

MEMORANDUM

FOR: Dean Plater and Dean Manlove

FROM:

Mathew Palakal



DATE: September 2, 2005

SCHOOL OF SCIENCE



In support of the university's mission, the department's mission is to build excellent academic programs coupled with strong research programs, industrial collaborations and community relationships. The three pillars supporting this mission are its Graduate, Undergraduate and Service Course Programs. The dynamics of Indiana, particularly in the Indianapolis area, obligate the department to not only continue, but increase this effort. The department has a key role to play in satisfying the information technology needs of the surrounding community and guiding their development.

During the Spring 2005 semester, the faculty in the Department of Computer and Information Science evaluated our current graduate program options and the idea to provide graduate certificates targeted at working adults in the Indianapolis community. Through discussions with the Computer Science Advisory Committee and members and our Graduate Committee, we have developed and submitted proposals for five graduate certificates.

The School of Science Graduate Affairs Committee has reviewed the proposals and recommended their submission for approval to the campus Graduate Affairs Committee. This will be presented by Pam Crowell at the next meeting on September 27th. The complete proposals are attached and submitted for your information and for format review. A summary of each certificate follows:

Biometric Computing Certificate: This program aims to provide an integrative experience by applying to a complex problem of a practical nature the theory and skills learned in the course work. The graduate of this program is prepared to adapt and respond quickly to the employer's specialized requirements. Biometrics is defined as the capture of the physiological and behavioral characteristics for personal identification and / or individual verification purposes. Since it uses individual personal characteristics to verify or recover identity, it is set to become a successor to the personal identification token. The technique of using biometric methods for identification can be widely applied to forensics, ATM banking, communication security, time and attendance, and access control

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Database and Datamining Certificate: This program will introduce students to the core concepts necessary for the design, implementation, and application of database systems. It stresses the fundamental principles in database modeling and design. The aim is to address the continuing need for engineering databases for complex and ever changing applications requiring security, performance, and reliability.

Bioinformatics Certificate: The explosive growth of biological genetic information sources, available over the Internet, has given rise to both opportunities and challenges for biological and medical researchers. The opportunities they provide are both scientific (e.g., understanding the information encoded in elementary biological structures) as well as technological (e.g., new drug discovery for specific diseases). Students earning a Bioinformatics Certificate will be able to participate in the development of agent-based information systems that have the potential to scale up to a broad range of complex information services.

Software Engineering Certificate: A central problem of today's economical development and competitiveness in industry, society, science and engineering is the mastering of complex, large, heterogeneous, software-intensive products and the processes of their construction, application and adaptation. The success of software products and services as well as of enterprises and organizations is increasingly determined by the availability of such adequate software solutions.

Cyber Security Certificate: The program in Cyber Security will explore concepts and principles of cryptography and network security, including classical and modern cryptography, cryptanalysis, secret key cryptosystems, public key cryptosystems, digital signature and authentication, hash functions and message digest, key distribution and key management, network security protocols. The focus of this program is on theoretical, practical, and application aspects of cryptosystems and security protocols in network systems such as the Internet.