Master Syllabus

OPT 2207 - Operations Systems Analysis

Division: Science, Mathematics and Engineering

Department: Operations Technology

Credit Hour Total: 3.0   **Lecture Hrs:** 3.0

Prerequisite(s): OPT 1101

Date Revised: October 2012

Course Description:

Computer simulation to solve manufacturing and nonmanufacturing problems. Involves actual programming of computer models consisting of labor, material, processing times and resources to predict future outcome of different alternatives.

General Education Outcomes:

☐ Critical Thinking/Problem Solving Competency

Course Outcomes:

Compare Environments and Techniques
Demonstrate the ability to compare the dynamic environment of computer simulation versus the static traditional engineering techniques.

Assessment Method: Locally developed exams
Performance Criteria: 70% of students correctly answer at least 70% of applicable exam questions.

Assessment Method: Performance appraisals
Performance Criteria: 70% of students score "4" or better on rubric

Principles of Effective Operations
Describe the principles of effective processing flow of material and labor through computer simulation.

Assessment Method: Locally developed exams
Performance Criteria: 70% of students correctly answer at least 70% of applicable exam questions.

Real World Problems
Demonstrate how to match computer model with real world problems to determine the best solution.

Assessment Method: Locally developed exams
Performance Criteria: 70% of students correctly answer at least 70% of applicable exam questions.

Assessment Method: Performance appraisals
Performance Criteria: 70% of students score "4" or better on rubric.

Purpose and Need for Computer Simulation
Describe the purpose of and need for computer simulation, and demonstrate how it is used to analyze various operations.

Assessment Method: Locally developed exams
Performance Criteria: 70% of students correctly answer at least 70% of applicable exam questions.

Assessment Method: Simulations
Performance Criteria: 70% of students score "70" or better on simulation rubric

Outline:

Simulation concepts
Introduction to ProModel
Simple simulation programming within the ProModel software
Locations
Arrivals
Processing
Entities
Running the simulation
Saving the simulation
Process evaluation using a simulation
Path networks
Using resources
Move logic
Advanced processing
ProModel parameters
Use of graphics
Programming variation into the simulation to increase realism
Applications of statistics and the normal distribution
Discussion of other type of probability distributions
Developing a simulation of a physical operating running in the lab (WRU assembly line is currently used)
Simulation validation and verification
Using additional ProModel features to increase realism
Attributes

Variables
Downtime
User distributions
Final Case study simulation