To: IPFW Senate

From: Ann Livschiz, Chair
         Curriculum Review Subcommittee

Date: September 28, 2011

Re: Proposal for the Certificate in Information Systems Application

The Curriculum Review Subcommittee supports the proposal for the Certificate in Information Systems Application, and finds that the proposal requires no Senate review.

<u>Approving:</u>   <u>Not Approving</u>   <u>Absent</u>
Ronald Duchovic
Il-Hee Kim
Carol Lawton
Ann Livschiz
Barbara Resch
Becky Salmon
Steven Sarratore
Susan Skekloff
Lubomir Stanchev
Nichaya Suntornpithug

IPFW
Request for a New Credit Certificate Program

Campus: _____Fort Wayne_____

Proposed Title of Certificate Program: ___Information Systems Application_____

Projected Date of Implementation: _____Fall / 2011_____

TYPE OF CERTIFICATE: (check one)

☒ UNDERGRADUATE CERTIFICATES – These programs generally require 12-29 credits of undergraduate-level academic work.

☐ GRADUATE CERTIFICATES – These programs generally require 12-29 credits of graduate-level academic work or undergraduate academic work carrying graduate credit.

☐ POST-BACCALAUREATE CERTIFICATES –These programs generally require 12-29 credits of undergraduate-level academic work, although students enrolling in these programs must have completed their baccalaureate degrees.

I. Why is this certificate needed? (Rationale)

II. List the major topics and curriculum of the certificate.

III. What are the admission requirements?

IV. List the major student outcomes (or set of performance based standards) for the proposed certificate.

V. Explain how student learning outcomes will be assessed (student portfolios, graduate follow up, employer survey, standardized test, etc.) and describe the structure/process for reviewing assessment findings for the purpose of ensuring continuous improvement of the certificate.

VI. Describe student population to be served.

VII. How does this certificate complement the campus or departmental mission?

VIII. Describe any relationship to existing programs on the campus or within the university.

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

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

Credit Certificate Program

Information Systems Application

I. Why is this certificate needed?

The Information Systems field requires entry level employees with a base of knowledge and skills that are embodied in the beginning topics of the Bachelor's Degree in Information Systems. This Certificate will allow a student to have the "credential" needed to show competency for the entry level position, or for repositioning within a company field, or reaffirming technical background. The student seeking the Bachelor's Degree in Information Systems will be able to compete favorably for entry level positions.

Students in other disciplines who like to work with the computer will find a very good foundation of coursework to give them the effective background to find entry level positions in their disciplines where the companies want some employees with computer technical background.

The Certificate coursework will provide the background that will easily provide avenues of working with the Information Systems or Information Technology Departmental staff in the company setting.

Entry level positions are among the following:
   a) Help Desk Specialist
   b) Entry Level Programmer
   c) Entry Level Application Developer
   d) Web Development Staff
   e) Data Base Staff
   f) Computer Operations
   g) Departmental Technical Staff Support

The Information Systems major with the Certificate in Information Systems Application will be in a preferred position to meet Co-Op and Intern/Work Study openings.

In addition the Certificate will allow the following important enhancements:
   a) Provide background in Information Systems to other areas of the computer field
   b) Provide avenue for existing IS trained professionals to retool
   c) Provide other trained professionals a background in the field of Information Systems

II. List the major topics and curriculum of the certificate.

1.	IST 14000	Introduction to Visual Basic for Applications	3 cr. hr
2.	IST 20300	Advanced Visual Basic for Applications	3 cr. hr
3.	IST 16000	Foundation & Role of Information Systems	3 cr. hr
4.	IST 26500	Enterprise Systems	3 cr. hr
5.	IST 27000	Data & Information	3 cr. hr
		Total Credit Hours	15 Credit Hours

➢ Course descriptions are attached at the end of the report

III. What are the admission requirements?

There are no special admission requirements. Any student at IPFW will be able to take advantage of the Certificate Program.

