

MGT 360 OPERATIONS MANAGEMENT- SPRING 2011

The College of New Jersey

School of Business

Spring 2011

T-F (12:00-1:50) & (2:00-3:50)

Office Hours: T-F 4:30-5:30 PM and Wed. 4:30 – 5-30

Dr. Lew Hofmann

Office: Business Building 305

Phone: 771-3057

hofmann@tcnj.edu

<http://hofmann.tcnj.edu>

Basic information

A. Purpose statement

The overall theme of this course is decision-making for process productivity and for product/service quality. Businesses must provide value to their customers in order to survive. In a healthy competitive environment, organizations of all kinds strive to improve the quality of their products, the effectiveness of their services, and the productivity of their processes. In their quest for competitive advantage, businesses often have to cut costs, increase throughput, optimize inventory levels, reduce cycle times, and meet deadlines. Thus the operations function of any organization occupies a central role among other equally important functions (e.g., marketing, finance, human resources).

Advances in product design, service and production processes, advantageous location of facilities, gains in productivity, and farsighted decisions regarding technology and capacity are a just a few examples of operational decisions that determine the success of a business. Often, competitive advantages in the operations area enable or facilitate the success of a marketing initiative and lead to financial success and increased well-being for the employees. Strategic decisions in other functional areas may fail because their impact on operations was not taken into account or not properly supported. Students of business, regardless of their majors, must understand and appreciate the inter-related nature of the operations function.

B. Course Description

This course provides knowledge and insights on how firms design and deliver products and services to their customers, how manufacturing and service firms associate themselves with suppliers and distributors in efficient supply-chains, and how managers use optimization techniques to improve quality and increase productivity. This *operations* perspective is essential to understand how firms compete in the marketplace, add value for their customers, and pursue profitability.

C. Course Prerequisites:

MGT 201 and STA 215 or equivalent

D. Text (None Required)

There is no required text for this course. **There is a required POM/QM CD containing software you will need in this course.** The POM/QM CD can be purchased at the bookstore.

Learning goals

Students are expected to meet the following objectives in specific areas of knowledge:

1. Explain the significance of operations management concepts and optimization tools in the production of goods and services and in the general competitiveness of the firm.
2. Be able to examine the operations of a business, recognize the essential components and how they function and interact, and make recommendations to improve their quality and productivity.
3. Explain concepts of quality and total quality management (TQM) and identify principles and methods of TQM in service and manufacturing environments.
4. Contrast the functions and activities of different types of supply chains, and describe the main processes used in procurement, distribution, and inventory management.
5. Apply operations management principles and quantitative techniques to improve different business processes, namely:
 - a. Facilities location, layout, and capacity
 - b. Inventory management
 - c. Logistics and distribution
 - d. Project management
 - e. Decision making
 - f. Aggregate planning and scheduling

Critical core concepts

- Technology has played a vital role in the improvement of quality, productivity and safety of production of goods and services throughout history and especially in modern societies.
- Quality, innovation, and productivity are the main levers of competitive advantage and profitability for the individual firm, and for the well-being of a region or nation.
- Quality, innovation, and productivity improvement are everyone's business and impact all areas of business.
- There are tried and proven principles and methods that are commonly used to analyze quality and productivity issues and to determine the optimal design or configuration of systems and business processes. Yet, there is a continuing need for research and improvement in the field of study.

Deep understandings

MGT 360 – Operations Management is organized around four key-questions that will guide the individual student's quest for learning and provide a common thread for the various topics presented throughout the course:

- (1) What is the role of technology in the modern organization and how does it impact all facets of the organization?

- (2) What is quality and how does an organization organize itself to achieve and maintain high levels of quality?
- (3) How do firms analyze their operations and business processes to improve quality, productivity and safety?
- (4) What are the advantages and limitations of quantitative analysis in the design and management of operational systems?

Predictable misunderstandings

All organizations exist to produce goods, services, or information, or a combination thereof. *Operations Management* focuses on organizing the activities of the firm in a way that ensures the creation of the right levels of quantity and quality of products and services in the most efficient way and in a timely fashion. Most students, for whom this is the first course in operations management, have at least one, and often all, of the misunderstandings listed below. Although this is understandable, *Operations Management* is designed to dispel and correct these misunderstandings.

Myth 1: Operations management is a concern for engineers.

When a marketing executive is considering changing a product design, this decision has enormous operational implications. The firm will probably have to change the equipment used to make the product, which has both a financial and operational impact. New technology has important effects on quality, reliability, capacity, work methods, employee training, scheduling, etc. When work methods and safety are improved, the quality of work life of the employee is objectively enhanced. Thus, operations management is a concern for the entire organization.

Myth 2: Operations management is about manufacturing firms.

Both goods-producing firms and service-producing services face critical issues regarding the development of new products and services, and the quality and productivity of their operations. A college, a hospital, an insurance firm, a software engineering firm, or an on-line business (e.g. Amazon.com) has more or less complex delivery systems and business processes that demand careful analysis. In addition, most goods-producing firms provide services relating to their products. In these cases, both goods and services must be managed, and quality and productivity concepts apply to both types of activities. Thus, operations management is about the operations in all types of firms, whether service or manufacturing.

Myth 3: Operations management decisions are low-level decisions, especially when compared to marketing and financial decisions.

