

BA in Management Program
Spring 2017
OPIM 404 – Business Process Analysis & Design

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Course Content:

This course presents the concepts and tools required for analyzing and designing business processes. It emphasizes the process view of organizations and how to manage processes based on this view. Important process performance measures, process redesign and the associated organizational implications are discussed. Basics of event simulation are introduced to provide students with a strong process analysis methodology. Simulation software is utilized to provide students with hands on experience.

Course Objective:

A business process is a collection of activities that transform one or more kinds of input to an output (in terms of a specific service or product) that is of value to the customer. Since the 1990s, many organizations have adopted a process view in managing their business processes so as to drastically improve their performances on operations, finance and marketing. Hence in today's highly competitive world, organizations carefully analyze, document and monitor their business processes. The business processes are continuously assessed and improved in terms of their efficiencies and effectiveness to minimize cost and maximize value creation for customers. The main objective of this course is to provide a comprehensive understanding of a myriad of analytical tools that can be used to understand, analyze, model, design and redesign business processes.

The objectives of this course can be restated in detail as follows:

1. To develop an understanding of business processes and their design, and moreover their importance in overall business performance and firm's strategic positioning.
2. To exploit graphical tools for charting and describing business processes, which are extremely useful in analyzing existing processes.
3. To equip you with the skills to assess and improve business processes with regard to key performance measures.
4. To study the effect of variability in business processes by investigating safety inventory in make-to-stock environments and safety capacity in make-to-order environments.
5. To explore a simulation software to model and improve business processes.

6. To introduce statistical analysis tools required by simulation such as input data analysis, which is used in determining input data distributions, and output analysis, which is of particular importance in comparing the performance of alternative process designs.
7. To develop an understanding of the role of business process management in continuous improvement initiatives and furthermore, the role of change management and organizational culture in business process management.

Learning Outcomes:

Upon successful completion of the course, the student should be able to:

1. Document simple business processes in terms of activities involved, their interdependencies, the inputs used, the resources utilized and the output generated.
2. Assess the performance of a business process in terms of key performance measures.
3. Model a business process using a simulation software.
4. Diagnose problems and propose improvements for the analyzed business processes.
5. Demonstrate the effects of improvements in terms key performance measures using output analysis.
6. Develop analytical and critical thinking skills.

Course Material:

Textbook:

There is no textbook for this course.

Reading Assignments

In addition to this book, case studies, and some articles are used as real world examples of the topics to be discussed. The students are expected to read them before the corresponding week's lecture to actively get involved in the discussion. A significant portion of your attendance and participation grade will be given based demonstration of your understanding on the materials covered in the reading assignments.

The details on the reading assignments are provided in the detailed outline provided at the end of this syllabus.

Additional Reading Material:

E. M. Goldratt, and J. Cox, *The Goal: A Process of Ongoing Improvement*, 3rd Edition, 2004, North River Press, Croton-on-Hudson, New York, NY.

R. Anupindi, S. Chopra, S. D. Deshmukh, J. A. van Mieghem, and E. Zemel, *Managing Business Process Flows*, 2nd Edition, 2006, Pearson Education Inc, Upper Saddle River, NJ.

W.D. Kelton, R. P. Sadowski, and D. T. Sturrock, *Simulation with Arena*, 4th Edition, 2007, McGraw Hill, New York, NY.

E. Murman, , T. Allen, K. Bozdogan, J. Cutcher-Gershenfeld, H. McManus, D. Nightingale , E. Rebutisch, T. Shields, F. Stahl, M. Walton, J. Warmkessel, S. Weiss, S. Widnall, *Lean Enterprise Value*, 2002, Palgrave Macmillan New York, NY.

M. J. Rother, J. Shook, J. Womack, and D. Jones, *Learning to See*, 2003, Lean Enterprise Institute, Cambridge, MA.

J. Womack, D. T. Jones, and D. Roos, *The Machine That Changed the World*, 1991, Harper Collins, New York, NY.

J. P. Womack, and D. T. Jones. *Lean Thinking*, 2003, Simon and Schuster, New York, NY.

Case Studies:

There will be three case studies to be analyzed and prepared as a team. The teams should address the issues raised in the case questions and/or the questions posted by the instructor, clearly identify the problem, determine and apply the necessary tools for quantitative analysis. Teams can consist of 1-4 students. The details on the three cases are provided below:

