



## **SCHOOL OF INFORMATICS**

INDIANA UNIVERSITY  
IUPUI

### **HEALTH INFORMATICS PROGRAM**

#### **SCHOOL OF INFORMATICS**

#### **Request for a New Graduate Minor**

**To be offered at Indiana University-Purdue University Indianapolis**

*Approved by the HI program faculty on  
October 17, 2012*

*Approved by the School of Informatics Associate Dean for Research and Graduate  
Studies on November 6, 2012*

*Approved by the School of Informatics Interim Executive Associate  
Dean on November 6, 2012*

#### **Objectives of the PhD Minor**

The purpose of this Graduate Minor Program is to provide opportunities for current Indiana University or Purdue University doctoral students in other disciplines at IUPUI to learn and use Health Informatics approaches to solve problems that arise in their academic fields. Such a minor is necessary as the use of health information technologies and biomedical computing are becoming ubiquitous across the health care delivery system. Future researchers and faculty members with roles and responsibilities for collecting, analyzing, managing, or working with health care data and information must be familiar with the fundamentals of health informatics concepts and approaches.

#### **Unique Features and Strengths of the Program**

The proposed Graduate Minor will serve many academic schools at IUPUI. Most notably, it will serve the needs of the Schools of Public Health, Allied Health, Dentistry, Nursing, Medicine and Sciences by providing data and information science knowledge in support of problem solving across multiple health-related domains. As IUPUI has been designated Indiana University's life sciences campus, a Health Informatics Graduate Minor would empower students performing cutting-edge life sciences research by making them proficient in informatics techniques, tools and skills they need to accomplish their objectives. The proposed Minor would also emphasize the transdisciplinary nature of health informatics.

#### **The Target Audience**

The proposed minor targets students at IUPUI seeking advanced degrees in Indiana University and Purdue University programs, such as Computer Sciences, Public Health, Allied Health, Dentistry, Nursing and Medicine and others. The Health Informatics program at the School of Informatics has received numerous inquiries from IUPUI Schools regarding the possibility of minors as part of their doctoral studies. Several students at the school of Public Health have already added Health Informatics courses to their curriculum as Informatics has been recognized as a core competency for the field of epidemiology by the Council for State and Territorial Epidemiologists (CSTE) as well as the Centers for Disease Control and Prevention (CDC).



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Informatics has been further recognized as a core competency in medicine by the American Association of Medical Colleges (AAMC) and in nursing by the American Nurses Association (ANA).

### **Plan for Sustaining Steady-state Enrollment**

In the first year (Fall 2013), up to five students will likely participate in the program. It is anticipated that this number will rise to ten per year in the next three to five years, as the awareness of the program increases.

### **New Resources**

No new resources are needed. All courses are currently taught at IUPUI by existing faculty.

### **Proposed date of implementation is fall 2013, assuming all necessary approvals have been met.**

#### ***Implementation Plan:***

Pending approval, the School of Informatics – Health Informatics will begin accepting applications in the spring 2013 for the fall 2013 entry into the Graduate Minor program. The Program Director will inform the graduate program leaders of all IUPUI academic schools when the Minor is approved, and include information on internal application procedures, program description, qualifying exams, and faculty contacts.

Once applications are received, the faculty in the Health Informatics program will review the applicants for admission to the minor. Once applicants are approved, the Graduate Minor designation will be added to their student record so that it can be awarded upon completion.

Students will be advised by a Graduate Minor Advisor, a full-time faculty member in the Health Informatics Program, regarding minor requirements in consultation with the student's doctoral research advisor.

#### ***Persons Designated as the Graduate Minor Program Administrators***

The Director and the Associate Director of the Health Informatics Program will administer the doctoral minor in Health Informatics.