IV. List the major student outcomes for the proposed certificate.

Certificate Outcomes

Students will:

1. Have an excellent foundation in application development through programming with a high level language.
2. Understand the role of the Information System as used today (with the people, technology, and organizational components) including the globalization role.
3. Understand the fundamentals of Enterprise Systems and the issues associated with their implementation.
4. Understand the role of databases, and database management systems, in managing the organizational data and information.
5. Student will be prepared to assume job positions at the entry level of the information systems work in an organization or business.

Individual Course Outcomes:

IST 14000 & 20300 **Intro & Advanced Visual Basic Programming**
        Two course sequence to fulfill requirement

Students will:

1. Learn to use primitive data types and data structures offered by the development environment
2. Learn to choose an appropriate data structure for modeling a simple problem
3. Understand basic programming concepts
4. Learn to write simple applications that relate to a specific domain
5. Learn to design, implement, test, and debug a program that uses each of the following fundamental programming constructs: basic computation, simple I/O, standard conditional and iterative structures, and the definition of functions.
6. Learn to test applications with sample data
7. Learn to apply core program control structures

IST 16000 **Foundation and Role of Information Systems**

Students will:
1. Learn how and why information systems are used today and be able to explain the technology, people, and organizational components of information systems.
2. Understand globalization and the role information systems has played in this evolution.
3. Learn how businesses are using information systems for competitive advantage vs. competitive necessity.
4. Understand the value of information systems investments as well as learn to formulate a business case for a new information system, including estimation of both costs and benefits.
5. Learn of the major components of an information systems infrastructure and how to mitigate risks as well as plan for and recover from disasters.
6. Learn how information systems are enabling new forms of commerce between individuals, organizations, and governments.
7. Learn of emerging technologies that enable new forms of communication, collaboration, and partnering.
8. Learn how various types of information systems provide the information needed to gain business intelligence to support the decision making for the different levels and functions of the organization.
9. Learn how enterprise systems foster stronger relationships with customers and suppliers and how these systems are widely used to enforce organizational structures and processes.
10. Learn how organizations develop and acquire information systems and technologies.

11. Learn how to secure information systems resources, focusing on both human and technological safeguards.
12. Learn how information systems raise ethical concerns in society and how information systems influence crime, terrorism, and war.

IST 26500   Enterprise Systems

Students will:

1. Understand the fundamentals of Enterprise Systems and issues associated with their implementation.
2. Learn to evaluate the costs and benefits of implementing an Enterprise System.
3. Understand how enterprise systems integrate functional areas into one enterprise-wide information system.
4. Learn to explain how "best practices" are incorporated in Enterprise Systems.
5. Learn to recognize how an organizational process often spans different functional areas.
6. Learn to describe the role of Enterprise Systems in carrying out processes in an organization.
7. Learn to integrate key concepts from functional-oriented courses, such as accounting, marketing, and organizational behavior, to promote the development of integrative skills.
8. Learn to explain how integrated information sharing increases organizational efficiencies.
9. Learn to Identify, describe, and evaluate the major Enterprise System software providers and their packaged systems.
10. Understand current trends related to Enterprise Systems.

IST 27000   Data and Information

Students will:
1. Learn to understand the role of databases and database management systems in managing organizational data and information.
2. Learn to understand the historical development of database management systems and logical data models.
3. Understand the role of information requirements specification processes in the broader systems analysis & design context.
4. Learn to use at least one conceptual data modeling technique (such as entity-relationship modeling) to capture the information requirements for an enterprise domain.
5. Learn to link to each other the results of data/information modeling and process modeling.
6. Learn to design high-quality relational databases.
7. Learn to understand the purpose and principles of normalizing a relational database structure and to design a relational database so that it is at least in 3NF.
8. Learn to implement a relational database design using an industrial-strength database management system, including the principles of data type selection and indexing.
9. Learn to use the data definition, data manipulation, and data control language components of SQL in the context of one widely used implementation of the language.
10. Learn to perform simple database administration tasks.
11. Learn the concept of database transaction and apply it appropriately to an application context.
12. Learn to understand the basic mechanisms for accessing relational databases from various types of application development environments.
13. Learn to understand the role of databases and database management systems in the context of enterprise systems.

