**Operations Management and**

**Management Science**

ISQS 5343 Instructor: Dr. Burns

Summer II 2013 Office: BA E306

Ph: 834-1547 email: jburns@ba.ttu.edu Hrs: 9:30 to 10:00 Tues, Thurs.

or by appointment

**TEXTS:** Russell and Taylor, **Operations Management: Creating Value Along the Supply Chain, Seventh Edition**, Wiley, 2011.

**REFERENCES:** Goldratt, Eli, **Critical Chain**, Great Barrington, MA: The North River Press, 1997. (You do not have to purchase the reference.)

Welcome to a course on operations management (OM) and management science (MS). When you think about it, just about every task we engage in has an operation or process associated with it. Only when we concentrate on the underlying process can we expect to make substantial improvements in profitability, and productivity. This course delivers to the student a learning experience of designing and managing the operations of an enterprise. In this course you will actually design the operations of the enterprise. And, you will be required to plan the buildup of all the operations as a project.

**Grading:** Three exams and a comprehensive final will be administered. All exams will be mandatory. Make-up exams will be administered in my office only to students with excusable conflicts. Exams will take place in this classroom during the regular meeting time, the final excepted.

In addition to the exams, three problem sets may be taken up. All exams and problem sets will be graded on a basis of 0 to 100%. The letter grade break-down used in assigning all grades, including the final grade is: A: 90 -- 100%, B: 80 -- 89.99%, C: 70 -- 79.99%, D: 60 -- 69.99%, F: below 60. Each exam will be worth 13% of the total grade; the final will be worth 15%. The problem sets carry a total worth of 16%. The term project will be worth 30%, broken down as follows. Each project part will be worth 4% (there are six project parts for a total of 24%) of the total grade and the turned-in final version of the project will be worth 6% of the total grade.

**WEB Site:** The web site for course materials related to this course is located at <http://burns.ba.ttu.edu/isqs_5343_S.htm>. You will find there a variety of PowerPoint slides organized by chapter, helps documents and models for use in this course at the site. In addition, there are practice exams, and this syllabus is there. All of the PowerPoint slides that we use in class are available there, for example.

**Attendance:** Class attendance will be noted. The seat you sit in on the second class period will be "your seat" for the remainder of the semester. Late entrances and early exits to and from the classroom are distractions which disrupt the class. If you arrive late or if you must leave early, please make your departure as quiet and orderly as possible.

**Problems:** The problem assignments serve to prepare you for the exams. Working with others on the problems is permissible, but you must understand the problem solutions. You will find that "keeping current" on the problems will greatly facilitate their solution. You should work the problems immediately after the material has been covered in class.

**Reading:** The reading assignments will enable you to work the problems with understanding and to comprehend the material covered in class. The student is well advised to have read each assigned reading for the class period before coming to class.

**Exams:** The exams will test your ability to apply the solution techniques discussed in class. In addition, the exams will test your general substantive understanding of the material including definitions and concepts. Each exam will consist of 50% multiple choice and 50% problems. Multiple choice questions may be used to lead you through a solution procedure.

**Academic Conduct:** The Texas Tech policy for academic conduct (Student Affairs Handbook, pg. 33-42) applies to all students, at all times. Any student who violates the academic conduct policy will be subjected to the appropriate disciplinary sanctions (Student Affairs Handbook, pg. 37). In absence of evidence to the contrary, students will be treated as trustworthy, honest, and just. Your integrity is worth far more than your grade in this class. Once your course grade has been determined, it is impossible to do extra work to improve the grade after the fact. After the end of the semester, do not ask me for the opportunity to do extra work.

**Disabled Students:** If, for any reason, you have a physical, visual, hearing or cognitive impairment that hinders your ability to write, see, hear or take exams, please advise the instructor of your condition, and provide a letter of verification from your doctor. As the instructor, I will make every effort to accommodate your situation as best as I can. You are also advised that you have certain rights as stated in Section 504 of the Rehabilitation Act of 1973 and described in the Student Affairs Handbook.

**Term Project:** A term project will be required. The term project will involve application of the techniques discussed in class to a problem area of interest to you. So pick a situation that you care deeply about. The term project will consist of six parts, each two-three pages in length, single-spaced. **The term project is due on or before August 8, 2013, at 11AM.** The term project will be accomplished in groups of three or four persons. It must be written in the following format.

1. **Title Page**

2. **Executive** Summary—A one-page brief of the project or case.

