OPERATIONS MANAGEMENT SYLLABUS

The Heller School for Social Policy and Management
Brandeis University
HS 258a, Spring, 2016
V1.7 (3/24/16)

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Fridays, 9:00-11:50 AM
Class Location: Schneider & Family Bldg G4
Office Hours: Thursdays 1:00-3:00 PM

Teaching Assistant: Rebecca Sliwoski
TA Office Hours: Tuesdays 12:00-2:00 PM

HBS CoursePack Cases link: https://cb.hbsp.harvard.edu/cbmp/access/44703591

Prerequisite: Statistics

Course Aim:

Increase your expertise in managing the flow of services and materials in order to better deliver value to diverse stakeholders – implementing and sustaining continuous improvement in operations.

Course Description:

Operations involve a sequence of activities organized for the purpose of making and delivering a product or service. This course prepares you to analyze, design, manage and improve operational work processes in social mission-driven organizations to meet the needs of clients, while engaging both staff, volunteers, and clients in achieving the mission. We explore ways to achieve quality outcomes without sacrificing efficiency and vice versa, given the resource constraints faced by many mission-driven organizations.

You will develop skills including quality assessment, process mapping, productivity analysis, process improvement by employing quality management techniques, capacity management analysis, customization versus standardization of work processes, balancing supply and demand, coordination of process elements, stakeholder alignment within operations and across other organizational functions. We will use a series of cases, articles, exercises, guest speakers and online simulations. Cases will be drawn from both product and service operations. Emphasis will be placed on hands-on learning where possible, and case analyses and recommendations will focus on practical, action-oriented management steps to achieve desired outcomes, using evidence available. Two written case analyses will be completed during the term.

To practice the application of concepts discussed in this course, you will conduct a process analysis and design project in a real-world setting. Groups of students will form teams, and then choose an organization and a work process to focus on within that organization. Through direct observations and interviews, student teams will map out their chosen work process. They will then analyze the work process, assessing how efficiently resources are used, and how effectively the process works for customers. Teams will make recommendations for process

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1 Portions of this syllabus are adapted by permission from a previous course by Heller Professor Jody Hoffer Gittell.
improvement, with specific actions and expected outcomes as a result of those changes. In-class team presentations and a final report will complete the deliverables.

Class participation is essential for this course so that we can take advantage of the experience and insights of class members. We want to explore how, why, and under what circumstances various approaches to operations management are effective or ineffective. Students’ previous experiences, both positive and negative, are a valuable source of data for this learning. Class participation also gives students the opportunity to develop an important management skill – articulating a point of view to one’s colleagues for the purpose of learning and decision-making.

**Course Objectives:** At the completion of this course you should be able to:

- Understand the different functions within operations, and evaluate how effectively those elements are designed and integrated within specific operational systems
- Analyze and assess the performance of production and delivery processes in operations, and be able to describe the unique characteristics of service operations
- Conduct a process review, diagnose problems in an operations environment, and formulate solutions for improvement using quantitative analysis
- Apply quality management concepts and tools to a variety of operations
- Describe how operations activities relate to other functional areas, and to the overall strategy, in an enterprise

**Course Requirements:** You must demonstrate the ability to apply concepts and techniques for designing, analyzing and improving operations. Performance will be assessed as shown below (with due dates):

<table>
<thead>
<tr>
<th>Two Written Case Analyses</th>
<th>20 points each x 2 = 40 points</th>
<th>First case due Feb. 26th and second due April 8th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Process Analysis Project</td>
<td>30 points</td>
<td>Paper and slides due Apr. 21st</td>
</tr>
<tr>
<td>Class Participation</td>
<td>30 points</td>
<td>All sessions but the first and last</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100 points</strong></td>
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</tbody>
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You are expected to be proficient in the use of Microsoft Excel for quantitative analysis, PowerPoint for presentations, and Word (or equivalent software) for written work.

**Case Analyses.** You will be asked to submit written analyses of two specific cases during the semester. Case analyses are due at the beginning of the class in which the case will be discussed. You will be asked to take the role of a protagonist in each case. The assignment will specify the management questions to be addressed. Each case write-up will be a 2 to 3-page business memo, summarizing the findings from your analysis, choices facing the organization, and your specific, practical recommendations for action on the issues involved. Citations to reference material should be integrated into the text of your memo in the way you would do so in an organizational setting. This includes references to material from books, articles, and internet sources. A full set of citations should be included on a separate page at the end and is not part of page count.

