DEPARTMENT OF INDUSTRIAL AND SYSTEMS ENGINEERING
ISEN 220: INTRODUCTION TO PRODUCTION SYSTEMS

REQUIRED or ELECTIVE: Required Course

CATALOG DESCRIPTION

Introduction to manufacturing and production systems; provides an overview of various aspects of manufacturing systems; includes design, analysis, operation and control; a perspective for manufacturing systems related problems and the complex interactions that they entail; includes the use of Excel and VBA.

PREREQUISITES

CSCE 206

COREQUISITES

STAT 211 and ENTC 181

PROFESSIONAL COMPONENT

This course provides fundamental skills in the use of VBA for Excel with an introduction to production systems and an initial experience of formulating analytical solutions to production problems. It is expected that after this course, students will be able to use VBA for Excel in other Industrial and Systems Engineering courses and understand the basic concepts of production systems. The method for evaluation will be homework and tests.

COURSE LEARNING OUTCOMES

At the end of the course, students should be able to
- be able to use Excel and VBA within a production system context,
- understand the basic terminology associated with production systems, and
- be able to form some simple quantitative decision models relevant for production systems.

TEXTBOOK AND ADDITIONAL COURSE MATERIAL

References: *The Goal* by E. Goldratt and J. Cox, 2004
VBA for Modelers by S. Christian Albright, 2010
Operations Management by Jay Heizer and Barry Render, 2006

TOPICAL OUTLINE

1. Introduction to VBA
2. Recording macros
3. Working with ranges and other Excel objects
4. Programming constructs
5. User Forms
6. Pivot tables

      7.Applications for production systems
          a. Blending, product mix, employee-scheduling

CLASS SCHEDULE

One hundred and fifty minutes of lectures per week; either three days a week at 50 minutes per day or two days a week at 75 minutes per day. No laboratory component.

CONTRIBUTION TO MEETING REQUIREMENTS OF CRITERION 5:

Subject	Semester hrs	Subject	Semester hrs	Subject	Semester hrs
Mathematics		Engineering Science	1	General	1
Basic Science		Engineering Design	1		

ABET OUTCOMES

A. An ability to apply knowledge of mathematics, science, and engineering.

The formulation of analytical solutions within a production system context involves the application of mathematics, science, and engineering. Thus, the use of mathematics will be reinforced.

E. An ability to identify, formulate, and solve engineering problems.

After VBA for Excel has been introduced, students will formulate problems related to production processes. This will be the first exposure to formulating industrial engineering problems for most of the students.

K. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

VBA for Excel is considered a modern engineering tool for industrial engineering; thus, its use has become a necessary skill for industrial engineering graduates who wish to work in industry.

PREPARED BY: Richard M. Feldman   **DATE**: January 15, 2010