Integrated Bachelor of Science in Health Information Management and

Master of Science in Health Informatics

Indiana University School of Informatics and Computing at IUPUI

Spring 2015

Integrated Bachelor of Science in Health Information Management and

Master of Science in Health Informatics

Signature Sheet

Degree Title: Existing Degrees - BS in Health Information Management

and MS in Health Informatics

Indiana University School of Informatics and Computing at IUPUI

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Signature of the Executive Associate Dean   Date

Indiana University School of Informatics and Computing at IUPUI

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Dean of the Graduate School   Date

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Provost   Date

Proposal Summary

The Indiana University School of Informatics and Computing (SOIC), Department of BioHealth Informatics, at IUPUI proposes a five-year, integrated BS/MS degree program in which both the BS in Health Information Management (HIM) and the MS in Health Informatics will be awarded. By designing a curriculum that transitions seamlessly from the BS in HIM to the MS in Health Informatics, the program will graduate students who meet all of the requirements of both degrees. This would create highly skilled *health informaticians,* essentially professionals with a strong HIM background as well as the knowledge and experience on how to apply this background to health informatics. The integrated degree program will also enhance student recruitment and retention for both Schools. Importantly, this accelerated program will dramatically increase the employment options and desirability of individuals receiving the combined degrees.

IUPUI's vision is to be one of the best urban universities, recognized locally, nationally, and internationally for its achievements––and already serves as Indiana's premiere urban research and academic health and life science campus. The campus' mission is to advance the State of Indiana and the intellectual growth of its citizens to the highest levels nationally and internationally through research and creative activity, teaching and learning, and civic engagement. With IUPUI's strong commitment to teaching and research, it promotes the educational, cultural, and economic development of central Indiana and beyond, offering a distinctive range of bachelor's, master's, professional, and doctoral degrees.

Consistent with IUPUI's vision and mission, the proposed program provides students with intensive hands-on experiential and problem-based learning opportunities. The primary benefits of this combined degree program are to broaden students' career horizons by allowing them to receive two degrees in a shorter time frame and at lower costs than it would take to pursue the degrees separately.

This application proposes a fully integrated five-year curriculum, designed to develop student's knowledge, skills, and abilities to apply fundamental HIM and health informatics principles to solve health-related problems in real-world advanced application areas. Students who complete the program will have greater experience, higher credentials, and be able to contribute more quickly and effectively at their work setting. The integrated five-year BS/MS program has several salient features that are attractive to students and employers, including greater breadth (BS) and depth (MS) of Health Information Management fundamentals and an application skillset in Health Informatics; better starting salary upon completion of the program; better career growth opportunities; and better preparedness to meet employment opportunities and challenges. This

accelerated, interdisciplinary program is important for attracting domestic students to graduate studies, especially from central Indiana and the rest of the U.S.

Owing to its accelerated format, School of Informatics and Computing, Department of BioHealth Informatics, expects the matriculation of their students will serve to enhance the quality and attractiveness of both the undergraduate and graduate degree programs in which they are enrolled. A sample program of study is included at the end of this document.

Degrees to Be Conferred

Successful students will leave this program with two degrees: a BS in Health Information Management and an MS in Health Informatics. These two programs currently exist.

Rationale and Demand for this Integrated-Degree Program

The Indiana University School of Informatics and Computing was the first school of informatics to be established in the U.S. As similar programs have been started, both within the U.S. and abroad, SOIC is challenged to implement innovative strategies to meet the needs of the changing education consumer. The HIM program is the oldest and largest program in the state, has been continuously accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM) for more than 50 years, and is the only program with a 100% online option.

Health (or Biomedical or Clinical) Informatics is the interdisciplinary science that deals with biomedical information and its structure, acquisition, and use. It includes research, education, and service in health-related basic sciences, clinical disciplines, and healthcare administration. Health informatics is derived from the disciplines of computer science, information science, cognitive science, social science, engineering, and the clinical and basic sciences. It includes applied and basic scientific work, ranging from theoretical model construction to the building and evaluation of applied systems.

