also ensuring its privacy and confidentiality. Finally, the program connected to the college's mission to produce entry-level professionals who will advocate for high-quality health information as the cornerstone for improvements in healthcare delivery.

In an era of shrinking state budgets, public universities find that they must do more with fewer resources, and this includes support for new graduate programs. Therefore, it is very useful to include in the proposal information that demonstrates to administration that requests for new faculty and other resources will be held to a minimum. Evidence of the intention to collaborate with other existing academic units or even with other institutions to deliver the new program can be very helpful in making this argument. For example, the MS HIIM proposal demonstrated how the program's department would collaborate with three other departments at our institution to deliver curriculum content in the proposed program.

The request for inclusion should include a section that documents and substantiates the market demand that may exist for the new program. For the MS HIIM program, we demonstrated the market demand by surveying students in the existing certificate program in health informatics and asking them whether they would be interested in continuing their studies at the master's-degree level. We included a

question aimed at gauging interest in earning the degree online and a question to assess interest in earning the Registered Health Information Administrator (RHIA) credential. The results for both questions convinced us to add an online component to the degree and a HIM concentration for a potential cohort of students interested in earning the RHIA credential. The market demand section reinforced the proposed argument for a new MS HIIM program at the university by making it more convincing.

Finally, in the interest of using resources carefully, state public university systems have become sensitive to avoiding duplication of programs across the institutions in their system. Therefore, it is important to understand the other players, that is, institutions that already offer similar programs in your state public university system as well as private institutions that may be considered competitors in your region. Understanding who these entities are and how they compare or contrast with your proposed program will help in making cogent arguments concerning why your proposed program is necessary. In the case of our university, three other local or regional programs offered preparation in health informatics. Because none offered a way to earn the RHIA credential and none offered online courses, our proposal highlighted the institution's plan to offer a fully online curriculum alongside the traditional face-to-face one and our program's concentration in HIM for students interested in obtaining the RHIA credential. Because we decided to highlight these two elements of the proposed program to set ourselves apart from existing similar programs, our program proposal had a greater likelihood of being approved.

Marketing

This section covers in more detail how market analysis helped to establish the need for the program and how we recruited potential students for the approved master's degree program.

Market Analysis

As part of the process of requesting authorization to establish the new program, a thorough market analysis was undertaken to determine the viability of creating a successful graduate-level HIIM program at the university. The results of this market analysis, combined with the program description (requirements, curriculum, facilities, equipment, staff, and justification), formed the core of the program proposal.

An important initial purpose of the market analysis was to help establish the rationale for proposing a new master's program in HI in a market that already contained existing master's-level HI programs at other regional competitor institutions.

As described above, in the proposal we identified the in-state and out of state competitors in the market space in which our program would operate. We compared our proposed program to their programs and highlighted key areas of divergence and existing unmet needs that our program would address. As referenced above, two clear advantages that our program could offer were highlighted: we would be the only institution offering the entire curriculum online in a manner suitable for distance education for students anywhere in the world, and our program, unlike its competitors, would make graduates eligible to sit for the RHIA certification exam.

Recruitment

Our proposal illustrated current and expected future student enrollment trends and outlined the steps we would take to ensure that the program would be supported by the local market. The department had an existing undergraduate HIIM program as well as certificate programs with steady enrollment streams, and these numbers were used to calculate expected enrollment growth and capacity figures for the proposed program. In addition, collaboration with other institutions as well as with other departments within the same university served to support marketing and recruitment of students to the new program. In this section, we explain in more detail the population of potential students from which we sought to recruit for the new master's-degree program.

In the fall of 2009, we began to offer a 15-credit-hour graduate certificate program in HI. The program is registered with the state's portal for distance education. Although we did not actively market

the certificate program, more than 100 inquiries about the program were received in a one-month period. It is worth noting that many of the inquiries questioned whether the certificate program would allow students to be eligible for the RHIA exam. All students are distance education students who take courses online. In an informal survey conducted in one of the spring 2011 courses, most of the enrolled students expressed strong interest in continuing their education via a master's-degree program in HI. The students in the certificate program include computer and information technology professionals, current health information administrators, and other health professionals. The student population matches our expectations of the potential distribution of students in the MS HIIM program.

