TO: Bruce Abbott, Chair, Senate Executive Committee

FROM: Carol Lawton, Chair, Curriculum Review Subcommittee

DATE: October 5, 2007

SUBJECT: Proposal for Minor in Informatics

The Curriculum Review Subcommittee supports the proposal for the Minor in Informatics, and finds that the proposal requires no Senate review.

Approving	Not Approving	Absent
B. Brewer		R. Duchovic
B. Hancock		G. Hickey
C. Lawton		L. Hite
A. Livschiz		A. Karim
S. Skekloff		D. Mansour-Cole
C. Sorge		R. Narang

Indiana University Purdue University Fort Wayne

Request for a New Minor

Proposed Title of Minor: Minor in Informatics

Department Offering the Minor: Computer Science

Project Date of Implementation: Spring, 2008

I.   **Why is this minor needed? (Rationale)**

The need to process the vast mountains of data and turn this data into information and thence into knowledge has long been the purview of those professionals with degrees in Computer Science, Information Systems, or Information Technology. Job titles have centered around the terms of database – and/or – programming. The individual has the AS, BS or MS type of degree, or has many years of experience. But what this individual often lacked was a background and understanding of the given field/discipline that needed the outputs from the data.

The need is arising across all disciplines to have a graduate who can use the computer as a "tool" to support the work in the discipline. In other words, to know the applied

discipline of the computer from the point of view of an "Effective End User" and not a computer science professional is the goal that is emerging.

When consideration is given to the needs of the future in utilizing the vast amounts of data that are growing everyday through the capabilities of the computer, it becomes clear that turning the data into useful information and knowledge will be a goal in any discipline.

This comes down to an individual being able to, in their field of work or study, know what to do and how to do it in order to accomplish the goal of gaining the insights and knowledge from the data available.

To be able to do this, and to effectively work with and interface with the computer professional requires more than the basic courses required by many disciplines that bring the student to the desired level of computer literacy.

II.   List the minor topics and curriculum of the minor.

    a.   Bulletin description is attached

    b.   Course descriptions are attached

III.   What are the admission requirements?

Students will be directly admitted into the minor by our department.

IV.   Describe student population to be served.

Any student who has a desire to have the advanced computer skills that can be applied to the topics in their discipline. The additional skills and knowledge that will come with the enhancement of the major degree via the Minor in Informatics opens many exciting job prospects.

V.   How does this minor complement the campus or departmental mission?

a. Students in other disciplines are often taking required computer courses that are mostly in the broad area of computer literacy. Courses that teach the basics of word processing, presentation graphics, spreadsheets, and some database concepts are the basis for required studies.

b. The first consideration is that the courses can not be just slightly altered computer science courses. The computer science courses are designed to produce a highly specialized software engineer or programmer/analyst or information systems specialist. While these concentrations are certainly valuable and desirable for any student, most students do not want to become full time computer technicians or computer professionals.

c. The courses offered need to teach the "craft" of using the computer.

d. Key concentrations of coursework will aim at gathering data, analyzing that data, turning the data into information, and then into knowledge through visualization and presentation.

VI.   Describe any relationship to existing programs within the university.

The courses that will be offered are for students seeking a more in-depth knowledge of how to use the tool of the computer and will be in the realm of "applied" courses.

The multidisciplinary approach will also be a requirement. Instead of just concentrating on the theory and science of the computer, the focus will be on the use and application of the computer in different disciplines.

VII.   List and indicate the resources required to implement the proposed minor. Indicate sources (e.g., reallocations or any new resources such as personnel, library holdings, equipment, etc.)

No additional resources will be needed for this program. Current Library

Allocations for the Computer Science Department will allow for a significant

collection of material centered on the topic of Informatics. Department and University computing resources are adequate for this program.

VIII.   Describe any innovative features of the program (e.g., involvement with local or regional agencies, or offices, cooperative efforts with other institutions, etc.)

a.   An **<u>Informatics (IM) Advisory Committee</u>** will be established of individual faculty members from other Schools/Colleges with an interest or expertise in informatics. It is expected that the original number of members will be small but will grow in the next few years. Some will also come from faculty being involved in the capstone course experience.

The committee will work in five main areas of endeavor with the core IM faculty. These areas will be:

1. Advisory about the overall needs for courses and topics.

2. Planning for new courses within the IM current program.

3. Capstone course planning for individual discipline courses (potential inclusion in the minor) as well as projects that will be used in the IM capstone course.

4. Course Development activities to enhance the current IM courses as well as courses that will be run in other departments (inclusion as an elective course). This will coordinate the courses that students will take to meet the requirements for the Minor.