The five-year BS/MS program will provide a seamless integration of the breadth of a Health Information Management background in the BS program with the depth of MS coursework on applying software tools to health data. The proposed program will benefit both international and domestic students while minimizing the investment of time and financial resources necessary to fulfill the degree requirements.

Health Information Management Salaries: Most positions in the HIM profession require at least a 4-year bachelor's degree in HIM and the Registered Health Information Administrator (RHIA) credential from the American Health Information Management Association (AHIMA). Nevertheless, most employers prefer––in addition to these qualifications––a master's degree in health informatics or a related field. The average starting salary for our graduates in May 2014 was $35,000 with all graduates employed and 91% in major. The average salary for Medical Records and Health Information Technicians is $35,000 with a bright career outlook.[*] The RHIA credential appears in job listings that include Clinical Informatics Analyst, EMR Implementation Consultant, EMR Software Trainer, Information Security Analyst, Operations Manager, Project Manager, Quality Assurance Analyst, and Regulatory Affairs Manager. Our current graduates work in positions such as Business Analyst, Claims Analyst, Clinical Case Manager, Clinical Coding Specialist, Coding Compliance Manager, College Instructor, Compliance Auditor, Data Quality Manager, Health Data Analyst, Health Information Consultant, Health Information Director, Information Security Officer, Medical Records Manager, Patient Information Coordinator, Physician Practice Manager, Privacy Officer, and Systems Integrator.

Health Informatics Jobs: There are multiple career paths in health and biomedical informatics, especially as the widespread implementation of electronic health records (EHR) has fueled growing career specializations. The MS in Health Informatics enhances the BS in Health Information Management competencies with those in the technologies and methodologies for processing and managing data, information, and knowledge in healthcare leading to the following careers: Biomedical Informatician, Clinical Applications Analyst, Clinical Data Analyst, Clinical Informatics Consultant, Clinician Leader, Health Information Exchange Specialist, Health Information Manager, Health Information Privacy Specialist, Healthcare Analyst, Healthcare Informatician, Informatics Analyst, Information Systems Lead, Medical Informatician, Project Manager, and Research Informatics Associate.

If students continue on to complete a Ph.D. in Informatics with a Biomedical and Health Informatics specialization, they could become academic faculty at a university, or research scientist for a university hospital, government agency, or pharmaceutical company. Potential careers include Assistant Professor, Post-doctoral Research Fellow, Lecturer, Director of Research, Principal Scientist, IT Application Architect, Senior Data Analyst, Strategic Innovation Manager, Senior Consultant; Behavioral Health Service Manager, Director of Outcomes Research, Safety

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[*] http://www.onetonline.org/link/summary/29-2071.00

Assessment Program Leader, Senior Clinical Scientist, Biomedical Informatician, and Senior Healthcare Analyst.

The greatest numbers of jobs are in healthcare settings (hospitals, medical clinics, doctor's offices or nursing care facilities) but also include biomedical and clinical research, consumer health, public health, and imaging. For example, Biomedical Data Analysts work on teams to develop tools for medical information systems and reports for statistical, clinical, and financial analyses. They develop and manage databases to track clinical performance, productivity, and develop dashboards and other tools to support disease management programs, cost and utilization, and quality and safety metrics. Those earning master's degrees can also become IT trainers, project managers, and consultants.

Health Informatics Projections & Salary: The range of salaries with a health informatics degree is higher than many fields. The average starting salary for health informatics jobs is estimated at $70,000 annually. Salaries peak at about $106,000. Approximately 442,290 individuals are presently employed in health informatics, and at least 78,000 job openings are expected over the next 10 years. CareerBuilder.com rates health informatics jobs as the No. 1 job opportunity in an emerging industry because of the recent federal legislation that has increased their demand. Other factors that contribute to demand for individuals with these skillsets include the anticipated growth in the medical industry, as well as technological advancements that affect biomedical and clinical information availability and computer and clinical innovations, which are developing rapidly.

Objectives of the Dual-Degree Program

The proposed integrated degree program will provide both intensive education and supervised research opportunities to high quality students who are serious about committing to this unique opportunity. Students will receive two degrees in a relatively shorter time period than it would take to pursue the degrees separately—and without dilution of the content of either program. The proposed program will help the IU School of Informatics and Computing at IUPUI to recruit and retain superior students who will receive both a BS in Health Information Management and an MS in Health Informatics within five years. Most importantly, we believe this will provide greater career opportunities for our graduates in an increasingly competitive job market.