Marketing efforts are focused on the five potential enrollment streams for the MS HIIM program: (1) individuals desiring entry-level positions in health information administration (former undergraduate HIM students), (2) individuals in the postbaccalaureate certificate program in HI who now want a graduate degree, (3) baccalaureate graduates in health services management, (4) baccalaureate graduates in information technology, and (5) career changers with baccalaureate degrees. Our marketing efforts include presentations at our annual state association's meeting; distribution of flyers and e-mails to the list of potential students, which has at least weekly additions; and presentations regarding the master's program to juniors in the undergraduate health services management program as well as to the university's undergraduate advisors.

Our Niche

The Council of Graduate Schools indicates that the number of nontraditional graduate students has risen dramatically and projects this trend to continue. Generally, many potential nontraditional graduate students are working professionals seeking a career change.¹¹ Many career-changers desire Internet-based, asynchronous delivery because they are place-bound either by current jobs or by family responsibilities. Thus, the MS HIIM program meets the needs of society by being available in two modes of delivery: face-to-face and online.

Our program also stands out from its regional and national competitors by offering a master's degree with an option that will qualify individuals to take the RHIA certification exam. As a result, the degree program appeals to a wider market of customers: those looking to acquire the specific knowledge and skills related to HIIM without committing to the RHIA option; those holding bachelor's and master's degrees from other fields seeking a master's-degree program that will prepare them as healthcare information professionals qualified to sit for the AHIMA RHIA certification exam; and finally, those who already hold the RHIA credential and are looking to upgrade their professional career status by earning a graduate-level degree in HIIM.

Timeline for Establishment

The program's establishment timeline, beginning with the Intent to Plan in 2008, is shown in Figure 3. Please note that after the MS HIIM program was approved in spring 2012, the overall academic program approval process at ECU was subsequently streamlined with the elimination of the "notification of intent to plan" step.

Postapproval Steps—Starting the Program

Marketing Strategies and Metrics

As the department commenced preparations for the HIIM program launch, the faculty and staff began a marketing and recruiting campaign to advertise the program and attract interested and qualified students. These activities included the creation of brochures, flyers, and new sections of the department's website as well as development activities such as attendance at the educational system's annual Health Informatics Career and Internship Fair/Symposium. The program received nationwide attention through a presentation at the 2014 Assembly on Education (AOE) national convention and exhibition at the 2013 AHIMA national convention. The department promoted the program by hosting the Health Informatics Career and Internship Fair/Symposium, a collaborative effort between five universities across the state whose location is rotated between the member locations each year. Additionally, the program received

statewide recognition with an alumni networking event at the annual meeting of the state's HIM association. The department marketed the program by presenting it to undergraduate advisors at the university so that they would be able to advise existing undergraduates about the program. Many of the advisors expressed interest in the program.

Every reasonable opportunity for marketing was pursued. HIIM-related organizations and venues were targeted along with students in the following undergraduate disciplines (among others): business, human ecology, health and human performance, nursing, technology and computer science, business and information technologies education, allied health, and engineering.

Additional marketing strategies and events included:

- waiver of the GRE/GMAT requirement if a student completed a HI or HIM certificate program with minimum GPA 3.5 and all HI and HIM certificate courses transferred to the MS HIIM program;
- a spring open house session;
- presentation to an undergraduate HSM junior class;
- presentation at our state HIM association's annual meeting;
- an advertisement page in the brochure for the state HIM association's annual meeting;
- marketing items included in attendees' bags at the state HIM association's annual meeting; and
- a table at the annual Health Informatics Career and Internship Fair/Symposium;

The main marketing metric that we used in identifying the source of applicant interest was applicant information collected through our graduate school's application process. On the application, students indicate how they found out about the program. The most frequently cited sources were online search results and the university's website. Additionally, we observed that in-person events such as open house sessions and presentations resulted in spikes of inquiries about the program.

The marketing strategies we used focused on our ability to provide education for both face-to-face and online students. Our marketing materials advertised the ability of students to complete their degree program via online learning, which our market analysis identified as one of the key differentiators of our program from its competitors.

Developing the Leadership Team

Upon acceptance of the proposal, the 12 department faculty members selected the leadership team that would be responsible for starting the program and ensuring its success. The team consisted of the program director, an assistant director of student affairs, an assistant director of academic affairs, and the department chair. The leadership team initially met twice a month during 2012–2013 and met once a month after the program started in the fall of 2013. Some of the issues the leadership team addressed included:

- creation of a departmental internship manual and student handbook;
- establishment of policies and procedures to address student inquiries;
- design of student orientation session activities;
- selection and design of courses, and establishment of policies to address course concerns;
- development of marketing strategies for upcoming marketing events; and
- updates to the existing HIM certificate program.