3. Part #1—revised from the earlier version turned in 7-15-2013, along with grade sheet and the earlier version;

4. Part #2 —revised from the earlier version turned in 7-17-2013, along with grade sheet and the earlier version;

5. Part #3—revised from the earlier version turned in 7-19-2013, along with grade sheet and the earlier version;

6. Part #4—revised from the earlier version turned in 7-30-2013, along with grade sheet and the earlier version;

7. Part #5—revised from the earlier version turned in 8-5-2013, along with grade sheet and the earlier version;

8. Part #6—turned in 8-8-2013, at 11AM, with the final term project report.

**PROJECT GRADING AND EVALUATION:** The project or case will be evaluated along the following dimensions.

1. *Originality* -- is the basic application especially interesting or unusual, or is it a re-hash of a well-known textbook illustration?

2. *Analytical approach* -- was the appropriate model (or models) chosen, and was the analysis complete and accurate?

3. *Documentation* -- were the problem characteristics well-documented, and were appropriate literature sources referenced?

4. *Quality of the report* -- is the report professionally done, in the correct format, and well-written? In addition, creativity, clarity, completeness, complexity will figure significantly into the overall grade.

**PROJECT COMMENTS AND SUGGESTIONS:** If done well, a project/case of this type is a tremendous learning experience. In the "real world" of business, industry, and public sector decision making, such undertakings are everyday occurrences at all managerial levels, and promotion to higher levels of managerial responsibility depends to a large extent on one's ability to identify, model, and solve problems, and to communicate the results in a well-written report.

The following "tips" may be helpful to you in identifying an appropriate project or case, and successfully completing the assignment.

1. Try to identify a problem or need in an environment familiar to you. Problems are all-pervasive in organizations, and few exist that cannot be addressed with a new product or service. Pick a problem or need that you care deeply about.

2. Begin now to define your project. Most poor projects (both in academia and in the "real world") are the result of procrastination – waiting until the last minute, and "throwing something together." I'll be happy to act as a consultant to help you focus an idea you may have.

3. To give you an idea of the wide variety of managerial problems amenable to projects of this kind, consider the following projects:

a. A one-stop-shop firm to help baby-boomers transition to retirement

b. Lean innovations in health-care process management

c. New startup manufacturing operations of a local manufacturer

d. New firm for accommodation of off-shoring of jobs

e. New firm to assist retirees to transition to a home in some tropical paradise

f. New firm to provide business services for the elderly

g. New firm providing consulting expertise to small retirement homes

h. A consulting firm to determine optimal site selection for regional supermarket chain.i. Scheduling professional development seminars in an eight-state region of the "Sun-belt.”

j. New firm that provides training six-sigma/TQM and its impact on cycle time and cost

**Policy:** The instructor reserves the right to make whatever changes are necessary in the syllabus or in the above-stated procedures. If changes are made, the student will be informed of them.

***Learning Objectives/Outcomes of Course:***

*1. To create a sense of excitement and interest in operations management*

*2. To understand why operations management is so important in modern society*

*3. To comprehend that operations management is embedded in and interactant with all of the other management disciplines*

*4. To understand the major trends in operations management today*

*5. To understand the importance of projects and project management in operations*

*6. To learn the relationships between strategy and operations management*

*7. To comprehend the importance of models in operations management*

*8. To be able to completely design the operations component of an Enterprise*

*9. To be able to completely plan the startup project of the operations component of an Enterprise*ISQS 5343 SYLLABUS—Summer II 2013