Proposed Program Structure

A. Admission requirement. Students will be admitted to the IU School of Informatics and Computing under the guidelines that currently exist for admitting BS students. The sequence of

courses for the first three years will be identical to the courses taken by traditional Health Information Management majors. The students will be made aware of the option to pursue the integrated degree program during their first year and advised appropriately should they wish to pursue it. The program is intended for those Health Information Management students who demonstrate the capacity through their coursework to succeed in this academically rigorous program. Therefore, only highly motivated students would be counseled to enter the integrated BS/MS degree program.

Students interested in applying for the integrated degree program would do so during the sixth semester (beginning of the last semester of the junior year) of their BS in Health Information Management program.

Admission will be selective: The undergraduate advisors for the HIM program and a Graduate Admissions Committee from the BioHealth Informatics Department evaluate applicants' abilities to succeed academically and their potential to contribute to the field. Candidates for admission to the graduate program would be expected to have completed successfully the first five semesters (at least 75 credit hours) of the BS in Health Information Management, with a cumulative undergraduate GPA of 3.25 or higher.

B. Degree Requirements. The proposed curriculum includes all the core undergraduate courses that are currently required for the BS in Health Information Management and all the graduate courses that are currently required for the MS in Health Informatics.

The total credit hours required for this integrated degree program will be 144 hours for those students awarded the BS and MS. For reference, the Bachelor of Science in Health Information Management requires 120 hours (30 credit hours of General Education Core, with HIM M200 Database Design for Health Information Management double counted toward the major, 85 further credit hours of HIM coursework, and 5 credit hours of electives) and the MS in Health Informatics requires 36 hours, for a total of 156 hours for two independent programs. The integrated program is constructed to exploit an overlap economy, thereby reducing the number of required hours:

- HIM M443 Professional Practicum in Health Information Management I (4 cr.) and HIM M444 Professional Practicum in Health Information Management II (4 cr.) are the undergraduate practica taken in the senior year. These practica are replaced by MS in Health Informatics practica, taken in the final year, with graduate-level CAHIIM-approved student learning outcomes.

- HIM M499 Health Information Management Capstone Experience (3 cr.) is replaced by the graduate level INFO B691 Thesis/Project in Health Informatics in the final year.
- The HIM M420 Health Information Project Management (3 cr.) course is replaced by INFO B505 Informatics Project Management (or INFO I575 Informatics Research Design) in the senior year.

These changes occur in the senior year (7th and 8th semesters) of the student's BS program. The graduate level courses satisfy all the BS degree requirements.

Students in the MS in Health Informatics graduate program must maintain a minimum cumulative GPA of 3.0 and earn a minimum of a B– in every course. If a minimum grade is not earned in a course, that course must be retaken. Graduate students cannot replace a grade; if a course is repeated both grades will be applied toward the cumulative GPA. If the cumulative GPA falls below 3.0, students will be placed on academic probation. Students on probation are required to bring up their average GPA to at least 3.0 by the end of the next semester. Failure to do so will result in dismissal from the graduate program.

C. Scope and Size of the Program. The program should be attractive to Health Information Management majors: There have been inquiries on using the graduate courses taken in students' senior years towards a Health Informatics degree. Since the inception of the Health Informatics program, several BS in HIM students have completed the program. The combined degree has the potential to increase interest further. During the initial years, it is expected that the BS/MS program would attract at least five students per year for a period of four years. This is expected to increase to at least 10 students per year during the following years. The first group of students will graduate after the fifth year following the start of the program.

D. Administrative Structure. There will be two plans of study for students in this program:

1) A BS in Health Information Management plan of study that will be filed no later than one semester before completing the BS degree requirements (normally in the sixth semester), and will include the 12 credit hours of graduate courses to be taken in place of less advanced but closely related undergraduate courses, and 2) an MS in Health Informatics plan of study that will be completed in tandem with the BS plan of study (normally upon completion of the 10th semester).