#### ***Faculty Initially Involved in the Graduate Minor Program and their Credentials***

##### **Dixon, Brian E., M.P.A., Ph.D., FHIMSS**

Assistant Professor Health Informatics, IU School of Informatics; Research Scientist, Regenstrief Institute; Investigator in Residence, Center of Excellence on Implementing Evidence-Based Practice (CIEBP), Department of Veterans Affairs, Health Services Research & Development Service  
Email: [bedixon@iupui.edu](mailto:bedixon@iupui.edu) | Web page: <http://informatics.iupui.edu/people/brian-dixon/>  
Research interests : population health, clinical decision support, public health informatics, health information exchange, health analytics, and health data quality

##### **Finnell, John T, MD, MPH**

Associate Professor Health Informatics, Director Health Informatics Program, IU School of Informatics; Research Scientist, Regenstrief Institute



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Email: [jfinnell@iupui.edu](mailto:jfinnell@iupui.edu) | Web page: <http://informatics.iupui.edu/people/john-finnell/>

Research Interests: Emergency Medical Informatics, Operational Research, Public Health Informatics

### **Gamache, Roland, PhD**

Visiting Associate Professor, School of Informatics, Indiana University, Affiliate, Regenstrief Institute, Affiliate, School of Medicine.

Email: [rgamache@iupui.edu](mailto:rgamache@iupui.edu) | Web page: <http://informatics.iupui.edu/people/roland-gamache/>

Research interest: My research interests focus on the integration of public health systems with community-based Health Information Exchanges, and on improving the dissemination of this public health information in an effort to measure and improve the health resiliency of the community. The work includes the application of public health data analysis in the areas of public health assessment, evaluation, policy development, data systems integration, strategic planning, quality improvement, and public health preparedness activities.

### **Jones, Josette, RN, PhD**

Associate Professor Health Informatics, Associate Director Health Informatics Program, IU School of Informatics; Associate Professor Nursing, IU School of Nursing

Email: [jofjones@iupui.edu](mailto:jofjones@iupui.edu) | Web page: <http://informatics.iupui.edu/people/josette-jones/>

Research interests: knowledge representation, ontology, health information searching, functional tell-and-ask interfaces design, nursing informatics, and consumer-provider communication.

## **Admissions Requirements and Procedures**

### **General Admission Requirements for the Graduate Minor in Health Informatics**

Students who are enrolled in any Indiana University or Purdue University doctoral program at IUPUI may apply for admission to the Health Informatics Graduate Minor program. Students must submit an internal application to the Health Informatics Program Director for review. Admissions are done on a rolling basis. Applicants are required to have a background in Information Technology and Health Care (or equivalent). Exceptions to this requirement will be made only in rare cases to otherwise outstanding students.

### **Student Financial Support**

It is expected that many of the students completing the Graduate Minor will have received funding from their academic department. The School of Informatics, Health Informatics does not generally offer financial aid for students pursuing the minor.

## **Completion Requirements and Audit and Certification Procedures**

### **Course Requirements**

The proposed minor will require a coursework totaling 12 graduate credit hours. These must include the following Health Informatics core courses:

- INFO I530 Foundation of Health Informatics
  - This course will introduce the foundation of Health Informatics. It will review how information sciences and computer technology can be applied to enhance research and



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practice in healthcare. The basic principles of informatics that govern communication systems, clinical decisions, information retrieval, telemedicine, bioinformatics and evidence based medicine will be explored.

- INFO I535 Clinical Information Systems
  - CIS includes human computer interface and systems design; health care decision support and clinical guidelines; system selection; organizational issues in system integration; project management for information technology change; system evaluation; regulatory policies; impact of the Internet; economic impacts of e-health; distributed healthcare information technologies and future trends.
- INFO I581 Health Informatics Standards and Terminologies
  - Health information standards specify representation of health information for the purpose of communication between information systems. Standards not only standardize data formats, but also the conceptualizations underlying the data structures. The design process of data standards, domain analysis, conceptualization, modeling, and the methods and tools commonly used are explored.
- INFO I642 Clinical Decision Support Systems
  - This course provides an overview of the background and state-of-the-art Clinical Decision Support Systems (CDSS). Topics include: the design principles behind clinical decision support systems, mathematical foundations of the knowledge-based systems and pattern recognition systems, clinical vocabularies, legal and ethical issues, patient centered clinical decision support systems, and the applications of clinical decision support systems in clinical practice.

If the program of research warrants it, additional Health Informatics courses at the 500 level or above, such as independent studies, may be substituted for core courses with the permission of a student's faculty advisor and the Minor Program Coordinator.

