State University of New York Maritime College

Department of Global Business and Transportation

SYLLABUS - TMGT 7060 Systems Analysis and Operations Research
Spring 2012 Sections 01 and 03

A. COURSE DESCRIPTION

This course explores quantitative and systems methods in business and transportation. Topics include problem solving, optimization – both linear and non-linear, network models, deterministic and probabilistic models, the systems life spiral, principles and practices for developing, managing and enhancing systems. Computers are an integral part of the course. Mathematics topics will be reviewed as necessary.

Prerequisites: None

Co-requisites: TMGT 6001 (Graduate Orientation)

Follow-On Courses:

TMGT 8120 (Topics In Managerial Economics);
TMGT 8510 (System Design And Control)

Role in Curriculum: foundation course

B. TEXTS AND MATERIALS

Required texts:

Felke-Morris, Terry, *Harper College, IL*
Basics of Web Design: HTML5 and CSS3
Publisher: Addison Wesley Copyright: 2011 Format: Paperback; 368 pp. 1st edition (March 7, 2011)

- **ISBN-10: 0137003382**
- **ISBN-13: 978-0137003389**

Hamdy A. Taha, *University of Arkansas*
Operations Research: An Introduction, 9/E
Publisher: Prentice Hall Copyright: 2011 Format: Cloth; 832 pp Published: 09/08/2010

- **ISBN-10:** 013255593X
- **ISBN-13:** 978-0132555937

Supplemental Materials:
Access to Angel
Notepad or WordPad
MS-Office (including Excel and Access).

C. STUDENT LEARNING OBJECTIVES

1. Course Objectives

A student who has successfully completed course TMGT7060 will be able to:

A. Prepare well-written business systems designs, analyses and other artifacts so as to clarify the purposes, design, construction and operation of an information system.
B. Employ electronic software to enhance oral and written communication about an information system.
C. Be able to outline, in general and for a specific system, the five phases of the system process
D. Be able to outline, in general and for a specific system, the seven dimensions of the system process

E. Be able to use principles of constituent relations, quality management, project leadership/management to define, organize and maintain an information system
F. Discuss the basics of hardware, software, service and data components of a system.
G. Formulate an optimization problem in both deterministic and probabilistic terms.
H. Use the basic graphic method to solve simple (linear and non-linear) optimization problems
I. Use probabilistic models to compute likelihood of events and expected values.
J. Use deterministic and stochastic models to estimate schedules, create network diagrams and evaluate project budgets.
K. Demonstrate a commitment to constituents' (stakeholders') needs as the ultimate driver of the systems process.

2. General Education Objectives

This course seeks to satisfy:

a. The requirement that students be capable of using systems and quantitative reasoning to analyze situations and to develop applications and solutions.

D. COURSE ASSESSMENTS

1. Assessments in the Class

a. Homework: Often will need to be turned in. **Students need to keep a copy of submitted HW.**
b. Class participation and labwork: Assigned class demonstration exercises and reports are to be presented in class on date due.
c. Exams: There will be two exams (one of them a written report) during the semester plus the final exam.

2. External Assessments

a. Performance in follow-on course(s) [see above for listing]
b. Interest and confidence in activities entailing systems and mathematics
c. Ability to encourage others in systems and mathematics

E. ACCOMMODATIONS FOR STUDENTS WITH LEARNING DISABILITIES

If you believe that you need accommodations for a disability (also referred to as IEPs and 504 plans), please notify me within the first week of class and contact the Office of Accessibility Services at (718) 409-7348 or email Dean Tardis Johnson at tjohnson@sunymaritime.edu for an appointment to discuss your needs and the process for requesting accommodations. Since accommodations may require early planning and generally are not provided retroactively, please contact Accessibility Services as soon as possible!

F. ACADEMIC INTEGRITY POLICY

Absolute integrity is expected of every Maritime student in all academic undertakings. A Maritime student's submission of work for academic credit indicates that the work is the student's own. All outside assistance should be acknowledged, and the student's academic position truthfully reported at all times. In addition, Maritime students have a right to expect academic integrity from each of their peers.

Students are expected to do their own work in class, on assignments, laboratory experiments, and examinations or tests in accordance with the directions given by the instructor. It is the

responsibility of all students to read and understand this statement of College policy on academic integrity. Maritime College considers the violation of academic integrity a serious matter, and one that will be treated as such.

A student who violates academic integrity may, depending on the nature of the offense, be subject to one or more of the following measures: failure of the assignment or examination, failure of the course, dismissal from the Regiment of Cadets, or dismissal from the College. Violations of academic integrity, also known as academic dishonesty, are subject to review by the Judicial Board. For details, go to:

http://www.thezonelive.com/zone/02_SchoolStructure/NY_SUNYMaritimeCollege/handbook.pdf

ALL ACADEMIC INTEGRITY VIOLATIONS WILL BE REPORTED TO THE DEAN OF STUDENTS

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A. – B. INSTRUCTOR INFORMATION and CLASS MEETINGS

Carlos Jerome, Ph.D.	
email: cjerome@aroundtheblock.org	**Class Hours:** Thu: Section 03: 2:30 to 5:00 PM Section 01: 5:10 to 7:40 PM
Office Hours: Thu: 12:50-2:20 pm, Sc&E / 124 and by appointment	**Room:** Marvin Tode Hall (Sc&E) /124

C. CLASS POLICIES

i. ***No phone calls or texting in class.***

ii. ***Attendance Policy and Absences***

a) Punctual attendance is required.

b) A student missing an exam [or class presentation] will receive a zero grade on the exam [or class presentation].

iii. ***Ethical Standards:*** Concern for all in class and encouragement of their learning.

iv. ***Language Standards:*** Clear use of English.

v. ***Homework:*** Punctual submission of HW is required. Students need to keep a copy of submitted HW and to keep returned HW.

D. GRADING

i. ***Exams and quizzes:*** There will be two exams (one of them a written report) during the semester. Surprise extra-credit quizzes **may** occasionally be given.

ii. ***Weighting of quizzes, exams, papers:***

First exam: 13 %
Second exam (written report): 13%
Quizzes: Fractional amounts of extra credit.

iii. ***Make-up Policy:*** A student missing an exam [or class presentation] will receive a zero grade on the exam [or class presentatiuon].

iv. ***Final Exam*** **will focus – but not be entirely restricted to – the material covered after the first exam. Weight:** 24 %

v. ***Final Grade Assignments***

First exam: 13 %
Second exam (written report): 13%
Final exam: 24 %
Homework: 25 %
Class participation and labwork: 25 %

E. COURSE OUTLINE*

1. Phases of problem solving / system life cycle
   Deterministic / Probabilistic Approaches
   Optimization problems
   Linear models and Inequalities
   Common curves and their slopes
   Optimization with One Decision Variable
   Inventory Models
2. Structure of Information Systems
   Dimensions of Systems Process
3. Production Phase of Systems Process
   Optimization with Two Decision Variable
   Graphical Solution

Exam 1

4. General linear optimization with simplex method
   Transportation Problem
   Sensitivity Analysis
5. Project Management/Leadership
6. Inception Phase

6. Elaboration

Probability Theory

6. Construction Phase

Queuing Models, Markov Chains and Processes, Game Theory

7. Transition Phase

Forecasting

Final Exam

* Any change will be announced accordingly. Mathematics and programming reviews will be covered as needed.