Case 1	Date: 01 March 2017, Wednesday 23:55 Case: New Balance Athletic Shoe, Inc. Type: Harvard Business Publishing - Product Number: 606094-PDF-ENG Subject: Operations Strategy, Lean thinking, Toyota Production System Teamwork?: Yes (Team grading)
Case 2	Date: 22 March 2017, Wednesday 23:55 Case: CRU Computer Rentals Type: Harvard Business Publishing - Product Number: KEL017-PDF-ENG Subject: Process Analysis, Linking process flows with financial flows Teamwork?: Yes (Team grading)
Case 3	Date: 03 May 2017, Wednesday 23:55 Case: Massachusetts General Hospital's Pre-Admission Testing Area (PATA) Type: MIT Sloan LearningEdge Case Subject: Service Operations, Process-Flow Analysis, Process Variability Teamwork?: Yes (Team grading)

Computer Software:

For discrete event simulation, a both training/evaluation and full licensed version of Arena 11.0 are also available among the software provided by Sabancı University Information Technologies. The full version accommodates 20 floating licenses on the Sabancı University Network. When you are not connected to the Sabancı University Network Arena will open in the training/evaluation mode, which is pretty much sufficient for this course.

You will be provided guidance and support to install the required software on your laptops.

Course Web:

Course syllabus, lecture notes, in-class exercises as well as their solutions and your grades will be available in the form of documents, spreadsheets, and powerpoint slides on OPIM 404 SUCourse site.

The students can frequently visit the Announcements, Assignments, Learning Modules and Schedule components. The *Announcements* component of SUCourse will be actively used for sharing announcements. Each announcement put to SUCourse will be emailed to the students, thus the students are responsible for checking their emails and appropriately setting the emailing

options in their SUCourse account. The in-class exercises are to be downloaded and uploaded (and similarly some of the homework assignments and project reports are to be uploaded) via the *Assignments* component. The powerpoint presentations as well as the solutions of the in-class exercises and some miscellaneous links will be placed under *Learning Modules*. The students should check the *Schedule* section for the details on the weekly reading assignments.

Note that Sabanci University uses a very powerful web-based tool called *Turnitin* through SUCourse. Turnitin is the worldwide standard in online plagiarism prevention. It allows instructors to compare student papers against a database composed of millions of articles. Every assignment you submit might be scanned by Turnitin, and results might be reflected in your grades.

Instructional Design:

The course will be taught using a blend of lectures, in-class exercises, term project, serious games, case studies for case analysis and reading assignments of a book, case studies and articles that include real-life examples of the concepts learned in the class.

The full powerpoint slides prepared for each topic will be available to the students at the OPIM 404 SUCourse site after each topic is completely covered in the class. These slides form a basis for presenting the materials of each topic. Thus, additional points might be emphasized demanding students to take notes during the lectures.

Lectures are made interactive by in-class exercises that the students carryout either individually or in groups. These in-class exercises can be short quantitative problems or conceptual questions or performing simulations on Arena, which altogether enhance the learning process of the students by active participation. The in-class exercises' grading will be done in such a way that even if there are small mistakes or some incomplete work, the student gets most of the grade assigned to the exercise. This is because the in-class exercises are not meant to be quizzes but they are means of creating an interactive class where students get the opportunity to practice of the issues raised in the lecture. Hopefully, this will clarify what is learned and what is not learned to both the instructors and the students so that this quick feedback will enable better delivery of the course material.

There are also serious games to be played so as to provide hands-on experience with the associated topics. These are basically simulations of real-world situations and put the students in a managerial decision making position.

There are a number of reading assignments as well which aim to convey the practical issues that arise in real life practices and introduce relevant state-of-the-art issues which are currently not covered in textbooks.

For further details on the cases and term project please read the requirements section that is provided after the grading section.

Grading:

Attendance & Participation	: 10%
In-Class Exercises	: 20%
Case Studies (Teamwork)	: 15%
Term Project (Teamwork)	: 15%
Midterm Exam	: 20%
Final Exam	: 20%

Peer Evaluation in Teamwork

Students might be asked to provide an evaluation of the members of their team in the cases analysis, if a need for peer evaluation is claimed by the students. In such a case the details of the peer evaluation to be used is presented below.

Each student will divide 100 points between the members of her team, including him/herself. This division should reflect that person's judgment of the contribution of the members of her team. The scores should not be merely functions of time spent by each member, but they should be measures of the "contribution;" their relative contribution to the idea generation, research, analysis, writing, oral presentation, report writing, etc.

