

MGSC 485**BUSINESS PROCESS MANAGEMENT
COURSE SYLLABUS**

CLASSROOM	Moore School of Business 335
CLASS TIME	Tuesday and Thursdays (12:30 p.m. – 1:45 p.m.)
PROFESSOR	Dr. Sanjay Ahire, Professor of Operations Management
OFFICE	Moore School of Business 709
CONTACT	Cell : 873-3376 Fax: 777-3064, Email: <i>ahire@moore.sc.edu</i>
OFFICE HOURS	Wed 10:00 a.m. – 12:00 n.n. ; 1:00 p.m. – 2:00 p.m.

You can also set up a prior appointment at other mutually convenient times on weekdays. You can call me with questions if you can't see me during office hours. For simple questions or clarifications, emails might be ok.

COURSE DESCRIPTION:

Since the 1990s, numerous organizations around the world have adopted the “business process” perspective of operations to significantly improve their operations, market, and financial performance. Examples of business processes include order fulfillment in manufacturing firms and fast-food restaurants, patient treatment in hospitals, loan processing in banks, and customer calls processing in call centers. Organizations now, more than ever, value managers with a cross-functional business process perspective. Business process improvement initiatives form the backbone of several key organizational change initiatives such as TQM, Business Process Reengineering, and Six-Sigma campaigns.

The primary objective of this course is to learn and apply the concepts and techniques of business process analysis and improvements as building blocks for all operations improvement strategies. Students will learn how to analyze and improve business processes in different contexts, and using different process improvement tools. They will learn tools from simple process-mapping to computer-based process-modeling using ProcessModelTM, a state-of-the-art software. Fundamental concepts that can be used to systematically analyze any business process will be covered. Use of sophisticated analytical techniques to design and manage efficient and effective operations and processes will be covered. The importance of balancing

technical/analytical and organizational/behavioral aspects of business process improvements will be highlighted through guest lectures and/or class discussions.

Students will learn and practice principles and techniques/tools of Lean and Six-Sigma Approach to business process improvements. This is in light of the pervasive implementations of six-sigma campaigns in various sectors. Note however that the treatment of topics will be balanced and the focus will be on developing the mindset and fundamental competencies for process improvement that extend well-beyond any one “brand” of process improvement initiative.

COURSE CONTENT LEARNING OBJECTIVES

1. To understand the “business process perspective of operations” and its critical importance of process management in manufacturing and service organizations in successfully executing their competitive strategies.
2. To learn to map the critical elements of business processes in manufacturing and service firms; and to model these processes (customers or entities, activities, resources, queues, storages, routings, decisions, processing logic) using a process modeling software such as ProcessModel™.
3. To understand the impact of resource capacities and flexibility, process efficiencies (speed and robustness and alternative process logic) on process performance metrics (flow time, throughput rate, inventory, and cost).
4. To understand the role of business process management in operations improvement strategies (TQM, BPR, Six-Sigma Campaigns, ERP); and to understand the role of organizational culture and change management during business process improvement.
5. To complete “lean-six-sigma green-belt certification” (written exam) requirements of a Fortune 500 organization.

COURSE MATERIAL:

REQUIRED MATERIAL

- [1] James R. Evans and William M. Lindsay. *An Introduction to Six Sigma & Process Improvement* (Book and CD), Thomson-Southwestern, 2005. ISBN: 0-324-30075-1 (book and CD package) [**Book and CD are Required**]. This book has been ordered through USC Bookstore and should be available there as well. (priced at about \$60.00 at BN.COM).
- [2] Michael L. George, David Rowlands, Mark Price, and John Maxey. *The Lean Six-Sigma Pocket ToolBook*. McGraw-Hill (New York). 2005. ISBN: 0-07-144119-0. [**Required; Useful for Six-Sigma Professional Certifications and Practice. This is available through any bookstore chain like B&N, Borders, etc.**] (priced at about \$13.00)

- [3] Goldratt, E. and Cox, J., 2004. *The Goal: A Process of Ongoing Improvement*. 3rd Revised Edition, North River Press, Inc., Croton-on-Hudson: NY. **[Required: This should be available in the USC bookstore under MGSC 395 course requirements (we are in fact making it a mandatory reading for all MGSC 395 from this semester). It is also available through any bookstore chain like B&N, Borders, etc.].** (priced at about \$15 at bn.com).

