Course Title: ITAP 3383: Enterprise Resource Planning Systems

Semester Credit Hours: 3 (3,0)

I. Course Overview

The course is intended to introduce students to the underlying need for information and business process integration in large organizations. It takes an overview look at the functional areas of a business and the business processes that support the functional areas. The emphasis is on the use of advanced information technology for integrating business functions through distributed databases for support of internal business functions. It includes a discussion of the idea behind selection and implementation of enterprise resource planning (ERP) systems. A part of the course is set aside for demonstrations and "hands on" exercises with one of the available ERP software. Students use this software to perform some of the processes and tasks to create, track, and communicate enterprise information.

II. PMU Competencies and Learning Outcomes

This course introduces students to the design and development of enterprise resource planning systems. Students develop both the conceptual basis and the practical skills in the design and implementation of enterprise-wide information systems to support the core and mission-critical business processes of an organization. They gain an understanding of and appreciation for the need for integrating business processes and information in large organizations for the purpose of not only planning and control but also to gain strategic competitive advantage. Additionally, this course makes an extensive use of the PMU technology infrastructure to provide communication between faculty and students. While the course does not include a structured laboratory component, out-of-class assignments are assigned to ensure students gain an introductory experience in working with an ERP system. The course includes group projects and provide opportunities for the presentation and defense of their designed solution.

III. Detailed Course Description

The course is designed to provide an overview of enterprise resource planning systems. In particular, the course focuses on the ERP life cycle. The course introduces students to problems that traditionally fragmented information systems create and therefore, to the underlying need for integration of business processes and information in large organizations. Further, the course focuses on implementation difficulties inherent in installing such systems and permit students to become knowledgeable about the issues and challenges in introducing such systems in large organizations. A part of the course is set aside for demonstrations and "hands on" exercises with one of the available ERP software. Students use this software to perform some of the processes and tasks to create, track, and communicate enterprise information.

The course covers three areas, which are somewhat interleaved during the term.

- The first area acquaints students with the conceptual problems of integration in organizations, the organizational characteristics that tend to make these problems more or less severe, and possible courses of action for firms faced with severe enough problems that they wish to take action. Attention is focused on ERP systems as a particularly interesting possible solution.
- The Second part of the course gives students an overview of one particular ERP system (SAP is strongly recommended). This portion of the course covers overall architecture, the user interface, and the major points of integration between its modules. Students learn how to enter transactions on the system, and to track the interactions and information flows between different business functions.
- The third part of the course focuses on how to implement an integrated enterprise-wide system into a large organization.

A running case study is used to illustrate above concepts. The mastery of these concepts and skills is demonstrated via an end-of-term team project. This course may be taught using one of the many ERP software available such as SAP, PeopleSoft, Oracle, or J.D. Edwards. SAP is highly recommended for several reasons. For one, it is the leading ERP software in use today. Secondly, SAP offers a program through which academic institutions can acquire SAP software and sample database at little or no cost. Universities that do not wish to install their own instance of SAP can use a hosted instance at one of the many universities worldwide. Finally, textbooks are easily available for SAP then other ERP software.

IV. Requirements Fulfilled

This course is required for all students majoring in Information Technology in the College of Information Technology. It is also recommended as an elective for students majoring in computer science and management information systems. It should be taken no earlier than the first semester of the junior year.

V. Required Prerequisites

GEIT 1411: Computer Science I
GEIT 1412: Computer Science II
GEIT 3341: Database Design.

VI. Learning Outcomes

In this course, students learn:

- To become familiar with the need for integrating business processes.
- To understand concepts of enterprise-wide resource planning systems.
- To become familiar with one of the many available ERP software to implement an ERP solution.
- To acquire introductory skills in the design and development of various enterprise information system modules using the selected ERP software.
- To acquire an appreciation for issues relevant to the design and implementation of enterprise-wide resource planning systems.
- To acquire the communication, leadership and teamwork skills necessary to work in teams, or in charge of teams, that are responsible for implementing mission-critical ERP solutions.

VII. Assessment Strategy

The student's performance in this course may be assessed on the basis of:

- Three examinations, including two term and one final examination.
- At least five out-of-class assignments. The assignments are to be accomplished in teams of 3-4 students each.
- One comprehensive final team project to be completed outside of class.

Relative weights assigned to these items in determining student's final grade are suggested as follows:

- The three examinations each account for 20% of the grade. Combined, the three examinations account for 60% of the grade.
- Laboratory exercises account for 25% of the grade.
- Final team project accounts for 15% of the grade.