If the team was highly functional, and each member did what they committed themselves to, then the student can assign the same mark to each member of the team. If, on the other hand, some members of the team did not fulfill their commitments and did not contribute as much as the others, then points can be distributed unevenly.

The points submitted by all members of the team will be aggregated by the instructor. Every student will be given his/her aggregate peer evaluation, without disclosing the individual peer evaluations to the students. In case there is no consensus among the team, for example, if two students divide the marks evenly and the third one divides them unevenly, then the instructor will use his/her judgment to assign peer evaluation marks--possibly after meeting with the members of the team.

In cases where there are conflicting marks, it is most likely that the instructor will meet with the team members and provide a mark based on an interview. For example, in a group of four, if Students A and B believe they did most of the work, and Student C believes otherwise, the team may be called in for an interview in order to be fair to everyone.

Past experience indicates that in most groups points will be distributed evenly. There will be a few groups where peer evaluations will play a role in the marks. The primary goal of this exercise is to avoid giving undeserved credit to individuals who did not help their teams. However, it is possible to have upwards adjustments of marks in case of students who have done more than what the group expected of them.

The peer evaluation will have a direct impact on your case analysis grades. To give a simple example, if the group mark is 30 out of 33.3, and if your peer evaluation indicates that your contribution was less than what was expected, then your case analysis grade mark will be less than 30 out of 33.3. There are no simple rules for adjustment.

Requirements:

There are seven main requirements of the course: Attendance & participation, in-class exercises, case studies, term project, the goal book write-up, midterm examination and final examination.

Attendance & Participation

Class attendance includes being in the class **on-time in each session**. It also **includes getting involved in the learning process** during class hours without distracting yourself or your classmates by activities such as having conversations, using your cell phones, tablets or laptops.

Participation requires contributing to class discussions positively and regularly, and asking questions which cannot be possible without due preparation. Reading the material to be covered and working out the required analysis will prepare you for each class session. Being kind, courteous and professional to both your instructor and your fellow classmates is an important part of positive contributions.

In-Class Exercises

In-class exercises will be assigned during class hours. They may be group or individual exercises. These will be completed during class and submitted at the end of the class hour. Still very few of them might be started in-class and submitted afterwards at the times to be announced by your instructor. You are expected to work on the assigned exercises by communicating with both your classmates and the instructor. Although these in-class exercises will be graded, they are not quizzes but means to learn the topics actively during class hours.

Case Studies

Case studies will be occasionally assigned and students will be expected to carry out the required work in teams of 1-4 students. The teams should work to address the issues raised in the case, clearly identify the problems to be studied, determine and apply the necessary tools for quantitative analysis.

A case report will be prepared for each case explaining the approach taken by the team to handle the situation, the results of their analysis, and the solution suggestions.

If you want to help a fellow team, discuss your approach to the case but do not give your file. To reemphasize this point, the teams can talk to each other about how they tackle the case study, but they should work on it as separate teams. More specifically, since most of the case studies are going to be delivered as a computer file (sometimes in MS Word or MS Excel or Visio but mostly in ARENA), students should not give their own files to others even if the intention is to give a hint or answer a specific question. It is very tempting for the receiving team to submit that file as his/her own and that would clearly be cheating; in that case both teams would be held responsible not just the receiving one.

Term Project

The term project involves analyzing, modeling and simulating a real life business process problem. The term project will be done in teams and the steps of the different phases will be announced in class and posted on SUCourse Schedule. You will present your projects in class and you will also submit a term project report.

Midterm and Final Exams

There will be a **midterm and a final examination**. All exams are in class and not comprehensive. The exams will be composed of three parts. The first part includes multiple choice and true or false type of questions. The second part of the exam consists of short essay questions. The third part of the exam contains questions involving quantitative analysis. The first two parts of the exam are closed book (closed notes) and the third part of the exam is open book (open notes). Additional details on these two exams will be posted as an announcement on SUcourse 4-5 days before each exam. Students are expected to follow these announcements. **You are expected to bring your own scientific calculator and laptop for each exam.**

The final exam will be during the final weeks and will be centrally determined and announced by the Student Resources. Please note that early final exams will not be given.

There will be **no makeup exam for the midterm**. If you miss the midterm in the case of plausible excused absences (for health reasons, etc.), **which must be documented**, your final exam grade will also be used as your midterm exam grade.