5. Equipment reviews and planning in order to request needed hardware and software.

b. The program will encourage any department to substitute their own discipline centered course for the junior year elective and/or for the senior year capstone experience course. This will allow a significant targeting of material for their students taking the Minor in Informatics.

c. The capstone course requirement will allow for a faculty member from a given discipline to, in effect, direct the content of the capstone course for students in that given major. The project can be tailored with a course experience that utilizes the knowledge base and the data in that discipline. This allows excellent collaboration between faculty in the Department of Computer Science and faculty from other departments in developing courses for the Minor in Informatics.

Bulletin Description for the Informatics Minor

Informatics

Program: Minor

Department of Computer Science

College of Engineering, Technology and Computer Science

ET 125 260-481-6803

A minor in informatics complements a major in such fields as Nursing, Biology, Business, Management, Political Science, Public Affairs and Education. To earn a minor in informatics, you should have completed CS 106 (or equivalent) with a grade of C or better.

The informatics minor includes the following courses:

Course Number and Title		Credits
Informatics Minor Core courses		
IM 105	Introduction to Informatics	1
IM 210	Problem Solving & Programming for Informatics	4
	(MA 153 recommended)	
IM 220	Database Application for Informatics	3

| IM 230 | Informatics Infrastructure | 3 |
| IM 330 | Information Retrieval & Presentation | 3 |

Informatics Elective selected from: 3

IM 310	Problem Solving & Programming for Informatics II
IM 370	Network Design & Management for Informatics
IM 380	HCI Design for Informatics

Other approved Informatics course from a related discipline

Informatics Capstone Course 3

IM 450 Informatics Design Project

Other approved Informatics capstone course from a related discipline

Total **20 Credits**

Course Descriptions

IM 105 Introduction to Informatics Cr.1.

This is a required foundation course for all students interested in the study of Informatics leading to the fulfillment of requirements in the Minor or Certificate programs. The course will cover key topics relating to ethics and social issues regarding Informatics. The course will provide applications and discipline specific examples involving all of the current converging technologies utilized in Informatics. The material presented will explore the interdisciplinary nature of Informatics. This course will provide the program plan of study and describe the various courses so the student can made the decisions necessary for the elective options as well as the semesters in which the courses will be taken.

IM 210 Problem Solving & Programming for Informatics I Cr.4.

An introduction to computer programming and problem solving at the level needed for the study of Informatics. Programming topics include data representation, expressions, control statements, subprograms, simple input/output, GUI development basics, and event-driven programming. Problem solving techniques include problem specification, pseudo-code, and stepwise refinement.

IM 220 Database Application for Informatics Cr. 3.

Theory and application of database systems from the viewpoint of Informatics. Topics include: data analysis and design, data storage, data querying, and data visualization. A special emphasis will be put on developing web-applications that allow for information gathering and graphical representation of information through the deployment of database technology.

IM 230 Informatics Infrastructure Cr.3.

This course focuses on the fundamental informatics technologies and their use in the company, business, or organization. Topics include design and development of web and other applications, computer operating systems, distributed systems, data applications, data and information analysis, e-commerce, multimedia technology, social implication of informatics, current and emerging technologies.

IM 310 Problem Solving & Programming for Informatics II Cr.3.

A continuation of IM 210 for students interested in a deeper understanding of program development. New topics include arrays, file I/O, fundamentals of object-oriented programming, and development of user-defined classes, advanced GUI programming, graphics, and presentation of visual data. Reinforcement of problem solving techniques.

IM 330 Information Retrieval & Presentation Cr.3.

An introduction to the basic concepts and techniques in information retrieval and visualization. Topics include information organization, access, and visualization, Web-based information retrieval, searching, and graphical presentations and interfaces. Students will study existing information retrieval and visualization systems.

IM 370 Network Design and Management for Informatics Cr.3.

The design, implementation, and management of computer networks for informatics. Topics include telecommunication concepts, client-server environments, Internet and intranet, wireless systems, network devices, network operating systems, network design, implementation and management, and network security. Students are expected to design and implement small networks.

IM 380 HCI Design for Informatics Cr.3.

A survey of human-computer interaction concepts, methods, and evaluation. Topics include HCI design issues, Web design, user interface design and techniques, multimedia, and simulated environments. Students are expected to design, implement, and evaluate user interface designs in small projects.

IM 450 Informatics Design Project Cr.3.

This course will incorporate a discipline oriented project. The student will be involved in a project from the planning through the end product. Parts of the project will include the data design, gathering, manipulating, and analysis. The project will also consider Web interface and network considerations. Final graphics and visualization presentations (including multi-media if needed) will be the end product. Students will work in teams.