A sample degree map illustrating a semester-by-semester distribution of the courses is attached, where the four overlapping courses (12 credit hours) are indicated in both BS and MS plans. The

granting of the BS diploma will be delayed until the MS is completed, unless the student withdraws from the MS program. The graduate program will offer thesis and project options.

After admission to the accelerated program, the student's performance will be assessed by the Graduate Committee at the end of each semester to ensure that the student's performance is at the level expected for regular MS students in the Health Informatics graduate program.

If a student's performance is judged by the Graduate Committee to be unsatisfactory for the integrated degree program, the student will no longer be in the program, but will still be able to receive a BS in Health Information Management upon completion of all the requirements of that degree.

This integrated degree program will be offered only on the IUPUI campus. This campus offers two other accelerated dual-degree health-related programs:

- Bachelor of Science in Public Health (BSPH) degree with an Environmental Health Science major and the MPH degree with an Environmental Health concentration (http://pbhealth.iupui.edu/index.php/prospectivestudents/undergraduate/accelerated-bsph-mph-program/)

- Bachelor of Science in Health Services Management/Master of Health Administration (http://pbhealth.iupui.edu/index.php/prospectivestudents/undergraduate/accelerated-bshsm-mha-program/)

Evaluation Plan

The BS/MS program shall be reviewed and modified each year by a joint committee composed of members of the HIM and Health Informatics programs in the SOIC's Department of BioHealth Informatics. The program, its specializations, and individual courses shall be assessed based on their respective student learning outcomes by direct and indirect measures and with reference to the Principles of Undergraduate Learning and the Principles of Graduate and Professional Learning. The evaluation plan for the curriculum and each course within the curriculum is being devised based on teaching goals and student outcomes in congruence with the professional skills and competencies for health information managers and health informaticians.

The BS in HIM has a long-standing, continuous accreditation by CAHIIM, the accrediting body of the American Health Information Management Association (AHIMA) and the American Medical Informatics Association (AMIA). CAHIIM requires us to explicate the student learning

outcomes. Submission for CAHIIM accreditation of the MS in Health Informatics is anticipated in April 2015.

In addition to CAHIIM reviews, two formal and external evaluations of the BS/MS shall take place during year three and again during year five. The third year review shall be a small one-to-two-day review that includes a person external to both schools. The fifth year review shall be a systematic three-day review that includes three external people. Potential external reviewers include faculty members of other units on campus (e.g., the IU School of Medicine, IU School of Nursing, Purdue School of Science, and the Regenstrief Institute), faculty of other universities, and prospective employers of our graduates. These reviews are not school reviews, but rather examine the strengths and weaknesses of the BS/MS program. In both reviews, a written set of recommendations would be delivered to the University Dean of the School of Informatics and to the Dean of the Graduate School. Prior to each of these reviews, procedures for the review process shall be established consistent with similar reviews at Indiana University and at comparable institutions.

Sustainability and Impact on the State and Region

The proposed program requires no additional resources and financial support from the school and campus. The key to the success of the program is to make prospective students aware of the availability of the program when they enter the undergraduate Health Information Management program. The seamless transition from undergraduate to graduate programs will greatly reduce the time needed to complete the two degrees when compared with traditional, separate BS and MS degree programs. This proposed program is, therefore, economical and sustainable in the long run.

As our city, state, and nation move towards a technology-based, high-tech economy, we continue to see a critical need for highly educated informaticians with advanced graduate degrees. We fully expect these program graduates with advanced degrees to have a major impact on central Indiana, the state of Indiana, and the greater Midwest.

Staffing and Infrastructure

Because the program uses existing courses, faculty, and facilities, no additional resources are required.