In reality, many strategic decisions made at the highest levels of an organization concern technology, location, capacity, facilities, and strategic alliances with suppliers or distributors. These are, by nature, operational decisions that have a critical effect on the firm's ability to compete and survive. Business executives and managers at all levels are concerned with operational decisions.

Myth 4: Operations-management decisions are relatively similar in all firms.

Operational issues vary greatly by industry. A transportation firm, such as Amtrak, faces very different issues than those faced by a computer maker such as Dell Computers, or those faced by a oil refinery run by Exxon or Mobil. An entertainment firm such as Disney faces operational decisions that are fundamentally different from those faced by e-Bay, an auction Internet company. Students will gain an understanding of these differences throughout this course.

Myth 5: Firms make the most money by implementing clever marketing and financial decisions.

In fact, clever and bold operational decisions, whether involving major investments or involving millions of small day-to-day activities are responsible for many critical competitive advantages. Students will learn to appreciate the significance of operational decisions on the ‘bottom line’.

Technical knowledge

In addition to the study of the issues and problems faced by firms in different industries, this course provides technical knowledge at the introductory level in areas such as inventory management, quality assurance, decision analysis, and forecasting, planning, and scheduling.

Student assessment

Students will be assessed using eight homework assignments; a quiz and two major exams

Specific techniques to facilitate and evaluate student learning

- a. Attendance and involvement in class is an important criterion for student learning. The student who engages in active learning by asking questions, offering his or her own views, and presenting findings of his or her own work, will have a deeper understanding and will be more likely to retain the concepts of the course.
- b. Assigned homework problems are used to evaluate the students’ ability to analyze complex processes.
- c. A Quiz, a mid-term test and a final exam will evaluate the students’ ability to apply concepts and techniques on their own.
- d. Independent projects may be used to evaluate the students’ ability to apply the concepts learned in class to the actual operations of a local organization.
- e. Videos of real organizations involved in operations, implementing and using operations technology, will provide real-world examples of operations.

Assessment Criteria and Performance Standards

The grade for each assignment will be scaled around the class average. At the end of the course the final grades will be scaled around a weighted average of all the assignments, quiz and exams.

Tests and final exam

Quizzes and exams consist of multiple-choice questions ranging from the application of concepts to analysis of small problems that require analytical skills and some computations that may be facilitated by the use of calculators.

Weights and Grade Assignment

Letter grades for each exam or graded assignment will be based on the class average for that exam or assignment. The average grade will be the lowest B- and thus determine the cutoff between the B- and the C- grade ranges. However, the cutoff will never be above an 80. Since the scale will likely be different for each graded activity, a weighted average will be used for the overall course grade.

A.....	13 points or greater above the average
A-	10-12 points above the average
B+.....	7-9 points above the average
B.....	3-6 points above the average
B-.....	1-2 points above the average
-----	Class Average will be the cutoff for a B-
C+.....	1-3 points below the average
C.....	4-7 points below the average
C-.....	8-10 points below the average
D+	11-13 points below the average
D.....	14-20 points below the average
F	More than 20 points below the average

Both exams and the quiz are graded on a 0-100 scale. The following weights apply in calculating the final score (average points):

Quiz	11%
Midterm Exam	30%
Homework (8 assignments at 3% each)	24%
Final Exam	<u>35%</u>
	100%

Learning activities

Learning activities are organized around six major topics: a) Product and services design, b) facilities and technology, c) quality management, d) project management, e) supply-chain management, and f) operations planning and control. The issues discussed under each topic and the learning activities involved are summarized below:

- 1) Designing, organizing and delivering products and services
 - The role of goods and services in the economy.
 - The challenge of improving productivity and quality.
 - The importance of operations strategy and its links to other business strategies.

- 2) Facilities and technology decisions for products and services
 - Selection and management of technology. The role of information technology in the modern corporation.
 - Decision-making under uncertainty and risk.
 - The central role of capacity to the firm's profitability. The role of linear programming in uncovering bottlenecks and informing capacity decisions.
- 3) Total quality management
 - Principles and basic tools (e.g., the Pareto chart, the fishbone chart).
 - Quality improvement programs (e.g., six-sigma programs).
 - Basics of quality control (e.g., simple control charts, reliability).
- 4) Project management
 - Structuring the activities of a simple project. Determining the critical path.
 - Revising the project schedule due to delays or constraints. Project crashing.
- 5) Supply-chain management
 - Role and location of facilities in the supply chain. Understanding a multi-stage global manufacturing and distribution system.
 - Logistics, warehousing, and transportation. Efficiency and responsiveness.
 - Scheduling of production of goods and services. Understanding the customer order cycle, the replenishment cycle, the production cycle, and the procurement cycle.
- 6) Operations planning, scheduling and control
 - Forecasting and aggregate planning.
 - Managing independent and dependent demand inventory.
 - Material Requirements Planning and Just-in-Time systems.

The material and the homework assignments are available on the PowerPoint slides. The assignments are subject to modification as we proceed through the semester. Homework assignments are due at the beginning of the class one week after they are assigned unless otherwise stated.