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Date** | **Powerpoint Presentation** | **Prior Reading** | **Assignment** |
| **1** | **7-9** | [**Intro to Operations & Comp**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/chap1_MOD.ppt) | **Ch. 1** [Kotlikoff: Is the U.S. Bankrupt?](http://burns.ba.ttu.edu/ISQS5343/US%20Bankruptcy%20Kotlikoff.pdf) | **Problems 1-5, 1-12** |
| **2** | **7-10** | [**Quality Management**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/ch02--v6.ppt) | **Ch. 2** [**Prob 2-3**](http://burns.ba.ttu.edu/ISQS5343/HW2-3.xls) **and** [**Prob 2-4**](http://burns.ba.ttu.edu/ISQS5343/HW2-4.xls) | **Ques. 2-8,Prob 2-1, Prob 2-14, Case Prob. 2.4** |
| **3** | **7-11** | [**Statistical Process Control**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/ch03--v6.ppt) | **Ch. 3** [**Prob 3-3**](http://burns.ba.ttu.edu/ISQS5343/HW3-3.xls) | **Probs 3-2, 3-14** |
| **4** | **7-12** | [**Product Design**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/ch04--v6.ppt)  [**Service Design**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/ch05--v6.ppt) | **Ch. 4** [**Prob 4-3**](http://burns.ba.ttu.edu/ISQS5343/HW4-3.xls)  **Ch. 5** | **Prob 4-8, Prob 4-14, Prob 5-4, Prob 5-5**  **Homework Set 1 due today, 5:00 p.m.** |
| **5** | **7-15** | [**Process Planning, Analysis**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/ch06--v6.ppt)  [**Review for Exam 1**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/Review%20for%20Exam%201.ppt) | **Ch. 6** [**Major Processes**](http://burns.ba.ttu.edu/ISQS5343/major%20processes.doc) | **PROJECT PART 1 IS DUE** |
| **6** | **7-16** | **Exam 1** | **Review of Chs 1-6** |  |
| **7** | **7-17** | [**Enterprise Resource Planning**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/ch15--v6.ppt) | **Ch. 15, p. 668-677** [**Information Architecture**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/information%20architecture.ppt) | **Ques. 15-16 (Oracle and SAP), Ques. 15-17**  **PROJECT PART 2 IS DUE** |
| **8** | **7-18** | [**Supply Chain Management**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/chap10_MOD.ppt) | **Ch. 10** | **Prob. 10-4** |
| **9** | **7-19** | [**More Supply Chain Management--Ch. 11**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/ch11--v6.ppt)  [**Supply Chain Management Tools: Simulation, Optimization**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/sup10_MOD.ppt) | **Ch. 11, supplement** [**S11.2**](http://burns.ba.ttu.edu/ISQS5343/HWS11-2.xls)[**S11.3**](http://burns.ba.ttu.edu/ISQS5343/HWS11-3.XLS)[**S11.5**](http://burns.ba.ttu.edu/ISQS5343/HWS11-5.XLS)[**HWS11-27**](http://burns.ba.ttu.edu/ISQS5343/HWS11-27.xls)[**Supply chain optimization w/ 2 products**](http://burns.ba.ttu.edu/ISQS5343/Globe.xls) | **Prob. S11-29, Prob S11-30**  **PROJECT PART 3 IS DUE** |
| **10** | **7-22** | [**Transhipment Problem**](file:///Z:\ISQS5343\new%20ppts\network_programming.ppt) |  | **Case Problem S11.1** |
| **11** | **7-23** | [**Linear Programming**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/linear_programming.ppt) | **Handout** [**Dentist's Problem**](http://burns.ba.ttu.edu/ISQS5343/dentists%20problem.xls) | **Probs. S14-6, S14-24** |
| **12** | **7-24** | [**Linear Programming**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/linear_programming.ppt)  [**Stochastic Simulation**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/sup12_MOD.ppt) |  | **Homework Set 2 due today, hardcopy in class** |
| **13** | **7-25** | [**Review for Exam 2**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/Review%20for%20Exam%20II.ppt)  [**Inventory with Independent Demand**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/ch13--v6.ppt) | [**Supply chain optimization w/ 2 products**](http://burns.ba.ttu.edu/ISQS5343/Globe.xls)[**multi-dimensional weighting location model**](http://burns.ba.ttu.edu/ISQS5343/WEIGHTED%20FACILITY%20LOCATION.xls) | **Inventory, Chapter 13, will be tested on Exam 3; the problems below will be part of the 3rd HW SET Prob. 13-6, 13-20** |
| **14** | **7-26** | **Exam 2** |  |  |
| **15** | **7-2**9 | [**Forecasting and**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/ch12--v6.ppt)  [**Sales and Operations Planning**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/ch14--v6.ppt) | **Ch. 12, Ch. 14** | **Prob. 12-10, prob. 12-19**  Prob. 14-6, prob 14-8  H**omework Set 3 due today, 5:00 p.m.** |
| **16** | **7-30** | [**JIT & Lean Production**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/ch16--v6.ppt)  [**Review for Exam 3**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/Review%20for%20Exam%203.ppt) | **Ch. 16** | **Prob. 16-10 done in class (not turned in)**  **PROJECT PART 4 IS DUE** |
| **17** | **7-31** | **Exam 3** |  |  |
| **18** | **8-1** | [**Project Management Basics**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/project%20management%20lecture%201.ppt)  [**Project Management Fundamentals**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/chap9_MOD.ppt) |  | **Handout** |
| **19** | **8-2** | [**Project Planning and Budgeting**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/project%20management%20lecture%202.ppt)  [**MS Project Tutorial**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/chap9_MOD.ppt) |  | **Handout** |
| **20** | **8-5** | [**Project Estimation and Scheduling**](http://burns.ba.ttu.edu/Isqs5343/New%20ppts/chap6_mod.ppt)  [**More Project Planning**](http://burns.ba.ttu.edu/ISQS5343/new%20ppts/Project%20Scheduling%20and%20Crashing.ppt) | **R: Chapter 6** | **Earned Value Problems**  **PROJECT PART 5 IS DUE** |
| **21** | **8-6** | [**Project Execution and Control**](http://burns.ba.ttu.edu/Isqs5343/New%20ppts/chap6_mod.ppt)  [**Critical Chain**](http://burns.ba.ttu.edu/Isqs5343/new%20ppts/critical.ppt)  [**Finishing Projects Fast and Frugal**](http://burns.ba.ttu.edu/Isqs5343/new%20ppts/Finishing%20Projects%20Fast.ppt) | **B: Notes** | **Handout**  **Homework Set 4 due today, 5:00 p.m.** |
| **22** | **8-7** | [**Termination and Closure**](http://burns.ba.ttu.edu/Isqs5343/New%20ppts/Stage%204%20%20Termination%20and%20Closure.ppt)  [**Maturity Models**](http://burns.ba.ttu.edu/Isqs5343/capable.ppt)  [**REVIEW FOR FINAL**](http://burns.ba.ttu.edu/Isqs5343/new%20ppts/review%20for%20final.ppt) |  |  |
|  | 8-8 | Final Project is due |  | PROJECT PART 6 IS DUE and will be handed in as part of the project in total.  PROJECT IN TOTAL IS DUE AT 11 am today-- |
|  | **8-9**  **Final** | **Final Exam-this room beginning 11:00 a.m. and ending before 1:30 p.m.** |  |  |