OPTIONAL MATERIAL

- [4] ProcessModel software [**Optional**]: This is a stand-alone computer-based process simulation modeling software. Note that this is “optional”, and we will be installing the commercial version of the software in the computer classroom where the class will be held, and also on 15-20 computers in the BA Open Labs (1st floor). However, students who want to install the software on their own computers for the semester can buy the current “120-Day Student Version” of the full software directly from ProcessModel Corporation. The details are on the processmodel website (<http://www.processmodel.com/> in the “Academic Programs and Pricing” section). The purchase of the software entitles the student to the use of the full commercial version of the software for 120 days, along with a print copy of the self-teaching booklet. Students need to have access to a computer that can load the software. See the website for computer system requirements. The relevant page from the Website (as of May 2007) is displayed below:

Software Website: <http://www.processmodel.com/>

Software Online Store: <http://store.processmodel.com/>

Educational Pricing

Standard Educational Packages

120-Day Student Version - This version is limited to 120 days of use. There is no limitation on the size of the model. This version includes an electronic copy of the user manual and a hard copy of the new self-teaching booklet. [Click here to view the booklet.](#)

Price - \$69 per copy plus shipping and handling.

Purchasing Educational Packages

ProcessModel accepts payment in the form of Mastercard, Visa, or American Express for all educational packages.

Students wishing to purchase their own version of ProcessModel may do so by credit card only. Students wishing to purchase ProcessModel academic version may do so by receiving a link to our online store from their instructor. If the instructor does not have this information, then have the instructor email us at academic@processmodel.com to receive this information. In order to qualify for the packages and pricing outlined here

you must be a qualified educational institution or a student of a qualified educational institution.

For further information please contact our educational advisor, at academic@processmodel.com or 801-356-7165, option 5.

[5] LeRoy F. Simmons and Laurette P. Simmons. *Self-Teaching Booklet For ProcessModel*. Packaged with ProcessModel. 2004. (packaged with the software and shipped to you when you order the software in Item 4 above). **[Optional]**.

[6] Other handouts and print material will be distributed from time to time.

COURSE DELIVERY / EXECUTION

The course will be delivered as a combination of lectures, discussions, and hands-on learning of process modeling techniques. The course will consist of three components: Lean and Six-Sigma (55%); Computer-Based Process-Modeling (30%), and Theory of Constraints using The Goal (15%).

Course Component 1: Lean and Six-Sigma (55% of the Grade)

This course component will involve coverage of tools and techniques of lean six-sigma process improvement strategies. We will primarily use the textbook (Evans and Lindsay) and supplement it with the reference book “Lean Six-Sigma Pocket Toolbook” (George et al.) for this component to learn the lean-six-sigma approach to process improvement. This will be supplemented with my lecture notes.

Student Presentations and Class Participation (10% of the Course Grade)

We will cover the lean-six-sigma component in the class through lectures, discussions, problems and cases. Students will also be required to make one group presentation on selected cases and topics from the reference book “Lean Six-Sigma Pocket Toolbook” (George et al.). Students’ presentations and class participation will make up 10% of the course grade.

Graded Internal Exams on Lean-Six-Sigma (20% of the Course Grade):

Internal Class Exams 1 and 2 (My Exams) – October 4 and November 20: Each of these exams will be 20% worth. I will count the “Exam with higher score” towards 20% of the course grade. Both the exams will be based on class-material covered and the Evans and Lindsay Textbook and the George et al. reference book. I will give detailed topics for the exams at least one week before the exams. Both exams will be open-book and open-notes exams.

Graded External Green-Belt Lean-Six-Sigma Certification Written Exam (25% of the Course Grade):

External Green-Belt Certification Written Exam (Sonoco Exam) – Final Exam Day (December 13; 3:00-5:00 p.m.): This exam will be the “Six-Sigma Green-Belt Certification Exam” administered by the Sonoco Products Company for their own employees. Sonoco is one of the strategic partners of the Global Supply Chain and Operations Management program at USC and has allowed us to use their Green-Belt Training Program. More information on how to use their e-learning website to learn their greenbelt requirements will be distributed soon. You can register and undergo the e-learning training program at your own pace. You may practice the Sonoco Exam “once” before the actual in-class exam on your own. Note that Sonoco will help us keep track of the number of attempts at the Exam you are making. I will permit only one try at the Exam on your own before I conduct the exam in the class.