Scheduling: "Dean's Office: Except in the case of a TCNJ authorized absence or documented personal emergency, faculty are encouraged NOT to make individual exceptions to course assignment due dates and exams. Our work is no less coordinated or time-sensitive than many tasks encountered in the workplace and meeting deadlines and obligations is simply one more step in preparation for a business career."

TENTATIVE SCHEDULE

	T-F
Introduction to the course	T 1/18
1. "Operations As A Competitive Weapon"	F 1/21
"Decision Making" & Homework #1 assigned	T 1/25
2. "Operations Strategy"	F 1/28
3. "Project Management. HW #1 due / Homework #2 assigned	T 2/1
4. "Process Design Strategy"	F 2/4
5. "Process Analysis" HW #2 due	T 2/8
•• Quiz covering Lectures 1,2,3,4 and Decision Making	F 2/11
"Waiting Lines" & Homework #3 assigned	T 2/15
6. "Process Performance and Quality"	F 2/18
7. "Process Layout HW #3 due / Homework #4 assigned	T 2/22
8. "Constraint Management"	F 1/25
Exam review HW #4 due	T 3/1
•• Midterm Exam (Everything covered to date.)	F 3/4
SPRING BREAK 3/7 – 3/11	
9. "Lean Systems"	T 3/15
10. "Location" Homework #5 assigned	F 3/18
11. "Supply-Chain Design"	T 3/22
12. "Inventory Management" HW #5 due	F 3/25
"Special Inventory Models" Homework #6 assigned	T 3/29
13. "Forecasting"	F 3/1
14. "Sales and Operations Planning Homework #7a assigned; HW # 6 due	T 4/5
15. "Resource Planning" Homework #7b assigned	F 4/8
"Linear Programming" HW #7a and b due / HW #8 assigned	T 4/12
16. "Scheduling" HW #8 due	F 4/15
17. Resource Allocation	T 4/19
Guest speaker	T 4/22
Exam Review	F 4/26
>> Final Exam as per the exam schedule	?

"Final Evaluations are an important component of the high-quality and rigorous educational experience at The College of New Jersey. All courses are to have a final evaluation that takes place during final exam period. The time designated as the "final exam period" contains both reading days and final exam days. It is expected that reading days will be a time during which students will be able to devote substantial time and effort to preparing for final evaluations. During this period, students will have an opportunity to reflect on what they have learned and integrate course material in a long-lasting and meaningful way. During the reading period, there should be no mandatory scheduled activities for a course, including in-class examinations (including make-up exams), presentations, or required meetings with instructors. There is an understanding that faculty should be accessible to students during reading period."

HOME WORK ASSIGNMENTS

There are eight homework assignments. Most are done on the computer. This work is not graded in terms of having the correct answers. The homework will be reviewed in class on the day it is due, prior to your submitting it. This will allow you to review and correct your own performance on the homework. Your homework will then be collected and will be returned to you the following class so that you can use it for exam preparation. If, for some reason, you are not able to attend the class where I return the homework (It has happened.), I will leave it in a box outside of my office.

Submission of all eight assignments on time is worth 24 percentage points toward your final grade (3% for each). Homework submitted after the class in which I present the homework solutions reduces the contribution toward your final grade by half (1.5 percentage points instead of 3). Not submitting an assignment reduces your final grade by three percentage points. You may submit late homework for half credit up until the final exam.

Collaboration on homework assignments is not discouraged and, in many cases, can enhance your understanding of the material. However, you must submit your own written work and/or computer printouts as appropriate. Copying the work of others may get your assignment done, but it will not prepare you for the exam questions pertaining to that work. All assignment work will be covered on exams.

You must show support for the answers on your homework. Even if you have the correct answers, if you do not provide evidence of how you arrived at those answers, you will not get credit. Evidence may be computer printouts or showing your own computations.

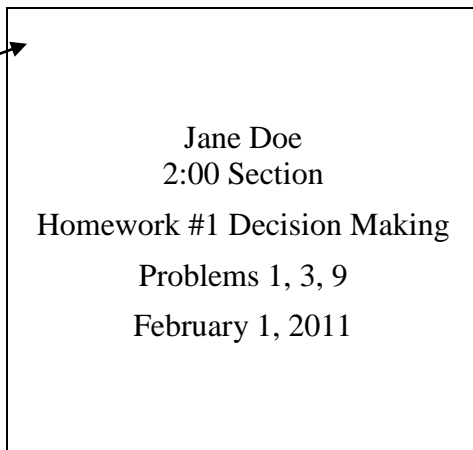
FORMAT FOR SUBMITTED WORK:

All submitted work will have a cover page, and all pages will be stapled or fastened together. ***Ten percent penalty for no cover page!*** The cover page should contain the following items:

Your name, class time, chapter and/or supplement, problem numbers, and the date.

Example:

*A staple
here would
be nice!*



The diagram shows a rectangular box representing a cover page. An arrow points from the text 'A staple here would be nice!' to the top-left corner of the box. Inside the box, the following text is centered:

Jane Doe
2:00 Section
Homework #1 Decision Making
Problems 1, 3, 9
February 1, 2011

COURSE INFORMATION SOURCES

There are two locations for course information. One of them is the course web site that can be accessed at: <http://hofmann.tcnj.edu>. This site contains the course syllabus, notes on assignments when necessary, a posting of your grades by your pseudo-name (if you give me one), special announcements, and other information about the course. The other source is on college networked drive volume “L” under my name. This also contains the PowerPoint slides, handouts that I used in class, and Excel Solver models for some of your homework.

