STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK

MASTER SYLLABUS

CITA 400 - QUANTITATIVE APPROACHES TO MANAGEMENT

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CANINO SCHOOL OF ENGINEERING TECHNOLOGY
DECISION SYSTEMS
FALL 2018

A. **TITLE**: QUANTITATIVE APPROACHES TO MANAGEMENT

B. % **COURSE NUMBER:** CITA 400

C. % **CREDIT HOURS: (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity)**

> **# Credit Hours:** 3
> **# Lecture Hours:** 2 **per week**
> **# Lab Hours:** **per week**
> **Other:** **per week**
>
> **Course Length:** 15 **Weeks**

D. **WRITING INTENSIVE COURSE**: No

E. **GER CATEGORY:** None

F. **SEMESTER(S) OFFERED:** Spring

G. **COURSE DESCRIPTION:** This is the study of the decision-making process and how quantitative methods are used to find solutions to business problems. Computer software tools are used to analyze and process data. Opportunities, problems and decisions that confront managers are analyzed and solutions are developed. Topics covered include, but are not limited to: Cost-volume-profit analysis, forecasting, decision theory, linear programming, probability concepts and applications, inventory control, queuing theory, and game theory.

H. % **PRE-REQUISITES/CO-REQUISITES:**

> a. Pre-requisite(s): MATH 141 Statistics
> b. Co-requisite(s): none
> c. Pre- or co-requisite(s): none

I. % **STUDENT LEARNING OUTCOMES:**

By the end of this course, the student will be able to:

Course Student Learning Outcome [SLO]	*PSLO*	*ISLO*
a. Exhibit a review analysis of a business model case study and assess the potential effectiveness of the solution methodology	4. Apply problem solving and troubleshooting skills 5. Explain the role of management as it applies to business practices in IT	2[CA, PS] 3[QTR]
b. Recognize a business plan and show a list of potential problems and solution models	4. Apply problem solving and troubleshooting skills 5. Explain the role of management as it applies to business practices in IT	2[CA, PS] 3[QTR]
c. Apply game theory strategies	4. Apply problem solving and troubleshooting skills	2[PS] 3[QTR]
d. Assemble forecasting models based on hypothetical market trends	4. Apply problem solving and troubleshooting skills	2[PS] 3[QTR]

e. Use decision theory models to predict future market trends and inventory requirements	4. Apply problem solving and troubleshooting skills	2[PS] 3[QTR]
f. Deduce the optimum solution or simulation tool based on presented data	4. Apply problem solving and troubleshooting skills	2[PS] 3[QTR]

J.   APPLIED LEARNING COMPONENT: **Yes__X___   No_____**
- Classroom/Lab

K. %   TEXTS: Render, B., Stair, R., & Henna, M. (2015). *Quantitative Analysis for Management with CD, 12th Edition*. New Jersey: Pearson Education.

L. %   REFERENCES: N/A

M. %   EQUIPMENT: Computer lab classroom

N. %   GRADING METHOD: A-F

O. %   SUGGESTED MEASUREMENT CRITERIA/METHODS:
- Exams
- Quizzes
- Participation

P.   DETAILED COURSE OUTLINE:

I. Introduction to Quantitative Analysis
    A. The Quantitative Analysis Approach
    B. Develop a Quantitative Analysis Model
    C. The Role of Computers in the Quantitative Analysis Approach
    D. Possible Problems in the Quantitative Analysis Approach

II. Probability Concepts and Applications
    A. Fundamental Concepts
    B. Mutually Exclusive and Collectively Exhaustive Events
    C. Statistically Independent Events
    D. Revising Probabilities with Bayes Theorem

        A. Minimal-Spanning Tree Technique
        B. Shortest-Route Technique

XI. Project Management
        A. Introduction
        B. PERT
        C. Critical Path Method

Q.   **<u>LABORATORY OUTLINE</u>:**

   I. Probability Concepts and Applications Lab
   II. Decision Models and Decision Trees Lab
  III. Regression Models Lab
  IV. Forecasting Lab
   V. Inventory Control Models Lab
  VI. Linear Programming Models Lab
 VII. Transportation and Assignment Models Lab
VIII. Network Models Lab
  IX. Project Management Lab