Bachelor of Science in Health Information Management and Master of Science in Health Informatics

IUPUI Degree Map

First Year					
Fall Semester			**Spring Semester**		
Description	**Course**	**Credits**	**Description**	**Course**	**Credits**
GE: Core Communication	ENG W131	3	GE: Core Communication	COMM R110	3
GE: Analytical Reasoning	Math-M 118 or higher	3	Major: Introductory	HIM-M 330	3
Major: Introductory	HIM-M 101	3	Major: IT	HIM-M 120	3
Major: IT	HIM-M 110	3	Major: Business	BUS-X 100	3
GE: Social Science	From list	3	GE: Arts & Humanities	From list	3
First Year Seminar	INFO-I 100	1			
Total Credits	**16**		Total Credits	**15**	
Cumulative Total	**16**		Cumulative Total	**31**	
Second Year					
Fall Semester			**Spring Semester**		
Description	**Course**	**Credits**	**Description**	**Course**	**Credits**
GE: Life/Physical Science	BIOL-N 261	5	GE: Life/Physical Science	BIOL-N 217	5
Elective		2	Major: IT	HIM-M 220	3
Major: Financial Management	HIM-M 270	2	GE: Cultural Understanding - World Language	From list	3
Major: IT	HIM-M 200	3	Major: Career Planning	NEWM-N 299	2
Major: Law	BUS-L 203	3	Major: Communication	HIM-M 275	3
Total Credits	**15**		Total Credits	**16**	
Cumulative Total	**46**		Cumulative Total	**62**	
Third Year					
Fall Semester			**Spring Semester**		
Description	**Course**	**Credits**	**Description**	**Course**	**Credits**
Major: Professional Program	HIM-M 325 w/lab HIM-M 326	3 1	Major: Professional Program	HIM-M 327 w/lab	4
Major: Professional Program	HIM-M 350	3	Major: Professional Program	HIM-M 345	1
Major: Professional Program	HIM-M 355 and M356	4	Major: Professional Program	HIM-M 351	3
Major: Professional Program	HIM-M 370	3	Major: Professional Program	HIM-M 361	1
Elective		3	Major: Professional Program	HIM-M 357 and 358	4
Total Credits	**17**		Total Credits	**13**	
Cumulative Total	**79**		Cumulative Total	**92**	

Fourth Year					
Fall Semester			**Spring Semester**		
Description	**Course**	**Credits**	**Description**	**Course**	**Credits**
Major: Professional Program	HIM-M 425	2	Major: Professional Program	HIM-M 400	3
Major: Professional Program	HIM-M 475	3	Major: Professional Program	HIM-M 470	3
Major: Professional Program	HIM-M 462	2	Major: Professional Program	HIM-M 490	1
~~Major: Professional Program~~	~~HIM-M 420 Health Information Project Management~~ INFO I501 Introduction to Informatics	3	~~Major: Professional Program~~	~~HIM-M 499 HIM Capstone Experience~~ INFO B581 Health Informatics Standards and Terminology	3
~~Major: Professional Program~~	~~HIM-M 443 Professional Practicum in HIM I~~ INFO B530 Foundations of Health Informatics	~~4~~ 3	~~Major: Professional Program~~	~~HIM-M 444 Professional Practicum in HIM II~~ INFO B535 Clinical Information Systems	~~4~~ 3
Total Credits	**13**		Total Credits	**13**	
Cumulative Total	**105**		Cumulative Total	**118**	

Summer 1		
Description	**Course**	**Credits**
Health Informatics MS	INFO-B 605 Social Foundations of Informatics or Graduate Elective	3
Total Credits	**3**	
Cumulative Total	**120**	

Fifth Year					
Fall Semester			**Spring Semester**		
Description	**Course**	**Credits**	**Description**	**Course**	**Credits**
Health Informatics MS	INFO-B 505 Informatics Project Management	3	Health Informatics MS	INFO-B 691 Thesis/Project in Health Informatics	3
Health Informatics MS	~~Graduate Elective~~ INFO-B 543 Professional Practicum in HIM I	~~3~~ 4	Health Informatics MS	~~Graduate Elective~~ INFO-B 544 Professional Practicum in HIM II	~~3~~ 4
Health Informatics MS	PHBL 651 Biostatistics for Public Health or Graduate Elective	3	Health Informatics MS	INFO B642 Clinical Decision Support Systems	3
Health Informatics MS	Graduate Elective	3			
Total Credits	**13**		Total Credits	**10**	
Cumulative Total	**134**		Cumulative Total	**144**	

MS in Health Informatics courses moved to the senior year and summer are indicated in cyan highlighting. MS in Health Informatics courses that substitute for undergraduate courses are indicated in yellow highlighting.