

APPROVAL OF NEW CONCENTRATION IN COMPUTER INFORMATION TECHNOLOGY

As a part of the Bachelor of Science in Computer and Information Sciences degree program, a student in this major chooses one of three alternative concentrations: Computer Programming and Information Systems, Computer Science, or Networking and Data Communications. In an effort to expand the needed service for the growing economy of the Eastern Panhandle, the department now seeks to add an additional concentration in Computer Information Technology.

The major thrust of this concentration is not only to expand into support systems, but also to cover other aspects in the business world. A mix of skills along with technical proficiency is important in real world applications. This concentration will place greater emphasis on the knowledge of business fundamentals. This concentration requires a minor and a minor in a related field is highly recommended.

Specific General Studies Requirement.....	3
MATH 154 Finite Mathematics.....	3
Degree Requirements.....	34
MATH 100 Freshman Seminar.....	1
CIS 102 Microcomputer Applications.....	3
CIS 104 Introduction to Computer and Information Sciences.....	3
CIS 211 Computer Language Concepts.....	4
CIS 234 Introduction to Networking.....	3
CIS 287 Systems Analysis and Design.....	3
CIS 386 Computer Organization.....	4
CIS 388 Database Management Systems.....	4
CIS 332 Web Programming I.....	3
CIS 419 Data Communication & Local Area Networks.....	3
MATH 314 Statistics.....	3
Track Requirements. Choose one track.	
Biometrics and Information Security.....	23
+CIS 372 Introduction to Biometrics.....	4
+CIS 312 Information Security.....	3
CIS 418 Management Information Systems.....	3
CIS 486 Network Security.....	4

Requirement Electives.....9
 Any CIS courses numbered CIS 300 or above or Math 254

Information Technology24

BADM 310 Principles of Management3
 +CIS 312 Information Security.....3
 +CIS 361 E-Commerce.....3
 BADM 345 Business Communications3
 CIS 418 Management Information Systems3

Requirement Electives.....9
 Any CIS courses numbered CIS 300 or above or Math 254

Web Programming and Design *25

MATH 200 Geometry and Measurements.....3
 CIS 334 Web Programming II.....3
 CIS 302 Windows Programming.....3
 CIS 434 Inter/Intra Networking.....3
 +CIS 450 Web Design Studio.....4

Requirement Electives.....9
 Any CIS courses numbered CIS 300 or above or Math 254

*A minor in ART is recommended with this concentration

+CIS 312 Information Security

Students will be introduced to the fundamental concepts of information security including the establishing and implementing an organization-wide security policy which is designed to protect the information assets of an organization. This course provides the student with the skills necessary to enforce an organization security policy, and to lay the foundation for continued study in the information security area. Prerequisite: CIS 234

+CIS 372 Introduction to Biometrics

Introduction to the basics of biometrics and investigate the mainstream biometric technologies being used. This course also explains the underlying image processing concepts required to understand biometric techniques. Also included are ethical and privacy concerns and the future of biometric technologies.

+CIS 361 E-Commerce

This course covers concepts, IT skills, tools, social and ethical issues for performing E-Commerce in contemporary fashion, with a focus on technical issues rather than business practice itself. Also included are topics such as EDI, VAN, ExtraNet, shopping cart, database and security. Prerequisites: CIS 234 and CIS 332.

+CIS 450 Web Design Studio

This course is designed for students to learn through real Web site projects. Students will form teams to learn advanced techniques for Web site creation, design, programming, and integration.

Languages, tools, and technical for creating advanced Web applications will also be covered.
Prerequisite: CIS 334

The following resolution is recommended for adoption by the Board:

RESOLVED, That the Shepherd University Board of Governors approves the Concentration in Computer Information Technology as a part of the Bachelor of Science in Computer and Information Sciences, effective for the Fall 2007 academic semester.