**WEB SITES**

1. [WWW.APICS.ORG](http://WWW.APICS.ORG)
2. [WWW.PMI.ORG](http://WWW.PMI.ORG)

(Both of these sites have jobs databases)

[www.integrationmanagement.com](http://www.integrationmanagement.com)

[www.cio.com](http://www.cio.com)

For 1000’s more websites on operations management, visit my web pages at

<http://burns.ba.ttu.edu/Some%20Operations%20Management%20Web%20Sites.htm>

For websites on project management, visit my web pages at <http://burns.ba.ttu.edu/PM%20Web%20Sites.htm>

For a website on green architecture, visit <http://www.architecture2030.org/media/index.html>

1. [Operations Management](http://managementhelp.org/ops_mgnt/ops_mgnt.htm)

Operations management focuses on carefully managing the processes to produce and distribute products and services. Usually, small businesses don't talk **...**  
**management**help.org/ops\_mgnt/ops\_mgnt.htm - 19k - [Cached](http://74.125.95.132/search?q=cache:EyKHHeDETfwJ:managementhelp.org/ops_mgnt/ops_mgnt.htm+operations+management&hl=en&ct=clnk&cd=1&gl=us) - [Similar pages](http://www.google.com/search?hl=en&q=related:managementhelp.org/ops_mgnt/ops_mgnt.htm)

1. [Operations management - Wikipedia, the free encyclopedia](http://en.wikipedia.org/wiki/Operations_management)

Dec 9, 2008 **...** Operations management is an area of business that is concerned with the production of good quality goods and services, and involves the **...**  
en.wikipedia.org/wiki/**Operations**\_**management** - 26k - [Cached](http://74.125.95.132/search?q=cache:AREu0HgptSIJ:en.wikipedia.org/wiki/Operations_management+operations+management&hl=en&ct=clnk&cd=2&gl=us) - [Similar pages](http://www.google.com/search?hl=en&q=related:en.wikipedia.org/wiki/Operations_management)

1. [Operations Management – covering transaction processing issues **...**](http://www.operationsmanagement.com/)

Operations Management – breaking news on the back-office issues of broker/ dealers, investment adviser firms and custodian banks.  
www.**operationsmanagement**.com/ - [Similar pages](http://www.google.com/search?hl=en&q=related:www.operationsmanagement.com/)

1. [Operation Management Center-The McGraw-Hill Companies](http://www.mhhe.com/omc/index.html)

OMC, McGraw-Hill. Linked to over 100 operations-related articles, classified by OM Topic. image. OM Resources · Company Tours · OM Articles **...**  
www.mhhe.com/omc/index.html - 11k - [Cached](http://74.125.95.132/search?q=cache:_b96zjfVsgEJ:www.mhhe.com/omc/index.html+operations+management&hl=en&ct=clnk&cd=4&gl=us) - [Similar pages](http://www.google.com/search?hl=en&q=related:www.mhhe.com/omc/index.html)