LECTURE POWERPOINT SLIDES -- SOME PHILOSOPHY

Before PowerPoint was available I provided similar information by writing and drawing on the chalkboard. This took much more class time. In an effort to be more efficient and legible I started using PowerPoint. This led to some occasional complaints that I only teach what the PowerPoint slides show, and thus I’m not really teaching. However, when I put that same content on the chalkboard, no one ever had this complaint. I have now eliminated the textbook, so the PowerPoint slides are your only source of course information other than your lecture notes.

The PowerPoint slides I use are ones I created. They are not supplied by the publisher of any textbook. I keep improving them so that I can provide the material I think is important in a visually stimulating way, and I continue to modify, expand and improve them each semester. They are a combination of my lecture notes and information from various textbooks. The PowerPoint slides have increased in number and information content to compensate for not having a textbook.

NOTE-TAKING, POWERPOINT, AND CLASS ATTENDANCE

There are four components to effective learning: *seeing* it, *hearing* it, *writing* it, and *doing* it. Making the PowerPoint printouts available before class would eliminate the “writing it” learning component, and not attending class eliminates the hearing it. When I started making PowerPoint slides available to print out and bring to class, there was a marked drop in class attendance and in grade performance.

During most lectures you will be viewing many PowerPoint's. I make these available to you from the L drive (under my name) as well as on the course web site (<http://hofmann.tcnj.edu/courses>), but not until after both sections have completed the classes in which I use them. You can view and print them in several formats or simply download them and view them as needed.

NO EXTRA CREDIT WORK!

During the semester I never hear anyone asking if they can do more than they need to do. They always wait and ask when it is too late. As the end of each semester approaches, and particularly after the final exam grades are made available, I get a number of students who come to me and ask if there is anything they can do to bring up their grade. NO! I do not make extra credit work available since, to be fair, I would have to make it available to everyone. If you wish to do extra work, start studying earlier and do more of it.

EXAMS

The quiz and two exams will be entirely multiple-choice questions. Some argue that essay exams are a better way to test your knowledge. These are people who can't write good multiple-choice questions and have to rely on the test bank questions, which are very poorly written. Also, it is very difficult, if not impossible, to be totally objective in grading essay exams.

The multiple-choice questions in this course are all written by me and will, when possible, be application oriented rather than questions that expect you to memorize lists or definitions. Also the tests are "democratic"—the majority rules. I do an item analysis after each exam, and those questions where more of you pick a particular wrong answer than the correct answer, I give you credit for it under the assumption that either I misled you in class or you were misled by the wording of the question.

SOFTWARE

The bookstore sells the POM/QM CD as a separate package, which is required for the course. It is proprietary and thus cannot be made accessible on the network to students who have not purchased it. The POM/QM programs are stand-alone (do not require Excel). There are also some Excel models on the L-drive that you will be using for a few of the homework assignments.

If you have your own computer and intend to do all of your work on it, you can easily install the POM/QM programs on your computer. Unfortunately, the POM/QM software does not run on a Mac, (and I am a Mac user) but you still need to purchase it in order to legally use it on the college server.

COLLEGE ATTENDANCE POLICY <http://www.tcnj.edu/~recreg/policies/attendance.html>

"Every student is expected to participate in each of his/her courses through regular attendance at lecture and laboratory sessions. It is further expected that every student will be present, on time, and prepared to participate when scheduled class sessions begin. While attendance itself is not used as a criterion for academic evaluations, grading is frequently based on participation in class discussion or other activities that may take place during class sessions. If these areas for evaluation make class attendance essential, the student may be penalized for failure to perform satisfactorily in the required activities."

TCNJ's academic integrity policy:
<http://www.tcnj.edu/~academic/policy/integrity.html>

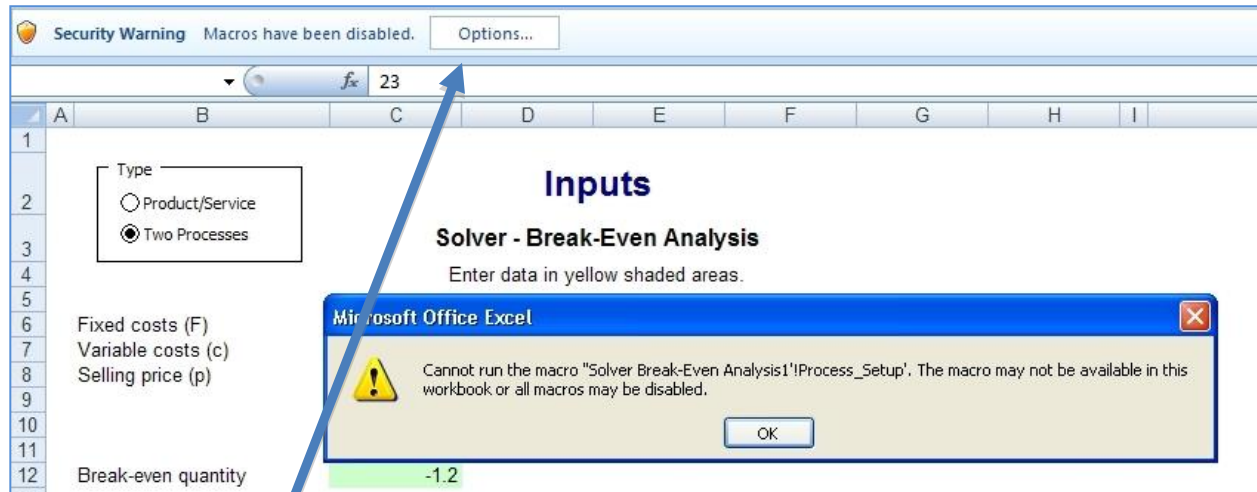
TCNJ's Americans with Disabilities Act policy:
<http://www.tcnj.edu/~affirm/ada.html>

