

## 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

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### 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