14. Learn to understand the difference between on-line transaction processing (OLTP) and online analytic processing (OLAP), and the relationship between these concepts and business intelligence, data warehousing and data mining.
15. Learn to create a simple data warehouse ("data mart").
16. Learn to understand how structured, semi-structured, and unstructured data are all essential elements of enterprise information and knowledge management. In this context, the students will learn the principles of enterprise search.

V. Explain how student learning outcomes will be assessed and describe the structure/process for reviewing assessment findings for the purpose of ensuring continuous improvement of the certificate.

Assessment:
1. Each course is required to have Assessment feedback completed by the students at the end of the course.
2. These are reviewed by the Information Systems faculty looking for any items that show a weakness in completion.
3. Any weaknesses found are addressed in the following year of coursework through changes in the syllabus, approach, and/or student assignments.
4. Continuous improvement will be done on an annual basis.

Accreditation Criteria:
1. The Bachelor of Science Degree in Information Systems follows the Accreditation Criteria of ABET/CAC (Accreditation Board of Engineering and Technology / Computer Accreditation Commission).
2. As courses change to meet the criteria of ABET/CAC, the Certificate will remain up-to-date with continuous improvement.

Department Review:
1. Annual departmental review and assessment of all programs and courses is done at the end of the academic year.
2. The departmental report is submitted to the Office of the Dean for inclusion in the College Report to the Assessment Council.

VI. Describe student population to be served.

1. The first population is the Information Systems Major. Every student seeking the Bachelor of Science degree will be able to complete, and receive, the Certificate. This will give them the base credential to allow them entry into opportunities for actual "work place" and "field of study" experience through:
    a) Co-Op programs including Intern and Work Study positions
    b) Entry level positions with companies (either part-time or full-time).

2. Related discipline students such as Business, Public Affairs (Management), Management, Hospitality Management, and Supervisory Leadership will find the Certificate will add much to their understanding of the role of computing in the support and operations of the types of industries in which they will be involved.

3. Companion degree students such as Technology degrees, Computer Science (CS), or Information Technology (IT), will find the Certificate ideal to add understanding of the use of computers to support the operations of a typical company.

VII. How does this certificate complement the campus or departmental mission?

In the department the Bachelor of Science in Information Systems major will have the added credential to "boost" them to a level of actual experience by utilizing the Certificate to enhance early work place involvement.

For students in other disciplines the Certificate will "open" opportunities for them in the companies they are employed by through the understanding of computer interactions to support operations.

VIII. Describe any relationship to existing programs on the campus or within the university.

The key relationship is that the individual completing the Certificate has the proper base coursework to continue towards the Bachelor of Science degree in Information Systems.

Should the student decide on another degree option to pursue, adding two junior level Information Systems courses will allow the student to complete a Minor in Information Systems.

IX. List and indicate the resources required to implement the proposed program. Indicate sources.

No additional resources are needed

X. Describe any innovative features of the program.

The bundling of the first 5 key core courses in the Information Systems degree provides the student with a base of knowledge and skills that makes them very employable at the entry level positions for many businesses, companies, and organizations.

The highlighted separation of the five key core courses into a Certificate is a new way of stating to employers that the individual has attained the basic skills needed in the entry level support positions.

The student gains the ability for employment on a full-time basis - or – is being defined as an individual student ideally suited for Co-Op positions or Intern/Work Study positions.

More companies now prefer students to have a background in the technical areas involving the implementation and use of the computing platforms used to support the operations of the company. The Certificate provides the basic foundation to meet this added requirement.