The rubric for grading a case analysis is as follows:

- **Summary of findings:** 30%
- **Analysis of choices facing the organization (using course concepts):** 40%
- **Specific practice recommendations:** 20%
- **Creativity and innovation in the analysis:** 10%

**Total:** 100% or 20 points
**Class Participation.** Class participation grades reflect my assessment of your total contribution to the learning environment. This reflects not only the frequency of your contributions in class, but also their quality (ability to draw on course materials and your own experience productively, ability to advance or sharpen in-class discussion and debate, willingness to take risky or unpopular points of view, use of logic, precision and evidence in making arguments), and the professionalism of your conduct (attendance, punctuality, preparedness, and showing respect to all class members and their class contributions).

**Attendance.** You are expected to attend all classes and be punctual for class start times. If you cannot be present or will be late or need to leave early, please notify me in writing as soon as possible. Missing more than two classes will affect your participation grade. If you are absent for any reason, you can submit a case or readings analysis for the class you missed, or you will get a zero for participation for that class session. These will be graded in the same way as the two assigned case analyses.

**Process Analysis Team Project.** You will be asked to form a team of 4 to 5 students in the second week of the term. Your team will choose one particular work process in an organization you have access to and can directly observe the operational activities. You will map the process using a work flow diagram or value stream map, analyze it, and provide recommendations for improving it, as well as provide anticipated costs and benefits resulting from those actions.

Half-way through the term you will be paired with a team working in a similar sector to compare/contrast the findings. The final written report and the final presentations will be by the combined teams.

You will be expected to utilize whatever concepts, tools and techniques from the course are relevant to that specific situation when making your analysis and recommendations. Your proposal is due **February 5**th and you will be paired with another team on **March 4**th. Your combined presentation will be given to the class on **April 21**st.

Your projects will be evaluated based on how well you observe and analyze the two work processes, how insightful your recommendations are for improving the two process, how effectively they are linked to your analysis, and how well you present your findings and recommendations.

Presentations are limited to no more than 10 powerpoint slides (not counting the cover slide) and should inform the class on each project (4 slides each), as well as the lessons from comparing and contrasting them (2 slides). Citations to reference material should be integrated into the text of your analysis in the way you would do so in an organizational setting. This includes references to material from books, articles, and internet sources. A full set of citations should be included on a separate page at the end as part of academic integrity and is not part of page count.

The rubric for grading the process analysis is as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work flow diagrams or value stream maps</td>
<td>30%</td>
</tr>
<tr>
<td>Analysis of the operations (using course concepts)</td>
<td>40%</td>
</tr>
<tr>
<td>Specific improvement recommendations</td>
<td>20%</td>
</tr>
<tr>
<td>Creativity and innovation in the analysis</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>100% or 30 points</strong></td>
</tr>
</tbody>
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Course Reading:


Additionally, we will use cases, articles and online simulations from Harvard Business School Publishing (HBSP), as well as monographs and cases posted on LATTE by permission from other sources. You will need to create an account with HBSP and then to purchase the required Course Pack online established for this course.

Provisions for Feedback: Case analyses will normally be returned 7 to 10 days after they are submitted to me. Class participation grades and Team Process Analysis Project grades will be given at the end of the semester. I may provide interim feedback on class participation during the course of the term and I will seek class feedback on our shared learning process.

Academic Integrity: Academic integrity is central to the mission of educational excellence at Brandeis University. Each student is expected to turn in work completed independently, except when assignments specifically authorize collaborative effort. It is not acceptable to use the words or ideas of another person – be it a world-class philosopher or your project partner – without proper acknowledgement of that source. This means that you must use footnotes or other appropriate citations and quotation marks to indicate the sources of any phrases, sentences, paragraphs or ideas found in published books, articles, material on the internet, or the ideas of another student.

Violations of university policies on academic integrity, described in Section 3 of *Rights and Responsibilities*, may result in failure in the course or on the assignment, and could end in suspension from the University. If you are in doubt about the instructions for any assignment in this course, you must ask for clarification.