1. [APICS - The Association for Operations Management](http://www.apics.org/)

APICS builds operations management excellence in individuals and enterprises through superior education and training, internationally recognized **...**  
www.apics.org/ - 33k - [Cached](http://74.125.95.132/search?q=cache:jWFfEPNDQp0J:www.apics.org/+operations+management&hl=en&ct=clnk&cd=5&gl=us) - [Similar pages](http://www.google.com/search?hl=en&q=related:www.apics.org/)

1. [Operations Management: Critical Perspectives on Business and ... - Google Books Result](http://books.google.com/books?hl=en&id=wnIhuahCMiEC&dq=operations+management&printsec=frontcover&source=web&ots=gF0nx0A8zW&sig=GxmbQx6qfKLFKi4qlTAyzLq4cYI&sa=X&oi=book_result&resnum=6&ct=result)

by Michael Lewis, Nigel Slack - 2003 - Production management  
**...** Management 55 MACHINES AND MEN Henry Ford with S. Crowther Source: Henry Ford with S. Crowther. Chapter VI from My Life and Work, London: William **...**  
books.google.com/books?isbn=0415249244**...**

1. [POMS](http://www.poms.org/)

Production and Operations Management is now on Business Week’s list of 20 premier **...** Until now operations management was the only discipline missing in the **...**  
www.poms.org/ - 30k - [Cached](http://74.125.95.132/search?q=cache:AZyRgGCju_IJ:www.poms.org/+operations+management&hl=en&ct=clnk&cd=7&gl=us) - [Similar pages](http://www.google.com/search?hl=en&q=related:www.poms.org/)

1. [Operations Management](http://www-afa.adm.ohio-state.edu/u-majors/pdf/opermgt.pdf)

File Format: PDF/Adobe Acrobat - [View as HTML](http://74.125.95.132/search?q=cache:CXEHCBeEw1gJ:www-afa.adm.ohio-state.edu/u-majors/pdf/opermgt.pdf+operations+management&hl=en&ct=clnk&cd=8&gl=us)  
The importance of operations management has increased **...** production and operations management majors, promotes faculty/student **...**  
www-afa.adm.ohio-state.edu/u-majors/pdf/opermgt.pdf - [Similar pages](http://www.google.com/search?hl=en&q=related:www-afa.adm.ohio-state.edu/u-majors/pdf/opermgt.pdf)

1. [Journal of Operations Management - Elsevier](http://www.elsevier.com/wps/find/journaldescription.cws_home/523929/description)

The mission of the Journal of Operations Management is to publish original, high -quality research papers in the field of operations management. **...**  
www.elsevier.com/wps/find/journaldescription.cws\_home/523929/description - 33k - [Cached](http://74.125.95.132/search?q=cache:4vpwJYf7wQEJ:www.elsevier.com/wps/find/journaldescription.cws_home/523929/description+operations+management&hl=en&ct=clnk&cd=9&gl=us) - [Similar pages](http://www.google.com/search?hl=en&q=related:www.elsevier.com/wps/find/journaldescription.cws_home/523929/description)

1. [Operations Management Research - Knowledge@Wharton](http://knowledge.wharton.upenn.edu/category.cfm?cid=13)

Operations Management Research by Knowledge@Wharton, the online business journal of the Wharton School. Knowledge@Wharton covers research in Finance, **...**  
knowledge.wharton.upenn.edu/category.cfm?cid=13 - 33k - [Cached](http://74.125.95.132/search?q=cache:5iLAC1hsdy8J:knowledge.wharton.upenn.edu/category.cfm%3Fcid%3D13+operations+management&hl=en&ct=clnk&cd=10&gl=us) - [Similar pages](http://www.google.com/search?hl=en&q=related:knowledge.wharton.upenn.edu/category.cfm%3Fcid%3D13)

**PROJECT OUTLINE**

The goal of the project is to outline the product/service design, process design, competitive strategy, and select a location or locations where you will produce your product or service. Additionally, you will determine what your facility will look like and how it will function. You will design the quality system, and the supply chain. Finally, you will design the project necessary to startup the operations component of the enterprise. The project will be accomplished in groups of three or four. **Specifically, you will need to include the following for each part of the project.**

**PROJECT PART #1: Strategic Design of the Firm and its Products/Services**

**[SEE CHAPTERS 1, 4 AND 5 FOR THIS PART OF THE PROJECT]**

In this part you will decide upon a name and mission for your firm and you will design the products or services the firm will engage in. In doing so you will be architecting an enterprise. We could call the result an “enterprise architecture.” The enterprise must also be thought of as a perpetual money-making machine. We must understand the primary purpose of any private-sector, for-profit firm is to make money—more money both now and in the future (Goldratt).