Selecting and Recruiting Advisory Committee Members

An advisory committee composed of community information management and informatics expert practitioners was created to help guide and advise the nascent program. The advisory committee consists of five HIM professionals, three chief information officers (CIOs), one chief executive officer (CEO), one

nurse, two physicians, one attorney, and two higher education professionals. The committee continues to guide and advise the ongoing development of the program through its annual meetings.

Developing the Mission Statement

The leadership team met and created numerous drafts of a mission statement. After lengthy discussion, the team achieved consensus on an initial version of the mission statement, which was presented to the advisory board for discussion and revisions:

The mission of the MS in HIIM is to educate current and future leaders on the meaningful use of information technology and information in healthcare. Graduates of the program will become key professionals for meeting the information needs of the various stakeholders within healthcare by:

- Differentiating the roles played by IT in collecting, analyzing, synthesizing and sharing healthcare data, information and knowledge.
- Applying informatics concepts and principles to the socio-technical aspects of health computing in order to add value to patient care.
- Engaging in executive level activities regarding the strategic use of information systems throughout the healthcare organization.
- Advancing the body of knowledge and standards associated with the management of health information in the electronic health environment.

After lengthy discussion with the advisory committee and many successive versions of the mission statement, the final and current mission statement listed below was approved.

Mission Statement of the Master of Science in Health Informatics and Information Management Program:

- To educate leaders in Health Informatics and Information Management to succeed in a changing healthcare environment
- To train skilled professionals to meet the information needs of all healthcare stakeholders
- To engage in research and innovation in Health Informatics and Information Management
- To contribute to Health Informatics and Information Management best practices
- To provide service to the university, profession and communities

The program vision statement was likewise discussed, revised, and ultimately approved by the advisory board and program leadership team.

Conclusion

It is important to know how the academic program approval process at your academic institution works and to construct a program proposal that clearly justifies its need at your academic institution. We chose to focus on the following aspects of the proposal for a new master's-level HIIM program at our university: describe the need for the new program; show how the new program aligns with institutional mission and goals; demonstrate how the new program avoids duplication of similar existing programs of regional competitors; and show evidence of market demand for the proposed program.

We expect that the university's MS HIIM students will become leaders and experts in the field. As Friedman states: "The trend is that for more and more jobs, *average is over*. Thanks to the merger of, and advances in, globalization and the information technology revolution, every boss now has cheaper, easier access to more above-average software, automation, robotics, cheap labor and cheap genius than ever before. . . . There is no good job today that does not require more and better education to get it, hold it or advance in it."¹² Our proposal for a graduate-level program in HIIM addresses this need for higher education of HI and HIIM professionals and may serve as a helpful example for institutions intending to establish similar programs.

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Notes

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Table 1

Admission Requirements for the Master of Science in Health Informatics and Information Management Program

<ul style="list-style-type: none"> • Completion of the university graduate admission application form
<ul style="list-style-type: none"> • Official transcripts from colleges and universities attended
<ul style="list-style-type: none"> • An earned undergraduate degree from an accredited institution and completion of the following prerequisite courses within five years of application: computer programming (3 semester hour minimum) and statistics (3 semester hour minimum); experience with Java programming preferred for thesis and nonthesis options.
<ul style="list-style-type: none"> • An undergraduate grade point average (GPA) of 3.00 or better
<ul style="list-style-type: none"> • Acceptable scores on the verbal, quantitative, and analytical sections of the GRE or GMAT
<ul style="list-style-type: none"> • Three letters of recommendation
<ul style="list-style-type: none"> • Personal statement: A statement of purpose outlining the goals for pursuing a graduate education in health informatics and information management
<ul style="list-style-type: none"> • Acceptable TOEFL or International English Language Testing System (IELTS) score for foreign students whose first language is not English
<ul style="list-style-type: none"> • Other criteria as required by the Graduate School