This exam also will be open-book and open notes. Therefore, it is important for you to make your own notes as you go through the training program. Note that Sonoco’s internal benchmark score for passing GreenBelt Certification is a minimum of 80. Sonoco will recognize your successful completion of their Greenbelt Certification requirements if you make a score of 80 or higher.

Course Component 2: Computer-Based Process Simulation Modeling (30% of the Grade)

Leading organizations have started to incorporate sophisticated data-based computerized process models to account for statistical variations in various parts of the business processes and complex interactions between various elements (resources and customers) of the processes. These modeling capabilities can allow an organization to evaluate the net impact of several process improvement tactics on the key process performance metrics with substantially more confidence and consequent payoffs.

I will teach this approach to process analysis and improvement with the help of hands-on instruction on “ProcessModelTM,” a cost-effective yet powerful process-modeling software that is fast becoming a platform of choice in sophisticated lean and six-sigma campaigns.

Classwork Self-Teaching Instruction (10% of Course Grade)

We will learn the software in the class and outside using the “Self-Teaching Booklet” (Simmons & Simmons, 2004) during November. Classwork will count 15% of the course grade. Please see the learning goals for the Self-Teaching Booklet that are summarized at the end of this syllabus.

Note from the Tentative Class Schedule that though five class sessions have been planned in November for the classwork, students may choose to complete the Self-Teaching module at their own pace on their own time before November. In that case,

they can utilize the November sessions for other purposes such as preparing for the Lean-Six-Sigma exams (on Nov 20 and 29) and consulting project work.

Analysis of a ProcessModel Case (15% of the Course Grade)

Student groups will be assigned a case on process-modeling for which they have to write a case analysis. The case will be based on actual consulting projects that have been executed within the ProcessModel software. Each case analysis should reverse-engineer the process-model that is presented within the software to develop the business statement of the process that has been modeled.

For the assigned case, the team should role-play the “process-owner” and follow the following case analysis/exploration approach:

1. Study the entire model of the current process.
2. Write business description of the process including data-specification as follows:
 - Customers/orders (entities that enter the process, pass through process steps, are processed, and exit the process).
 - Process Steps and Process Logic (How customers are processed)
 - Resource configurations and details (How resources are used in each process step to process customers, resource capacities, costs, etc.).

Be sure to identify the ProcessModel software features/commands that are used to model the above process details.
3. Identify critical output quality measures (critical Ys) for the process, and current and target metrics of performance.
4. Identify CTQ controllable input variables (Xs) for the process. These are the factors that impact the outcome measures.
5. Execute the current process model and understand the output. Summarize most important findings.
6. Develop a reasonable scenario (you can change any Xs including process logic to create a revised process model) that will demonstrate improvement in the process over the current performance along the critical output measures selected.
7. Analyze the two models and the corresponding process performance.
8. Write a concise focused report on Steps 2 through 7 above, and submit it to me (due date: Semester-End, Dec 7).

Again, note that while the Case Report is due at the end of the semester (Dec 7), students may choose to finish the Case Report much before then if so desired.

Course Component 3: Theory of Constraints Using “The Goal” (15% of the Grade)

“The Goal” is probably the most read “novel” of operations management. Please see the separate handout (at the end of this syllabus) on how to conduct a focused reading of The Goal. I expect you to read the book on your own during the semester. Please feel free to discuss any issues from the book with me during office hours.

You should review the book within the context of the guiding questions and general concepts of constraint management. You should also review Chapter 7 from MGSC 395 again for this aspect of the course.

I will have a separate one hour exam on The Goal and Lean Concepts; from 2-3 p.m. on the Final Exam Day (Dec 13) before the Green-Belt Exam. Note that this will also be an open-book and open-notes exam.

CLASS ATTENDANCE

I strongly encourage students to attend all class sessions, except attendance at the career fairs or extra-ordinary circumstances. Please let me know in advance if you must miss a class. Exam make-ups will be evaluated on a case-by-case basis on its merit. I reserve the right to deny a make-up exam to a student.

GSCOM INDUSTRY SPEAKERS SUMMIT (Sep 25, 2007)

There will be a GSCOM Industry Speakers Summit on September 25, 2007 (Belk Auditorium: 6-9 p.m.). I encourage all of you strongly to attend it. It will feature industry executives from large manufacturing and service firms who will speak about the role of GSCOM and process improvement strategies in their organization’s performance, and will be very relevant to MGSC 485.