SUPPLEMENT ON SOFTWARE USE

The Excel Solver models are available on the H-drive under my name. They require Excel in order to run. They also require that you enable the Excel Macros. The macro security level is currently set to high for all TCNJ computers. This prevents you from running many of the

solvers. To remedy this on pre-2007 versions of excel, do the following: 1. Run Excel 2. Select the "Tools" menu. 3. Select "Macros" in the tools menu. 4. Select "Security" in the Macros sub menu. 5. Under "Security Level" select "Medium". 6. Exit the Excel program and re-run it. 7. Run the Solver model you wish. If it has macros, it will now ask you if you wish to enable them. Say yes.

On Excel 2007 you will get the following message if the macros are disabled.



Click on the "Options..." button on the top line following "*Security Warning Macros have been disabled.*" This will bring up the "*Security Options*" screen shown below. Check "*Enable this content*" at the bottom.



INSTRUCTIONS ON ACCESSING AND USING POM/QM IN THE LABS



Last year POM/QM only worked from computers in the School of Business. People could not access it from the library or other labs on campus. Also, it will not run on a Mac if that's what you have.

You may be able to access the program from one of four possible ways: “**My Network Places**” or “**SAL**” or via the “**Applications Explorer**” or the networked “**I Drive**” depending on where you are located. I can do all four from my office, but in the lab you may have only the “My Network Places.”

“My Network Places”



”Via SAL from the start menu”



“Applications Explorer”



Accessing the “I Drive”

Apps on 'Tcnj11' (I:)	Network Drive	747 GB	294 GB
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Using I-Drive:

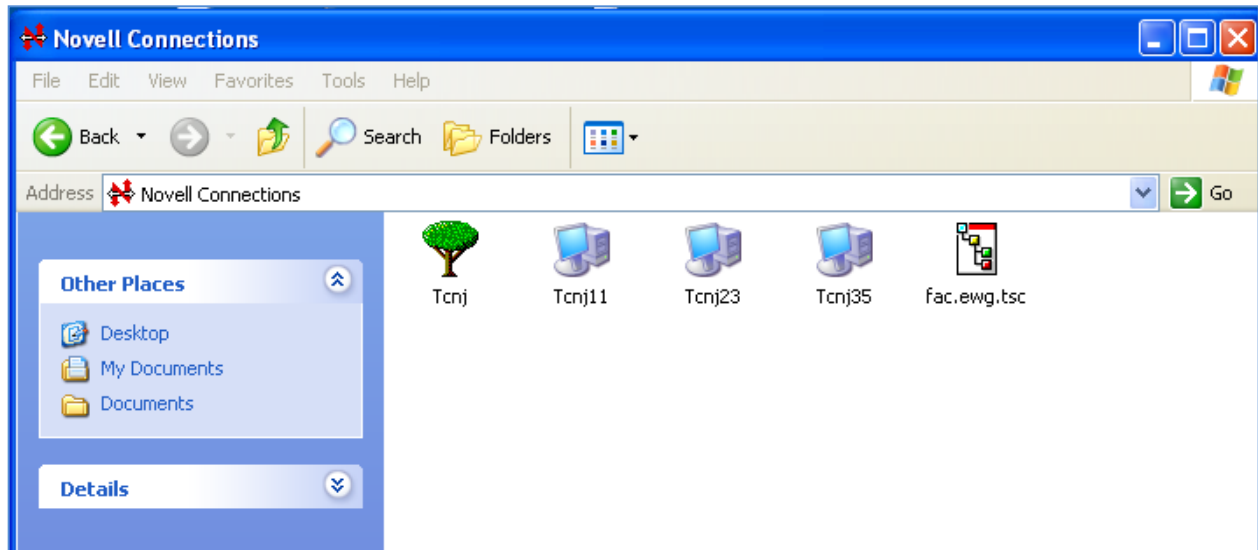
- Click on the “My Computer” icon on the desktop and select “I drive.”
- Scroll down until you see “POM/QM”