Notice: If you have a documented disability and require any accommodations, please bring them to my attention prior to the second meeting of the class. If you have any questions about learning or other disabilities, contact Mary Brooks, Disabilities Coordinator for The Heller School at maryeliz@brandeis.edu, room 106 or at x62816.
COURSE OVERVIEW

Part I. Introduction
Session 1  January 15 – Course Introduction and the Operations Mindset

Part II. Process Flow
Session 2  January 22 – Process Fundamentals
Session 3  January 29 – Capacity, Demand, Work Flow Diagrams, and Value Stream Mapping
Session 4  February 5 – Process Flow and Inventory Analysis in Service Operations

Part III. Process Improvement
Session 5  February 12 – Quality Principles, Statistical Process Control and Six Sigma
          February 19 – No Class (Mid-Term Recess)
Session 6  February 26 – Continuous Process Improvement (Kaizen) and DMAIC
Session 7  March 4 – Policy Deployment (Hoshin Konri) and Performance Metrics

Part IV. Systems Operations
Session 8  March 11 – Cross-Functional Coordination Enabling Operations
Session 9  March 18 – Supply Chain Management
          March 25 – No Class (March Recess)
Session 10  April 1 – Operations in Developing Countries and in Service Mission-Driven Organizations

Part V. New Frontiers
Session 11  April 8 – Supply, Demand, and Data Analytics
Session 12  April 15 – Integrated Operating Systems and Transformation

Part VI. Conclusion
Session 13  April 21 (Thursday) – Project Presentations and Course Summary
**Course Schedule**

**Part I. Introduction**

**Session 1**  January 15 – Course Introduction and the Operations Mindset

*Motivating Questions:* Who is in the class? What are our shared learning objectives? How is this course organized? What are the expectations and deliverables? What is the case method for learning? What is an operations mindset?

*Preparation Assignment:* Pick an organization in which you have worked or with which you are very familiar. Focus in on a work process and, on a single slide (PowerPoint or otherwise), specify the following:

- The value proposition for a key customer, client, or stakeholder
- The steps in the work flow associated with delivering on the value proposition
- The metrics used to measure success

*Please bring a printed copy of your slide to class – with your name on it.*

*In-Class Simulation:* Tinker toy tower construction exercise

**Part II. Process Flow**

**Session 2**  January 22 – Process Fundamentals

*Motivating Questions:* What is operations management? How do we look at and analyze processes? What are the key elements and concepts? How do you analyze the capacity of a process? What are typical management issues related to providing sufficient capacity cost-effectively?

*Required Readings:*

- Process Fundamentals, HBSP
- Capacity Analysis: Sample Problems, HBSP
- George, Michael L. (2005) *The Lean Six Sigma Pocket Toolbook* –Chapter 4: Voice of the customer

*Required Cases to Read and Prepare for Discussion:*

- University Bookstore
- Sportswear case

*Recommended Readings:*

- Note on the Management of Queues, David Maister, HBSP
- Note on Managing Process Flows, HBSP

**Session 3**  January 29 – Capacity, Demand, Work Flow Diagrams, and Value Stream Mapping

*Motivating Questions:* How do we plan for and effectively deliver products and services to meet variable demands?
Required cases to read and prepare for discussion:
Sof-Optics case, HBSP
Donner Company case, HBSP

Required Readings:
George, Michael L. (2005) The Lean Six Sigma Pocket Toolbook –Chapter 3: Value stream mapping and process flow tools

Recommended Readings:
Graban, Mark (2012) Lean Hospitals, Chapter 4: Observing the Process and Value Streams

Comments: In this session we will examine two cases that highlight the importance of operational effectiveness on the performance of the firm. Analyzing process flows and revising operating parameters, whether related to customer service functions (Sof-Optics) or production processes (Donner), are fundamental skills needed in operations management. Process mapping and value stream mapping tools and methods will be introduced.

Note: The Team Process Analysis Project will be discussed.

Session 4  February 5 – Process Flow and Inventory Analysis in Service Operations

Motivating Questions: How is the design of physical facilities, deployment of people resources, operating procedures, and variability relevant to operational systems and overall performance?)

Required Readings:
Breaking the Trade-Off Between Efficiency and Service, Frances Frei, HBSP

In-Class Online Simulation:
Operations Management Simulation: Benihana V2, HBSP

Recommended Readings:
Graban, Mark (2012) Lean Hospitals, Chapter 9: Improving Flow

Comments: This session brings together most of the major forces affecting operations. Students will run the Benihana simulation in class to experience the interplay of design, operating rules, demand variability, and other factors in a restaurant operation.

Part III. Process Improvement

Session 5  February 12 – Quality Principles, Statistical Process Control and Six Sigma

Motivating Questions: What is Quality Management? What are the fundamental elements of Process Improvement? What is the history, how did these philosophies and techniques develop? What is Lean? Six Sigma? How do these concepts relate to each
other? What does any of this have to do with the design and delivery of healthcare or other services?