ETHICAL STANDARDS

Organizations and managers are coming under an increasing scrutiny in terms of their professional and business ethics and social responsibility. Students must view their academic work as an integral part of meeting these ethical standards in their current / future careers. I expect all students to adhere to the highest ethical standards. If anyone chooses to act in an unethical manner (e.g., plagiarism, cheating on exams, free-riding on projects, etc.), there will be a substantial impact on the grade for that component of the course or more. For example, free-riding on projects based on an evidence (triangulated assessment based on peer evaluation, company evaluation, and my assessment) can lead to a zero on that component.

IN-CLASS COMMUNICATION

Students should maintain a high sense of responsibility and mutual respect while communicating with me and with classmates. I will do the same. While discussing issues related to actual organizations (e.g., projects and clients), special attention should be made to not disclose names and information about client firms that will jeopardize either the clients' interests or our' or our school's professional image. Failure to do so will result in consequences and penalties at my discretion, including but not limited to asking the student to leave the classroom.

SUMMARY OF COURSE COMPONENTS AND GRADING

Component	Date or Due Date	Weight (% of the course grade)
Presentation and Case Analysis Teams Formation (with my help)	August 28	
One Lean-Six-Sigma Class Presentation	September-October	15%
Lean-Six-Sigma Exam 1* (Internal)	October 4	20%
Lean-Six-Sigma Exam 2* (Internal)	November 20	20%
ProcessModel Self Learning Classwork and On Your Own	By November End	10%
One ProcessModel Case Analysis Report	December 7 (Due Date)	15%
The Goal+Lean+TOC Exam	December 13 (2-4)	15%
Lean-Six-Sigma Exam 3* (External: Sonoco Green-Belt Exam)	October 5, 19, November 2, 30	25%

* The higher of the scores from the two Exams will be used for 20% of course grade.

GRADING SCALE

Grades are generally set according to the following standards. Plus grades may be used for grades closely grouped near the cut-off.

Overall Course Grade	GPA	Overall Percent Points (scaled to 100)
A	4.00	90 and above
B	3.00	80 – 89.99
C	2.00	70 - 79.99
D	1.00	60 – 69.99
F	0.00	Below 60

MGSC 485: TENTATIVE CLASS SCHEDULE

Date	Topic
August 23	Syllabus Discussion and Course Requirements
August 28	Business Process Analysis and Improvement Methods
August 30 September 4	Key Process Performance Metric; Process Flow Times and Capacity Calculations
September 6, 11	Six-Sigma: DMAIC - DEFINE Phase (Evans & Lindsay: Chapters 1, 2, and 3)
September 13	Student Presentation Team 1 (George et al. – Chapters 2 and 3)
September 18, 20	Six-Sigma: DMAIC - MEASURE Phase (Evans & Lindsay: Chapter 4)
September 25	Student Presentation Team 2 (George et al. – Chapters 3 and 4)
September 27 October 2	Six-Sigma: ANALYZE Phase (Evans & Lindsay: Chapter 5)
October 4	Lean Six-Sigma Exam 1 (Internal) [20% of the Grade] (Open Book and Open Notes)
October 9	Student Presentation Team 3 (George et al. – Chapter 5)
October 11, 16	Six-Sigma: DMAIC – IMPROVE Phase (Evans & Lindsay: Chapter 6)
October 18	Student Presentation Team 4 (George et al. – Chapters 6 and 7)
October 23	Six-Sigma: DMAIC – CONTROL Phase (Evans & Lindsay: Chapter 7)
October 25	Student Presentation Team 5 (George et al. – Chapter 8)
October 30 November 1	Six-Sigma: DFSS (Design for Six-Sigma) (Evans & Lindsay: Chapters 8 and 9)
November 6	Student Presentation Team 6 (George et al. – Chapter 9)
November 8, 13, 15, 27, December 4	ProcessModel Training: Self-Teaching Booklet* (Though five sessions are allocated to in-class coverage of ProcessModel, this training could be accomplished anytime during the semester outside of the classroom by students on their own, according to their schedules; and with my help during office hours, thus, this time could be used for other purposes by students who have completed the ProcessModel training by this time of the semester, including time for Six-Sigma Exams and ProcessModel Case Report).
December 7 (Due Date)	ProcessModel Group Case Analysis Report (This also could be completed by students anytime during the semester with my help during the office hours; doesn't need to be completed at the end of the semester).
November 20	Lean Six-Sigma Exam 2 (Internal) [20% of the Grade] (Open-Book and Open-Notes)
December 13 (2-3 p.m.)	The Goal + Lean + TOC Exam [15% of the Grade] (Open Book and Open Notes)
December 13 (3-5 p.m.)	Lean Six-Sigma Exam 3 (External: Sonoco Green-Belt) [25% of the Grade] (Open-Book and Open-Notes)