Using SAL or Applications Explorer

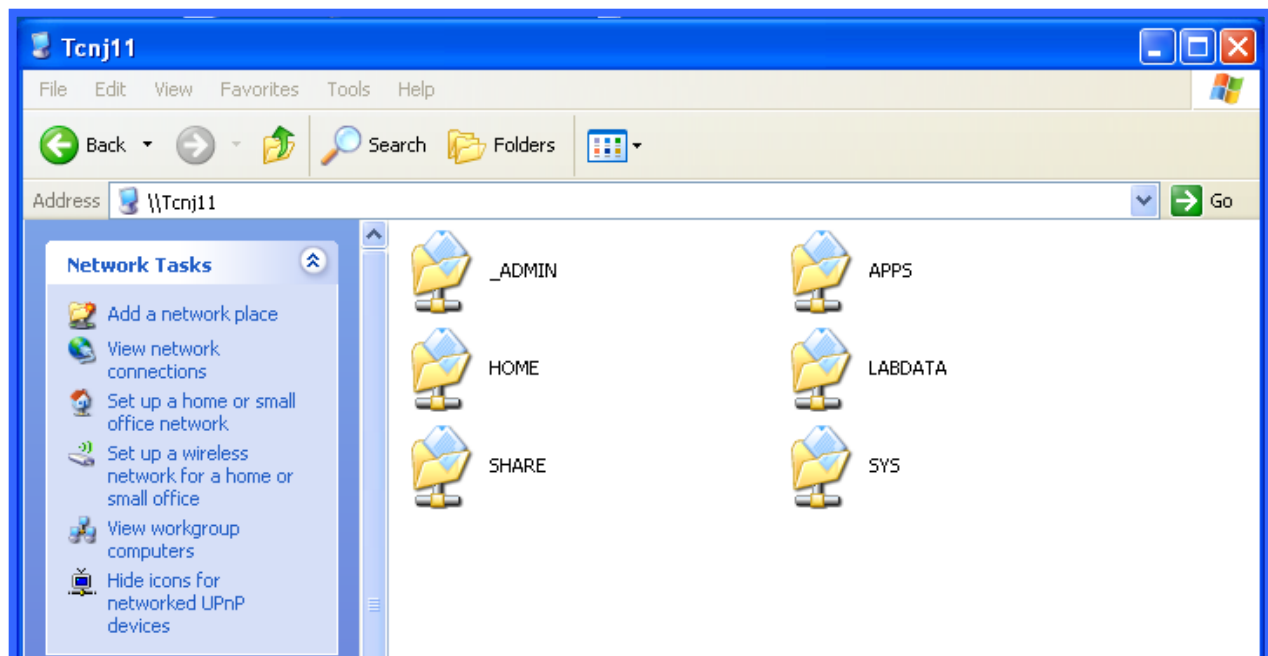
Click on either SAL or Applications Explorer and then Click on “All.” Scroll down for the POM/QM icon. If you don't see it anywhere, it means you have not been authorized to use it yet. Be patient. Your names will be submitted.

Using My Network Places

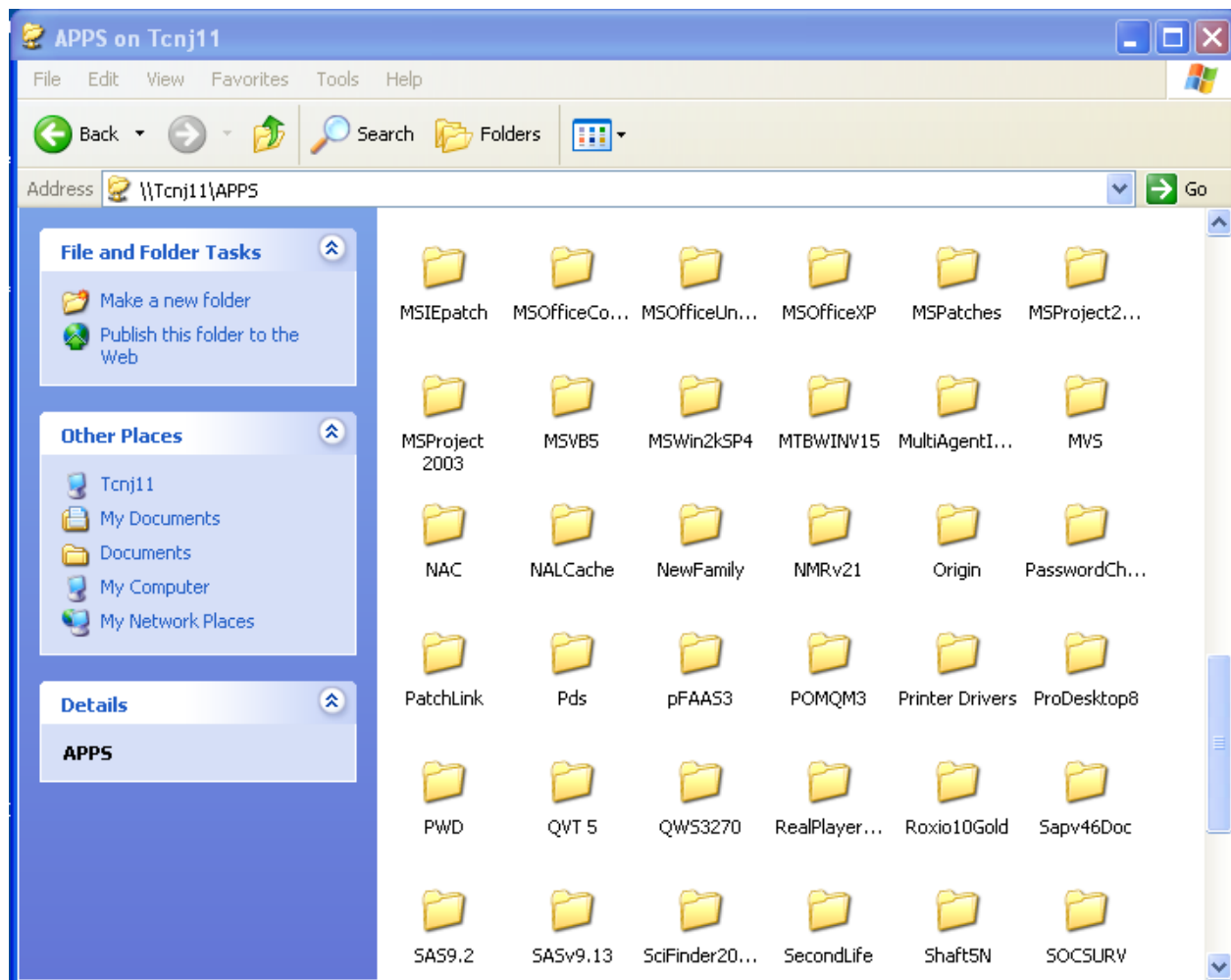
Click on “My Network Places and select “Novell Connections. The click on “Tcnj11.”