1.1. Following pages 17-21 of your text, decide what your firm’s primary task will be. Decide what your firm’s core values will be. Decide who your customers will be. Then choose your firm’s core competencies (core competencies are not product features, but processes the firm does better than anyone else). Core competencies should align with the way in which the firm adds value in the market spaces it plays in. Finally, position the firm within its larger competitive context.

1.2. You will design a detailed description of your product or service, following the material in Chapters 4 & 5.

1.3. How did you select your product or service (Chapters 4 & 5)? Specifically, discuss:

a) Idea development

b) Feasibility study and rapid prototyping

c) Form and functional design

d) Final design and productivity measurement for your product

e) Description of resources necessary to manufacture your product

1.4. How do you plan to gain a competitive advantage in the market place? Make sure to cover your competitive priorities (cost, quality, time (speed), flexibility). Which of these will your company concentrate on? Will your firm compete on cost, on quality, on speed, flexibility, or some combination of these? Specifically, how will you compete using the competitive priorities you have chosen?

1. Cost
2. Quality
3. Time (speed)
4. Flexibility

1.5. Discuss how you might use barriers to entry to prevent additional competitors from entering your market spaces. This might include getting patents on your proprietary processes and products (your intellectual property), using learning curves, using global sourcing, high levels of capital investment, and economies of scale, among other possibilities.

1.6. Discuss what operations activities you anticipate will be important to your firm. These could include, but not be limited to customer acquisition, customer processing, order fulfillment, new product or service development, customer maintenance and retention, etc. **These are the major processes of any firm by the way**. But some may not be important to you.

1.7. Use either policy deployment or a balanced scorecard (Chapter 1) to map out a strategy for startup of your firm.

**Due: July 15, 2013**

**PROJECT PART #2: Strategic QUALITY Design and Management**

**[SEE CHAPTERS 2, 3, 4 AND 5 FOR THIS PART OF THE PROJECT]**

2.1. Discuss what you will do from the “get-go” to insure a quality product or service. Examples include: decide who the customer is, decide what to measure, decide how to effect improvement, decide whether a kaizen culture will be implemented within your firm, decide whether quality circles, six sigma, will be utilized, etc.

2.2. Discuss what role employee training will play in quality prevention. To which of prevention or appraisal should greater attention be devoted? Discuss the relationship between poor quality and cost from a producer (manufacturer) point of view.

2.3. Discuss how will you measure and control quality (what you will measure, data you will need to collect, quantitative methods you will use to analyze the data). **Provide vivid illustrations of the quality control charts that you will use.**

2.4 Discuss the dimensions of quality, depending on whether you will be creating a product or service—use the right dimensions.

2.5. Construct a quality house (house of quality—Chapter 4) for your product or service. Determine customer requirements first. Pick an importance number on a scale of 1 to ten for each requirement. Then decide what design characteristics you will use. Construct the mapping matrix that maps customer requirements into design characteristics. On the right come up with a competitive assessment only if there are viable competitors out there. At the bottom, consider objective measures and target values. Design changes are necessary only if you are improving upon an existing product or service. Obviously, you cannot do design changes if you are designing a first-of-its kind product or service. I have seen this exercise done for designing sports bars and educational curricula, so this is a technique that is equally germane to services. You can use the template found at [www.QFDOnline.com](http://www.QFDOnline.com) if you wish.

**Due: July 17, 2013**

**PROJECT PART #3: Strategic Design/Management of the Internal Processes Required to Produce/Deliver the Product or Service**

**[SEE CHAPTER 6 FOR THIS PART OF THE PROJECT]**

3.1. Identify the internal processes required to deliver value to your customers (i.e., strategy development, new product or service development, customer acquisition, order fulfillment or service—see handout entitled Major Processes in the reading column of the syllabus website). Which of these are core processes—critical to the success of the firm. What measures will you use to assess performance of these processes?