MGSC 485: BUSINESS PROCESS MANAGEMENT
ProcessModel™ Training Using Self-Teaching Booklet
(LeRoy F. Simmons and Laurette P. Simmons)

Learning Goals are to understand the :

1. Value and limitations of computer-based process simulation modeling for business process improvement.
 2. General components of a simulation model for a business process.
 3. Mechanics of creating a process model and executing it.
 4. Components of simulation output reports.
 5. Customers Features: Arrival Patterns
 6. Process Logic: Activities, Queues and Queue Capacities, Storages
 7. Process Routings: Percent, Conditional, Create – Attach, Renege, etc.
 8. Resources: Resource Capacity, Resource Availability, Shifts, Resource Connections
 9. Use of Variables versus Attributes
 10. Different types of patterns: Discrete Distributions versus Continuous Distributions. Types of Patterns: Triangular, Uniform, Normal, Exponential, Poisson
 11. Importing Excel Data and Fitting Distributions.
 12. Creating Custom Reports
 13. Running multiple replications.
 14. Evaluating multiple scenarios
 15. Using SimRunner Optimizer (advanced).
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MGSC 485
Business Process Management

GUIDED READING TIPS TO *THE GOAL*¹

“The Goal” is probably the most read novel on operations management. It is regularly used and referenced in general management and operations management seminars. It is also regularly prescribed in operations and supply chain management and even accounting courses. It highlights the practical challenges faced by manufacturing managers which are universally applicable to all sectors (banks, hospitals, retail, government agencies) and provides a systematic approach to effectively managing any business process. It also highlights the critical importance of operations management capabilities to help organizations become profitable. The same concept applies to non-profit organizations due to demands for meeting their goals cost-effectively.

This document provides questions for helping you focus on key points in reading the book. Please review the following questions and then read the entire book to derive answers to these questions. You will be asked True-False or Multiple-Choice questions only on the book. These questions will not target whether you remember small details but rather whether you understand the theme and major insights and events from the book as captured by the following questions.

1. (Chapters 1-3) Explain the problems the Bearington Plant faced before Alex Rogo met with Jonah at the Chicago airport. What actions had Alex taken initially at Bearington and how successful were they for the plant and for the entire UniWare division?
2. (Chapters 1-3) After expediting the Burnside order for Peach, Alex and Bob Donovan come to realize in achieving on-time delivery, another important, but conflicting, requirement also be met. What is that conflict?
3. (Chapters 4-5) Why did Jonah think that although Alex reported improved departmental efficiency, there really was no plant-wide improvement? Is it possible to have departmental success that does not translate into plant success?
4. (Chapter 4-5) When asking about productivity, Jonah thought Alex’s answer about improved efficiency was not appropriate. What did they agree *productivity* really was?

¹ Goldratt and Cox, *The Goal*, North River Press, Great Barrington, MA, 2004

5. (Chapter 4-5) Alex realized everything else was subordinate to the goal. For manufacturing organizations like the Bearington plant, what did Alex determine *The Goal* to be?
6. (Ch 6-10) Jonah suggested that performance measures like profit and ROI were not meaningful in departments of the plant. What three performance measurements did he suggest as better?
7. (Ch 11-17) The Boy Scout hike was a breakthrough for Alex. Why did he decide a plant with *balanced* capacities does not perform well? How does this relate to statistical fluctuations and dependent events? How does the Boy Scout Troop demonstrate the “GLOBAL” view of a manufacturing plant rather than the “LOCAL” view?
8. (Ch 18-21) What is the difference between a bottleneck and a non-bottleneck resource? How does this relate to the goal?
9. (Ch 18-21) What is the true cost of capacity at a bottleneck? What was the purpose of the red/green tag system introduced by Alex? What bottlenecks did it help and how?
10. (Ch 22-28) What does Jonah mean when he says “an hour saved at a non-bottleneck is a mirage”?