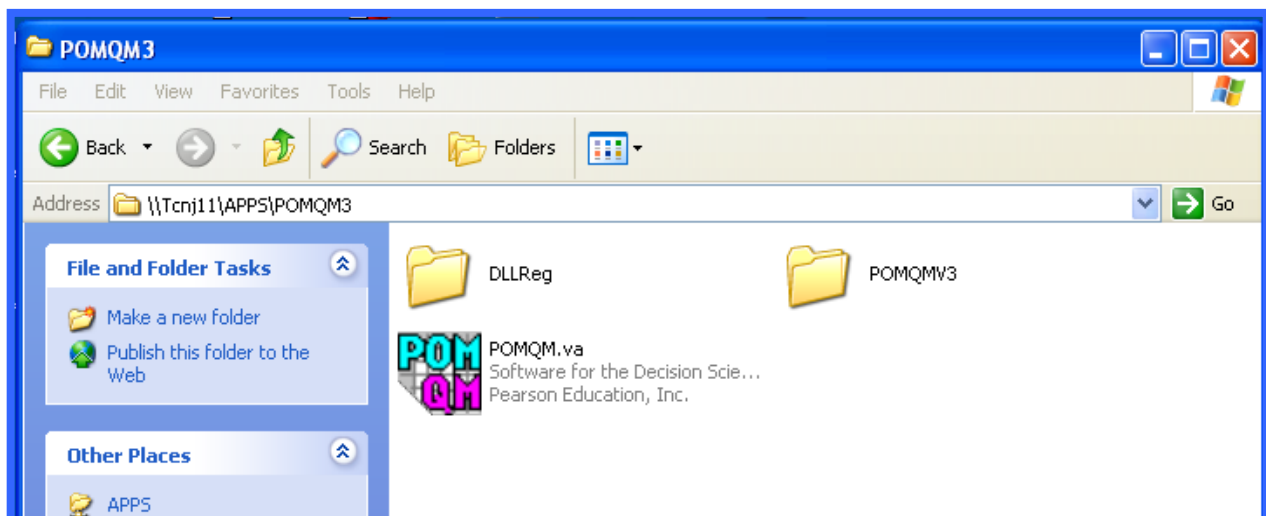
Click on “APPS”



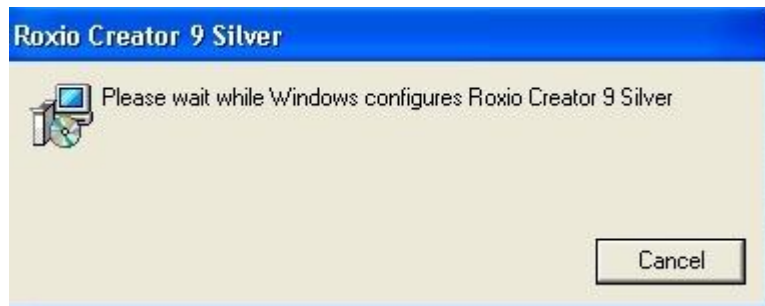
Scroll down to POMQM3 and select it.