**Required Readings:**
George, Michael L. (2005) *The Lean Six Sigma Pocket Toolbook* – Chapter 1: Using DMAIC to improve speed, quality, and cost

**Recommended Readings:**
Graban, Mark (2012) *Lean Hospitals*, Chapter 5: Standardized Work as a Foundation of Lean

**February 19 – No Class (Mid-Term Recess)**

**Session 6**
**February 26 – Continuous Process Improvement (Kaizen) and DMAIC**

**Motivating Questions:** What is the Toyota Production System — TPS — and why is it important? How do we apply the Lea philosophy in both manufacturing and service operations?

**Required Readings:**
George, Michael L. (2005) *The Lean Six Sigma Pocket Toolbook* –Chapter 5: Data collection
George, Michael L. (2005) *The Lean Six Sigma Pocket Toolbook* –Chapter 6: Descriptive statistics and data displays
*Decoding the DNA of the Toyota Production System*, HBSP

**Required Cases to Read and Prepare for Discussion:**
*Cincinnati Children’s Hospital Medical Center*, HBSP

**Recommended Readings:**
*How to Change a Culture: Lessons From NUMMI*, HBSP
*Fixing Health Care from the Inside*, HBSP

**Assignment:** between Feb. 26 and March 4, watch this DVD:
GBMP DVD: Toast Kaizen Value Stream Mapping. Instructions will be available on LATTE. Watch Parts 1 & 2.

**Written Case Assignment:**
*Operations Management Exercise: System Utilization in Service Management (Roy Shapiro), HBSP*

*Note:* The Written Case Analysis is due.

**Session 7**
March 4 – Policy Deployment (Hoshin Konri) and Performance Metrics

**Motivating Questions:** What Key Performance Indicators (KPIs) lead and lag process improvement? How are performance metrics aligned at all levels in an organization? What performance metrics are particularly relevant for different types of service organizations? What are the limits of performance metrics as a guide for process improvement?

**Required Readings:**
George, Michael L. (2005) *The Lean Six Sigma Pocket Toolbook* – Chapter 7: Variation analysis
George, Michael L. (2005) *The Lean Six Sigma Pocket Toolbook* – Chapter 8: Identifying and verifying causes

**Recommended Readings:**

**In-Class Simulation:**
Deming’s red bead experiment

*Note:* The Team Process Analysis Project teams will be paired.

**Part IV. Systems Operations**

**Session 8**
March 11 – Cross-Functional Coordination Enabling Operations

**Motivating Questions:** What kinds of activities must operations managers coordinate to ensure effective performance of the entire system? In what ways do they orchestrate the variety of activities needed to deliver products or services, both inside and outside their organizations?

**Required Readings:**
Coordination: *An Overview*, HBSP

**Required Cases to Read and Prepare for Discussion:**
*MGH PATA*, available on LATTE
Southwest Airlines: In a Different World case, HBSP

Comments: Coordination is one of the fundamental roles in operations management. This session explores aspects of Coordination and builds on process analysis and improvement work. Students will examine a case about Southwest Airlines regarding its entry into LaGuardia Airport in NYC and the strategic implications of that move for its entire operations.

Session 9  March 18 – Supply Chain Management

Motivating Questions: What is Supply Chain Management? What are the key elements? What about forecasting, balancing supply and demand?

Required Readings:
George, Michael L. (2005) The Lean Six Sigma Pocket Toolbook –Chapter 9: Reducing lead time and non-value add cost
Supply Chain Management article on LATTE

Required Cases to Read and Prepare for Discussion:
Triple-A Supply Chain, HBSP

Recommended Readings:
Making Supply Meet Demand in an Uncertain World, HBSP
Power of Virtual Integration: An Interview with Michael Dell
What Is the Right Supply Chain for Your Products? HBSP

In Class Online Simulation: Root Beer Game, HBSP.

March 25 – No Class (March Recess)

Session 10  April 1 – Operations in in Developing Countries Service Mission-Driven Organizations
(How do operations within not-for-profit organizations differ from the for-profit sector? What are the additional complexities associated with NGOs and operations in developing countries?)

Required Cases to Read and Prepare for Discussion:
Pediatric Orthopedic Clinic at the Children’s Hospital of Western Ontario (Robert Klassen, Kellie Leitch, Manpreet Hora), HBSP
VidaGas: VillageReach - The Mozambican Foundation for Community Development Joint Venture, HBSP

Recommended Readings:
Graban, Mark (2012) Lean Hospitals, Chapter 8: Preventing Errors and Harm

Special guests: Bart Metzger, UMass Memorial Health Care, & Janet Wilder, SHARE

Special Focus: The Honey Bee Network

Comments: This session uses the VidaGas case to explore the unique characteristics of not-for-profit operations in developing countries.
Part V. New Frontiers

Session 11  April 8 – Supply, Demand, and Data Analytics

Motivating Questions: How to major shifts in supply and demand impact operations management? In what was are new forms of data analytics changing operations management?