3.2. DESIGN – Design the process you will use to manufacture your product (Machines, labor, robotics, etc.) or deliver your service? Include a detailed description and diagram of the process; that is, provide a workflow diagram or process map of how the work is to proceed through the manufacturing facility. If you are manufacturing a product, what type manufacturing process will you use (i.e., project, batch, line, continuous—see Ch. 6, pp. 229-230)? If you are manufacturing a product, will your manufacturing process be make-to-order, make-to-stock or assemble-to-order[[1]](#footnote-1)? If you are delivering a service, what type of service will you use (**professional service**—accountants, doctors, dentists, attorneys; **service shop—**education; **mass service—**banking, retailing; and **service factory**—airlines, electricity.) If you are delivering a service, provide a workflow diagram or process map of how the work is to proceed through the process.

3.3. MANAGEMENT – Discuss how you will design your processes so that every step adds value in some way. (Will you use value stream mapping, process flowcharts, what?) Discuss how you resolved such issues as capital intensity, process flexibility, vertical integration and customer involvement relative to your endogenous processes.

3.4. IMPROVEMENT – Briefly outline your plan for how to achieve continuous improvement and innovative breakthroughs in your core processes identified above. Consider the performance measures you identified in step 3.1 above.

**Due: July 19, 2013**

**PROJECT PART #4: Strategic Design/Management of the External Processes Required to Deliver the Product or Service**

**[SEE CHAPTERS 6, 10 AND 16 FOR THIS PART OF THE PROJECT]**

4.1. Decide upon the extent to which you will be vertically integrated. Will your firm look more like Exxon or more like Dell? Do vertically-integrated firms have a supply chain? Do service-oriented firms have a supply chain?

4.2. Outline your supply chain strategy (i.e., what processes will you outsource and why) and discuss how it will impact your facility location decision. Also discuss the effect of JIT on your supply chain strategy.

4.3. What specific external processes do you consider critical to the success of your firm and why? What measures of success will you use for these critical external processes? How will you improve these processes?

**[SEE CHAPTER 11 SUPPLEMENT FOR THIS PART OF THE PROJECT]**

4.4. Describe the steps/analysis that you went through to determine the best **international, regional, and community** location for your facility (use either a transportation or linear programming model when doing your analysis). Identify dominant location factors to be used in your analysis:

a) Proximity to sources of supply.

b) Proximity to customers.

c) Proximity to sources of labor.

d) Community considerations.

e) Site considerations.

f) Quality of life issues.

**Develop a multi-dimensional, weighted model that considers and weights the dimensions that are important to you. Use it to select a location from at least three candidates.**

4.5. Set up a supply chain optimization or simulation model (as illustrated in class) that tells you how to distribute, schedule or organize your supply chain. If you are delivering a service, **consider a resource allocation model like the dentist model or a capacity sizing simulation like the bio-diesel problem.**

**Due: July 30, 2013**

**PROJECT PART #5: Strategic Design/Management of Inventory and FORECASTING**

**[SEE CHAPTERS 6, 7, 8, 12, 13 AND 16 FOR THIS PART OF THE PROJECT]**

5.1. Do your inventory requirements involve independent items or dependent items or both?

5.2. What will your inventory strategy be and how will you utilize “just-in-time” concepts in your facility (be specific). Additionally, discuss what you hope to accomplish through the use these techniques?

5.3. Utilizing the material in Chapter 8, discuss to what extent will you utilize a “team” approach in job design (# of workers in the team and how they interact) and why.

**FORECASTING, BEP[[2]](#footnote-2), CAPACITY, LAYOUT, SPACE AND EQUIPMENT REQUIREMENTS**

**[SEE CHAPTERS 6 (BEP PART) AND 12 FOR THIS PART OF THE PROJECT]**

5.4. Forecasting steps

* 1. Decide what to forecast.
  2. Evaluate and analyze appropriate data (feel free to utilize past production demand data from a similar company or product).
  3. Select the forecasting model (quantitative, not qualitative) and defend your selection.
  4. Generate forecasts.
  5. How will you check accuracy of your forecasts?
  6. Will you forecast for seasonality and trend components; if so, how?

5.5. Show forecasts as attachments.

5.6. Determine the necessary production capacity of your facility based on your demand forecasts and breakeven point (BEP).

**[SEE CHAPTER 7 FOR THIS PART OF THE PROJECT]**

5.7. Develop a diagram of the facility layout and justify your layout choice (use the objectives of facility layout as the basis for your layout justification). Show how the product/service flows through the facility from raw materials to finished product. Also discuss how you plan to apply the concept of “line balancing” when producing your product or service.

5.8. Space & Equipment required for each function

a) Diagrams should reflect space requirements (machine, operator, and WIP).

b) Discuss what happens at each station.

c) Show output at each station (pieces per hour, customers per hour, or similar measure).