### ***PHD Minor in HI – Course offerings***

Fall	Spring
<ul style="list-style-type: none"><li>• INFO I530 Foundation of Health Informatics (web-based)</li><li>• INFO I535 Clinical Information Systems (web-based)</li></ul>	<ul style="list-style-type: none"><li>• INFO I581 Health Informatics Standards and Terminologies (in-class)</li><li>• INFO I642 Clinical Decision Support Systems (web-based)</li></ul>

### **Minimum Overall GPA**

Successful completion of the Graduate Minor Program requires at least a “B” for each course counting toward the minor. Course grades of “B-“and below can be repeated once. Students who fail to achieve the minimum grade of “B” the second time will not be able to earn the PhD minor in HI.



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### **Maximum Number of Transferable Credits**

Applicants who have already earned credit for one or more of the equivalent courses from other institutions and other programs may request to apply up to a maximum of three credits of these courses toward the minor. Any waivers or substitutions have to be approved by the Minor Coordinator in consultation with the graduate faculty of the Health Informatics Program. A maximum of three credits from another institution may be applied toward the Graduate Minor.

### **Maximum Number of Allowable Undergraduate Courses**

No undergraduate courses can be applied to the minor program.

### **Maximum Time for Completion**

All requirements for the certificate must be completed within four years. Most students enrolled in this program will be full-time students, and should attempt the minor during the early part of their studies.

### **Number of Allowable Credit Hours taken Prior to Admission to the PhD Minor**

Up to six equivalent credit hours taken prior to admission to the Graduate minor, including a maximum of six credit hours taken from another institution ("B" grade or higher, or equivalent, required in all six credits), will be counted towards the minor. The rest of the courses must be completed at IUPUI within a four- year period from the time of admission. In the case of a student with six equivalent transfer hours, six additional credit hours must be completed at IUPUI in order to earn the minor. The completion timeline stated above applies in both cases. If a student completes any combination of equivalent credit hours prior to admission and transfer credit hours, the student must complete the remaining number of credit hours at IUPUI, which will be no less than six.

### **Curriculum and Accreditation**

The proposed minor will conform to CAHIIM (Commission on Accreditation for Health Informatics and Information Management Education) accreditation standards insofar as they are applicable. Student progress will be measured by faculty evaluation in accordance with course syllabi and objectives, and the program will be periodically reviewed and assessed.

### **Procedures for Governing the Program including Construction of Committees that will Provide Oversight**

The Graduate Faculty of the Health Informatics program will oversee the program. All advising will be done by these faculty members. A Qualifying Exam will be required for the minor; the student selects three out of the four required courses to be examined on. The minor representative for IU PhD programs has the option of sitting in on and examining the candidate during the qualifying examination. Examinations will be offered in August. Students who do not successfully complete the examination can retake the examination a second time

The Health Informatics Program Directors and the graduate admissions coordinator will take responsibility for all record keeping and tracking of students.



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### **Procedures for Program Evaluation including the Criteria for Success**

Upon completion of the minor program, exit interviews will be conducted by a faculty committee for all students to determine the effectiveness of the program in meeting their needs and to identify how they are using the skills and tools learned in the program in their major areas of study. Follow-up interviews will be conducted after three and five years. Given the projected enrollment of this program, it is anticipated that most students will be tracked in this manner. Success of the program will be defined in terms of demand (enrollment) and the responses of the students surveyed upon completion of their degree and in the follow-up interviews. To ensure completion of this important, final aspect of the feedback loop—ensuring the ongoing quality of the minor program offering and soliciting insight for future improvements, the school recorder will place an administrative hold on the student's record, pending notification from the program director that the interview has been completed.

### **Impact on Undergraduate and Graduate Programs**

It is anticipated that the graduate minor would have no impact on undergraduate programs. The minor would be an option for graduate students in many fields, and would increase their options for doctoral minors. Some graduate programs have expressed particular interest in Health Informatics competencies, and it is anticipated that most students will originate from other health sciences schools.

### **Employment Possibilities for Graduates**

The Health Informatics Graduate Minor will add value to the portfolio of doctorate recipients by increasing their theoretical and analytical informatics skills and allowing them to apply this knowledge to their area of research. It is expected that the minor program will be a popular option for students in the life and health sciences, and will enhance their marketability for both academic and industry positions.

### **Comparisons with other universities and Indiana University**

The proposed Graduate Minor differs from the program at Indiana University Bloomington. The proposed program includes only graduate level courses, and requires four distinct courses for a total of 12 credit hours. The proposed Health Informatics courses to be included in the Graduate Minor are only offered at the IUPUI campus, and therefore comparison is not applicable.