Required Readings:
George, Michael L. (2005) The Lean Six Sigma Pocket Toolbook –Chapter 10: Complexity value stream mapping and complexity analysis
George, Michael L. (2005) The Lean Six Sigma Pocket Toolbook –Chapter 11: Selecting and testing solutions

Cases to Read and Prepare for Discussion:
Putting the Service-Profit Chain to Work, HBSP
Focused Factory, HBSP

Note: Students will apply these concepts in an analysis and written assignment of the FoldRite case, involving production planning activities to meet a surge in demand. Integration with the business strategy, and making decisions in the face of economic and market uncertainty are two of the important factors students will need to consider.

Written Case Assignment:
FoldRite Furniture Co. case, HBSP

Comments: Coordination is also critical for effective Supply Chain management. It includes planning and scheduling functions, as well as processes developed to deal with uncertain events as they affect operations. New forms of data analytics are relevant across diverse organizational settings and are advancing the frontier for operations management.

A portion of class time will also be available for students to work on their Team Process Analysis projects.

Session 12  April 15 – Integrated Operating Systems and Transformation

Motivating Questions: How do integrated operating assumptions provide a window into operating systems? What is involved in changing operating assumptions? How do pivotal events add up to a transformation in operating systems?

Required Readings:
Cambridge, MA: MIT Press – Chapter 8: Integrated Operating Systems

Recommended Readings:
Graban, Mark (2012) Lean Hospitals, Chapter 11: Getting Started with Lean
Graban, Mark (2012) Lean Hospitals, Chapter 12: A Vision for a Lean Hospital
Part VI. Conclusions

Session 13  April 21 (Thursday) – Project Presentations and Course Summary

Each of the Pairs of Teams will present both of their Process Analysis & Improvement Projects in class (as a combined presentation).

The two teams should prepare a joint Powerpoint presentation with no more than 4 slides each and no more than 2 integrative slides, for a total of 10 slides (not counting the cover slide). The joint presentation should be no more than 10 minutes and all team members should present some part of the material.

The due date for the powerpoint presentation component of this assignment is noon April 20th (Wednesday) and the paper component is due at noon on April 21st (Thursday, which is our last class). **Please note that late submissions will incur a grade point penalty.** Please upload your paper and Powerpoint presentation via the Latte collector.
Emergency Response Recommendations

In any organization, safety is the number one consideration. The Department of Homeland Security recommends the following three responses to any emergency on campus: **RUN > HIDE > FIGHT**

**ONLY FOLLOW THESE ACTIONS IF SAFE TO DO SO.** When in doubt, follow your instincts—you are your own best advocate!

**RUN**

Action taken to leave an area for personal safety.
- Take the time now to learn the different ways to leave the building **BEFORE** there is an emergency.
- Evacuations are mandatory for fire alarms and when directed by authorities. **No exceptions!**
- Evacuate immediately. Pull manual fire alarm to prompt a response for others to evacuate.
- Take critical personal items only (keys, purse, and outerwear) and close doors behind you.
- Assist those who need help, but carefully consider whether you may put yourself at risk.
- Look for **EXIT** signs indicating potential egress/escape routes.
- If you are not able to evacuate, go to an Area of Rescue Assistance.
- Evacuate to Evacuation Assembly Area and remain until additional instructions are given.
- Alert authorities to those who may need assistance.
- Do not re-enter building until emergency response personnel indicate that it is safe to do so.

**ACTIVE THREAT:**
- If it is safe to do so run out of the building. Get as far away as possible.

**HIDE**

Action taken to seek immediate shelter indoors when emergency conditions do not warrant or allow evacuation, such as for severe weather.
- Take the time now to learn the different ways to seek shelter within your building **BEFORE** there is an emergency.
- If you are outside, proceed to the nearest protective building.
- If sheltering-in-place due to severe weather, proceed to the identified Storm Refuge Area or to the lowest, most interior area of the building away from windows or hazardous equipment or materials.

**ACTIVE THREAT:**
- Lock or barricade your area.
- Get to a place where the threat cannot see you.
- Place cell phones on **silent**.
- Do not make any noise.
- Do not come out until your are advised it is safe.

**FIGHT**

Action taken as a last resort to increase your odds for survival.

**ACTIVE THREAT:** If you cannot run away safely or cannot hide, **be prepared to fight with anything available to increase your odds for survival.**