Computer Information Technology

Summary

The genesis for the Computer Information Technology (CIT) concentration was the many contacts received by the Chair of Computer Information Sciences, Mathematics and Engineering (CME) Department asking if Shepherd had programs of study in information technology, or bioinformatics, or web design. Further, during the past several years a change in faculty in the CME department has brought the necessary skills and experience to teach in areas associated with information technology. Lastly, a concentration in CIT will build on a shift in the University's computer sciences program toward applied fields while retaining the basic core in computer science, computer programming and networking. This shift has also been seen in the addition of the Industrial Mathematics concentration last year, the hiring of an applied mathematician for that program, and in the proposed degree program in Computer Engineering that is awaiting HEPC approval. This is a shift in emphasis for both computer science and mathematics, but there are minimal expenditures associated in implementing this program because current laboratory facilities are adequate to support the concentration.

It is estimated that the CIT program will attract 4-6 students in the first year and should attract an increasing number of students in subsequent years because this is a popular career choice in computer science. It is anticipated that future students in this field will come to Shepherd from local community colleges, particularly Hagerstown Community College, with whom the CME department has finalized a working relationship in computer technology.

Below is an outline of degrees in Computer Science within the CME department. A complete listing of areas of study in the CME Department can be found at its website:
www.shepherd.edu/cmeweb/programs.html

B. S. in COMPUTER INFORMATION SCIENCE

B. S. in COMPUTER ENGINEERING (PENDING)

Concentrations in CIS

Computer Science
Computer Programming and Information Systems
Networking and Data Communication

Computer Information Technology (Pending)

Tracks in CIT

Bioinformatics and Network Security
Information Technology
Web Programming and Design

Computer Information Technology

3.7.1 Educational Objectives

The Computer Information Technology concentration will provide students with the knowledge and the tools to be used in business processes and project management skills, as well enhancing their communication, presentation and innovation abilities.

The major thrust of this concentration is to extend computer technology into the business world and its support systems. A combination of technical skills and proficiency is important in real world applications. This concentration will place greater emphasis on the knowledge of business fundamentals.

A graduate of this program will have developed an appreciation of the connections between the real and the digital worlds. One goal of this concentration is to bridge the gap that exists between the technology and the user of the technology with respect to understanding how computers and software applications can meet the needs of real life. The core courses in the CIT concentration will provide students with the required depth of knowledge in programming, networking, computer organization, web programming and mathematics. There will be three different tracks in the concentration and each focuses on a particular skill: Biometrics and Information Security, Information Technology, and Web Programming and Design. Each of these areas are designed to help a particular sector of the business world: the security of networks; the optimization of business organization and data base management; or web design and programming.

Relationship of Objective to the Mission of Institution

"Shepherd University is a student-centered, learning community meeting the changing needs of the people of the Eastern Panhandle of West Virginia and the surrounding communities through teaching, research, service, and technology."

The Computer Information Technology concentration will strengthen our ability to support the mission of Shepherd University. In particular, it will:

- **Fulfill Our Duty to Serve the Community.** This concentration will make Shepherd's technological capabilities and knowledge base better able to serve the workforce and economic development of West Virginia's Eastern Panhandle and surrounding communities through collaborative arrangements with business, government, and labor.
- **Enhance Research & Publishing Capabilities.** This concentration will help the faculty to propagate and maintain resources and tools necessary for successful support of research projects and faculty preparation and submission of papers to academic journals and other professional publications.

Shepherd University currently has a Computer Information Sciences (CIS) degree program and anticipates offering a Computer Engineering degree program in the fall of 2008. The CIS degree program at Shepherd University is a four year course of study to prepare students in (presently) three different concentrations; Computer Science - CS, Computer Networking and Data Communications - NDC, and Computer Information Systems- CPIS. Shepherd's existing program emphasizes a strong foundation in computer science, networking, programming and technology that will interconnect with all of the areas of the CIT concentration.

Special Features That Make Shepherd a Desirable Place to initiate this Program

The strong foundation in the established areas of computer science, mathematics and engineering within the School of Natural Sciences & Mathematics all support the establishment of this new concentration. Not only does the proposed Computer Information Technology program strengthen the CME department's ability to support the mission of Shepherd University, but it will allow us to better fulfill our duty to serve the community and enhance the ability of our faculty to pursue research projects and submit papers in professional publications.