Examinations assess mastery of ERP design principles and implementation concepts, methodology, and tools discussed in class and assigned laboratory exercises. Assigned laboratory exercises are designed to provide students, working in teams, with "hands-on" experience in implementing various parts of an ERP system. The final team project is designed to permit students to apply concepts, methods, and tools learned in class to implement an ERP solution for a fictitious company. The grade on the final project depends on the quality of completed project, written technical documentation, and an oral presentation of the implemented solution.

VIII. Course Format

This course utilizes a mix of in-class lectures, discussions, and software demonstrations designed to help students learn the various tasks involved in designing and implementing an ERP solution. While class meetings are utilized to emphasize conceptual foundation in topics related to these tasks, software demonstrations are used to provide students with hands-on training in performing these tasks. For best results, a part of this course should be taught in a lab-environment where students can follow the instructor during software demonstrations and discussion of key development strategies. Initial class meetings introduce students to the theoretical concepts. Most of the later meetings are used for laboratory software demonstrations geared at helping students master skills for designing and developing various parts of an ERP system. A running case study is used for this purpose so that students see an end-to-end development cycle. Students are expected to attend three hours of lecture per week. There are no scheduled lab hours for this course.

In addition, the instructor should consider creating a Web site for this course using Web technologies such as WebCT or BLACKBOARD. At minimum, the site should include:

- Course syllabus
- Lecture material (for example PowerPoint slides, lecture notes, etc.). These should be placed on the site ahead of class meeting so that students may use the material to prepare for the lecture
- Software demonstration exercises completed in class
- Out-of-Class assignments and end-of-term project
- Keys to exams (after students have completed them)
- Solution to Laboratory Exercises (after graded assignments have been returned)
- Mechanism for students to digitally submit their assignments
- Course calendar
- Mechanism to communicate electronically (for example e-mail)
- Discussion groups
- Students course performance measures

Classroom Hours (3 hours per week) **Class: 3**
Lab: 0

IX. Topics to be Covered

A. ERP concepts
   1. Evolution of information systems
   2. Emergence of ERP software
B. Business functions, process and data requirements
   1. Functional areas and business processes
   2. Functional area information systems
C. Planning, design, and smplementation of ERP systems
   1. ERP data inputs
   2. ERP output capabilities
   3. Selecting an ERP solution
   4. Designing an ERP solution
   5. Implementing an ERP solution
   6. Manage the “go live” phase
D. ERP system in a large organization
   1. ERP modules for sales and marketing
   2. ERP modules for accounting and finance
   3. ERP modules for production and materials management
   4. Complete ERP solution
E. ERP and e-commerce: using ERP through the Web

X. Laboratory Exercises

Students are assigned one out-of-class application development exercise every three weeks. These hands-on exercises are expected to be done in a team setting (generally 3-4 students/team) and are designed to illustrate various development concepts covered during lecture meetings. Thus, students are expected to complete about five such exercises. Collectively, these exercises enable students to learn the several steps involved in the design and implementation of a relatively simple ERP application. The following major areas should be covered in these exercises:

- Identify and design various modules for an ERP solution
- Design, and develop sales order processing and distribution module
- Design and develop production planning process module
- Design and develop an accounting module to generate financial statements and product profitability analyses reports
- Design and develop an human resource module to manage employee benefits

XI. Technology Component

A. In class, the instructor makes use of state-of-the art multimedia projection equipment and software. These are used to project slides and Web-based content relevant to the concepts of enterprise resource planning systems.

B. In class, in a laboratory setting, the instructor makes use of a commercial ERP software to demonstrate various tasks involved in successful design and implementation of an enterprise-wide resource planning system.

C. Outside class, the instructor uses Web-based course management software (for example WebCT, BLACKBOARD) to interact with students as described under course format section.

XII. Special Projects/Activities

An end-of-term team project is required in this course. This project is designed to permit students to apply concepts, methods, and tools learned in class to develop an ERP solution for a fictitious company. The project is require students, working in teams, to design and implement a complete ERP solution using ERP software such as SAP. Student teams are expected to:

- Design, test, and deploy the application,
- Prepare a complete technical manual, and
- Make an oral presentation of their solution.

The final project is thus designed to assess competency in performing various tasks related to the conceptual design and implementation of an ERP system.

XIII. Textbooks and Teaching Aids

A. Required Textbook

Joseph Brady, Ellen Monk, and Bret Wagner; *Concepts in Enterprise Resource Planning*, Course Technology; 2003
ISBN: 0619015934.

B. Alternative Textbooks

Daniel E. O'Leary; Enterprise Resource Planning Systems: Systems, Life Cycle, Electronic Commerce, and Risk; Cambridge University Press; First Ed. 2000
ISBN: 0521791529.

C. Supplemental Print Materials

As available from publisher.

D. Supplemental Online Materials

As available from publisher.