**[SEE CHAPTER 16 FOR THIS PART OF THE PROJECT]**

Questions 9 and 10 have to do with lean production concepts—the Toyota Production System.

5.9. Lean production produces the following benefits: reduced inventory, improved quality, lower costs, reduced space requirements, shorter lead time, increased productivity, greater flexibility, better relations with suppliers, simplified scheduling and control activities, increased capacity, better use of human resources, and more product variety. Decide which of these goals you want to address with concepts of leanness in conjunction with your processes.

5.10. In connection with your lean analysis, you must utilize at least four of the following ten elements: flexible resources, cellular layouts, pull system, Kanbans, small lots, quick setups, uniform production levels, quality at the source, total productive maintenance, supplier networks. Pick four or more that work together synergistically. Discuss how you will use the concepts of Leanness to improve your processes

**Due: August 5, 2013**

**PROJECT PART #6: Design of the Startup Project**

**[SEE CHAPTER 9 AND HANDOUTS FOR THIS PART OF THE PROJECT]**

In this part you will actually be designing the project that will launch your new enterprise into reality. You will use a work breakdown structure (WBS) to determine the tasks. You will use a network diagram to determine the sequencing of the tasks and you will use a Gantt chart to determine a schedule for completion of each task and thus the entire project. Upon completion of this final part, you will know the starting date, the stopping date and the total cost as well as the costs of each task. And, you will know what human resources are required and what cash flow is required. For the network chart, Gantt chart and budget, use MS Project. (MS Project will not draw a WBS for you.)

In short, when you have completed this part, you will have a plan for startup of your enterprise. Please turn in: 1) a discussion of your startup project in which you explicitly justify the duration and total cost of your project, 2) your Gantt chart (using MS Project), 3) your network chart (using MS Project), and 4) a WBS of your project.

For extra credit, turn in a tracking Gantt chart in addition to the Gantt chart mentioned above with a progress line on it (10 pts extra credit) and turn in an MS Project-calculated earned value report (10 pts extra credit).

**Due: August 8, 2013, turned in with the final term project.**

ISQS 5343 Survey

July 9, 2013

1. Have you had a course in management science or operations research or decision theory before, at either the graduate or undergraduate level? (YES/NO)
2. Have you seen operations management, possibly at the undergraduate level? (YES/NO)
3. Have you taken ISQS 5230 (Decision theory) before or are you currently taking ISQS 5230? (YES/NO)
4. Are you familiar with the use of spreadsheets? (YES/NO)
5. Are you familiar with business process reengineering as a concept? (YES/NO)
6. Do you believe that (the content of) this course is genuinely worthwhile for your career and major? (YES/NO)
7. What is your major and if MBA, what is your concentration within the MBA?
8. What type of work do you plan to do following graduation?
9. How many semester hours are you taking this summer session?
10. Are you working part-time? How many hours/wk?

12. Four years ago, I traveled to China. I was able to exchange $440 US into RMB 3300. what is the exchange rate in RMB/$?

13. In Brazil, a liter of regular unleaded gasoline costs R$ 2.57 (that is, 2.57 hayish per liter). If the exchange rate is .52 dollars per R$ (hayish) and there are 3.78 liters in a gallon, what is the cost of unleaded gas in $/gallon?

14. A young couple, Helen and Harry, are considering buying a Toyota Prius (Hybrid) or a Honda Civic (conventional). The Prius costs about $23,070 but gets an EPA-estimated combined city highway mileage of 55 miles per gallon. The Honda LX has an MSRP of $16,960 and gets an EPA-estimated combined city/highway mileage of 35 miles per gallon. Assuming the average cost of a gallon of gasoline is $3.00, for how many miles would you have to drive the Prius in order to break even on the higher cost? (Assume there are not other costs other than purchase price and fuel costs.)

15. Assuming the $ is being devalued against other currencies; what is the impact on interest rates, if any. What is the impact on the sale of cotton overseas?

1. A **make-to-order** process is like what Levi Jeans offers through its on-line internet sales in which the jeans are made from scratch to your specifications; **make-to-stock** is what GM, Ford and Chrysler do in that they produce unsold vehicles that are inventoried and stored on company facilities are at dealerships until sold; **assemble-to-order** is what Dell does in that it produces computers to customer specs as derived from online or phone sales from prefabricated parts and then delivers them to customers directly. [↑](#footnote-ref-1)
2. Break-Even Point [↑](#footnote-ref-2)