The business community in the Eastern Panhandle and the federal agencies operating in this area have approached Shepherd and made known their desire to have computer science graduates who are better able to meet their workforce needs. Area business and government agencies are willing to collaborate with Shepherd University in developing and placing computer science and engineering students within their organizations.

Finally, this concentration will provide homogeneity to the interdisciplinary programs in the CME department. We are very confident that this concentration will attract students who are interested in pursuing a technical degree in computer technology- related areas from throughout the tri-state region to Shepherd University.

3.7.3 The Institution will assure High Quality Standards for the Program and Maintain a Continuing Assessment of Quality

High Quality Program

Four faculty members have joined the department since fall 2004. Dr. Osman Guzide has worked in the computer science industry and as a computer science consultant for many years. Dr. Weidong Liao has worked as a software engineer and recently completed his Ph.D. in computer science. Dr. Zhijun Wang has a Ph.D. in Computer Science and will complement the program with courses in Graphic Design. Our newest faculty member, who will join the CME department in fall 2007, is Dr. Seung-yun Kim. Dr. Kim has a background in Computer and Electrical Engineering and will provide the students with the necessary hardware background. James Romano has been a member of the Shepherd faculty since 1972 and his contributions in programming courses have proved to be invaluable.

Assessment

The department performs assessment in all areas of the program in coordination with the Office of Teaching, Learning and Instructional Resources.

The CME department is in the process of establishing guidelines of assessing this new concentration. We are committed to this process, as it ensures our effectiveness in preparing students for a career in the fields of computer science and computer technology.

3.7.4 Other Institutions Offering Similar Programs:

University of Maryland offers a similar program and there are community colleges such as Hagerstown Community College where two year technology degrees are offered in related areas. The department is actively working with the two-year colleges to articulate their associate degrees into a baccalaureate degree in CIT at Shepherd University.

3.7.5 Statement of Societal, occupational, research, or public service needs that will be met, as well as anticipated student demand for the program.

Societal and Occupational Needs

There has been a strong demand for computer technology graduates in the information technology industry. Latest trends indicate the need for integration of computers into a variety of applications that require a strong background in the principles of networking, computer architecture and organization. These skills will be coupled with knowledge of business fields such as website design and development, e-business and e-commerce, information security and biometrics.

Moreover, the introduction of this program will serve to fulfill the recent call from various civic and private groups like the Chamber of Commerce and the Gateway New Economy Council to increase the number of highly skilled workers in the Eastern Panhandle of West Virginia and the tri-state region.

Student demand for the program

Given the affordable tuition at Shepherd University, the growth and expansion in the information technology industry, and the recent student interest in computer sciences, we anticipate a high demand for this program as we are accessible to the residents of the eastern panhandle and tri-state area.

3.7.6 Additional Resources Needed to Offer Program

Faculty

No additional faculty will be required to offer the CIT concentration. As the concentration grows, new faculty will be requested in accordance with Shepherd's new policies for the creation of new positions.

Facilities Requirements

The requirement of new facilities to support the CIT program will be minimal. The Department of Computer and Information Sciences, Mathematics and Engineering currently has state-of-the-art laboratory facilities. There are two engineering/mathematics laboratories, one networking and distributed systems laboratory and one general computer and information technology laboratory.

These facilities can be easily adapted to teaching all the courses necessary for the CIT concentration. In addition, a new laboratory has been created using existing resources that strengthens and expands our facilities.

Library

The library at Shepherd University has been strengthened considerably in recent years. The School of Natural Sciences and Mathematics and the CME Department will work with the library staff to recommend resources and materials needed for this concentration.

In addition, we propose to subscribe to the ACM (Association for Computing Machinery) and IEEE (Institute of Electrical and Electronics Engineers) online digital library so that students and faculty members at Shepherd University can have access to publications from ACM and IEEE.