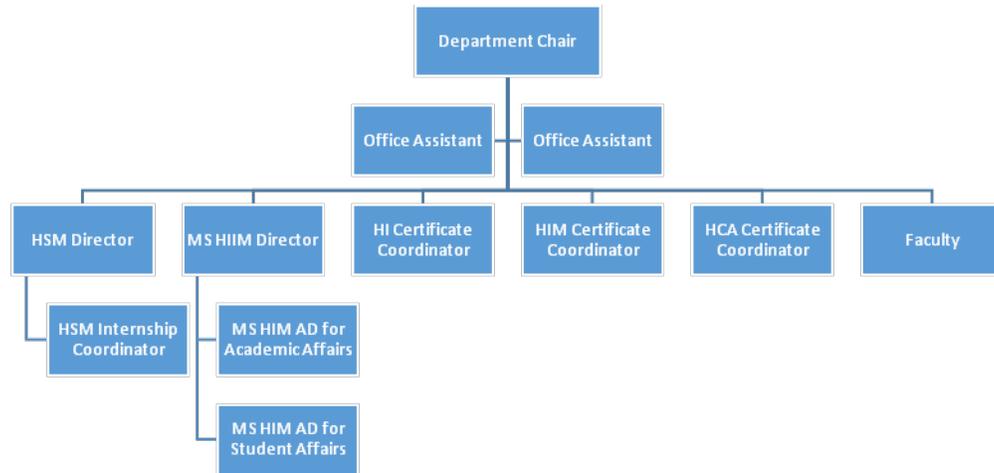
Figure 1

Curriculum Map of the Master of Science in Health Informatics and Information Management Program

MASTER OF SCIENCE IN HEALTH INFORMATICS AND INFORMATION MANAGEMENT CURRICULUM MAP				
Thesis Option 12-21 hours	Non-Thesis Option 12-18 hours	RHIA option 12-21 hours		
COHE 6440 E-Health Care Information Systems COHE 6450 Decision Support in Health Care COHE 7000 Thesis SENG 6230 Software Engineering	COHE 6440 E-Health Care Information Systems COHE 6450 Decision Support in Health Care COHE 6803 Internship SENG 6230 Software Engineering	COHE 6310 Health Accounting and Financial Administration COHE 6460 Classification Systems in Health Care COHE 6600 Management of Health Care Operations COHE 6803 Internship		
<table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top; width: 50%;"> BIOS 7021 Biostatistics for Health Professionals COHE 6000 Health Care Systems and Problems COHE 6410 Electronic Health Records COHE 6420 Evaluation Methods in Health Informatics COHE 6430 Database Systems in Health Care COHE 6470 Health Information Privacy and Security </td> <td style="vertical-align: top; width: 50%;"> COHE 6480 Health Data Structure COHE 6490 Foundations of Health Information Technologies COHE 6510 Social and Organizational Issues in Health Information Technologies COHE 6630 Quality Management in Health Care HIMA 6060 Theories and Applications MIS 6843 System Analysis and Design </td> </tr> </table>			BIOS 7021 Biostatistics for Health Professionals COHE 6000 Health Care Systems and Problems COHE 6410 Electronic Health Records COHE 6420 Evaluation Methods in Health Informatics COHE 6430 Database Systems in Health Care COHE 6470 Health Information Privacy and Security	COHE 6480 Health Data Structure COHE 6490 Foundations of Health Information Technologies COHE 6510 Social and Organizational Issues in Health Information Technologies COHE 6630 Quality Management in Health Care HIMA 6060 Theories and Applications MIS 6843 System Analysis and Design
BIOS 7021 Biostatistics for Health Professionals COHE 6000 Health Care Systems and Problems COHE 6410 Electronic Health Records COHE 6420 Evaluation Methods in Health Informatics COHE 6430 Database Systems in Health Care COHE 6470 Health Information Privacy and Security	COHE 6480 Health Data Structure COHE 6490 Foundations of Health Information Technologies COHE 6510 Social and Organizational Issues in Health Information Technologies COHE 6630 Quality Management in Health Care HIMA 6060 Theories and Applications MIS 6843 System Analysis and Design			

Figure 2

Health Services and Information Management Department Organizational Chart



Abbreviations: AD, assistant director; HCA, healthcare administration; HI, health informatics; HIM, health information management; HSM, health services management; MS HIIM, Master of Science in Health Informatics and Information Management.

Figure 3

Master of Science in Health Informatics and Information Management Program Establishment Timeline