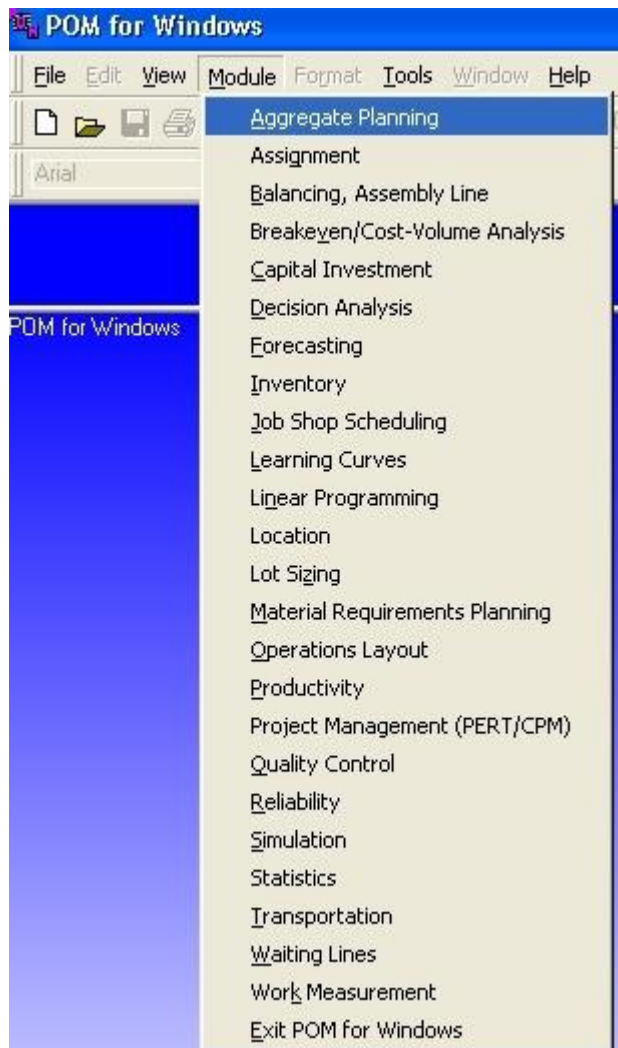
Click on POMQM to access the program.



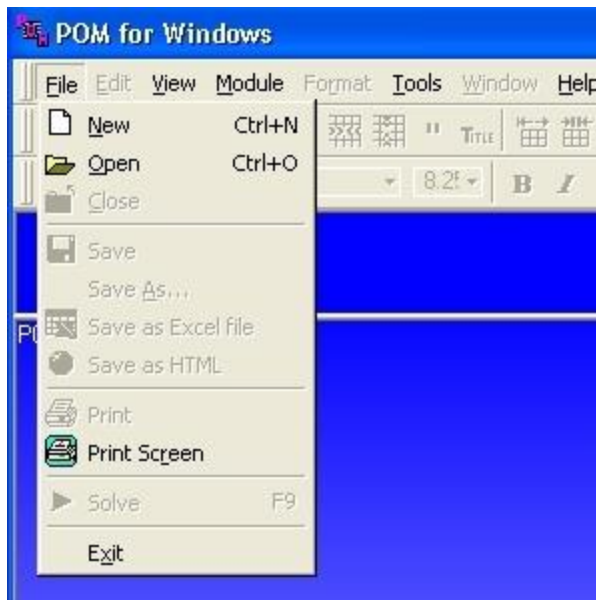
If for some reason you get a screen that looks like the one below, click “Cancel” until it stops. I have no idea what is going on with this, but the POM program will run once you get rid of this. I think the I.T. folks have fixed it.



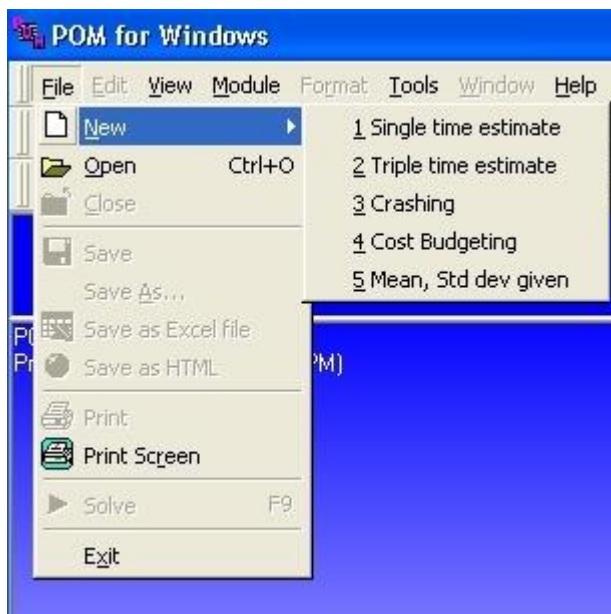
Once in the POM-QM program, cancel the hints window and select your application.



The first homework assignment using POM/QM is Project Management (PERT/CPM) After selecting the module you wish to use, select “New” from the “File” menu.



For Project Management you will then get this window:



Select "Single time estimate" for CPM

Select "Triple time estimate" for PERT

The "Single time estimate" will give you the following setup window:

Create data set for Project Management (PERT/CPM)/Single time estimate

Title:

Number of Tasks:

Table Structure

- ☒ Precedence list
- ☐ Start/end node numbers

Row names

- ☒ Task 1, Task 2, Task 3,...
- ☐ a, b, c, d, e, ...
- ☐ A, B, C, D, E, ...
- ☐ 1, 2, 3, 4, 5, ...
- ☐ January, February, March, April, ...
- ☐ Other

Use “Precedence List.” You can change the title to the problem number and select the appropriate row names. Select the number of tasks and then click “OK.”

Getting Screen Printouts

The POM/QM program has a “print screen” feature, but it is not great. You can use the computer’s built-in screen print (PC or Mac), or you can download one of the free programs that allow you to highlight just the information you wish to print. I used “Jing” for the screen prints in these instructions. It is free for both PC and for Mac, but you won’t be able to use it in the labs.

The Excel Solver models do not have a built-in screen print feature, so you will have to use one of the other methods to print your results.