Makeup exam for the final exam may only be given in the case of excused absences (for health reasons, etc.), which must be documented. The makeup for the final exam will be scheduled and announced once the final exams at undergraduate level are completed. This makeup exam will cover the topics of the final exam, however, it may include only two parts (first part consisting of short essay questions (closed book and notes) and second part containing questions involving quantitative analysis (open book and notes)).

Academic Honesty:

Learning is enhanced through cooperation and as such you are encouraged to work in groups, ask for and give help freely in all appropriate settings. At the same time, as a matter of personal integrity, you should only represent your own work as yours. Any work that is submitted to be evaluated in this class should be an original piece of writing, presenting your ideas in your own words. Everything you borrow from books, articles, or web sites (including those in the

syllabus) should be properly cited. Although you are encouraged to discuss your ideas with others (including your friends in the class), it is important that you do not share your writing (slides, MS Excel files, reports, etc.) with anyone. Using ideas, text and other intellectual property developed by someone else while claiming it is your original work is *plagiarism*. Copying from others or providing answers or information, written or oral, to others is *cheating*. Unauthorized help from another person or having someone else write one's paper or assignment is *collusion*. Cheating, plagiarism and collusion are serious offenses that could result in an F grade and disciplinary action.

Specific to this course, it is important to know that submitting a computer file (e.g. Excel workbook) prepared by someone else, *even partially*, is cheating. You may talk to others about assignments but in the end you should be doing all the work. It is important that you do not share your solutions as Excel files with anyone until it has been graded. Sharing your file with others could easily tempt them to submit part or all of it as their own. This would be cheating and in most cases easy to detect. Once you share your file with someone, it could easily be forwarded to a lot of students and some of whom could cheat or plagiarize. Plagiarism is a very serious misdeed that can result in a reduced grade or an F (for the assignment and/or the course). Please pay utmost attention to avoid such accusation.

Classroom Policies and Conduct:

Sabancı BAMAN Undergraduate Program **values participatory learning**. Establishing the necessary social order for **a participatory learning environment requires that we all:**

- Start each fifty minute class session on time.
 - This involves coming to each class on time.
 - Late entries to the class are unfortunately not allowed.
 - This also requires careful scheduling and execution of your activities during the break.
- Turn off all cell phones, tablets, laptops or other electronic devices unless they are used as part of the lecture.
- Do not leave and re-enter the class during each fifty minute long lecture. For exceptions on emergency and health related excuses, please silently signal and get the consent of the instructor.
- Do not read anything in print or on the electronic devices other than the class material.
- Come prepared to make helpful comments and ask questions that facilitate your own understanding and that of your classmates. This requires that you complete the assigned readings for each session before class starts.
- Listen to the person who has the floor. During class hours avoid unnecessary conversations.
- **Laptop policy:** You will be expected to bring your laptop and be ready to use it for those class periods noted in the course schedule below. Usage of the laptop must conform to the provisions of this course as laid out in this syllabus. If you use your laptop during class, it is only to be used for class activities such as performing necessary calculations on a spreadsheet. You are not to connect the laptop to the network and should not be doing any non-class activities during class time. Laptop usage may be forbidden if it is abused or if it distracts the professor or other students.

Course Schedule:

Week 1	Dates: 09 February 2017, Thursday
	Topics: Business Processes, Business Process Reengineering, Six Sigma
	Recommended Reading: Garanti Bank: Transformation in Turkey – HBS: 300114-PDF-ENG Reengineering Work: Don't Automate, Obliterate by M. Hammer Harvard Business Review, July-August 1990, 104-112.
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Week 2	Dates: 16 February 2017, Thursday
	Topics: Systems and Processes, Process View, Process Modeling
	Requirement: Reading 1: Stable Yourself to an Order by B.P. Shapiro, V.K. Rangan, J.J. Sviokla, Harvard Business Review, 1992, 70 (4), 113-122.
	Recommended Reading: Types of Processes – HBS: 682008-PDF-ENG
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Week 3	Dates: 23 February 2017, Thursday
	Topic: Lean Thinking
	Requirement: Reading 2: Decoding DNA of Toyota Production Systems by S. Spear and H. K. Bowen, Harvard Business Review, 1999, 77, 97-106. Start working on Case 1 – New Balance Athletic Shoe, Inc. due March 01, 2017.
	Recommended Reading: Toyota Motor Manufacturing, USA Inc. – HBS: 693019-PDF-ENG Lean at Wipro Technologies – HBS: 607032-PDF-ENG Mercadona – HBS: 610089-PDF-ENG
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Week 4	Dates: 02 March 2017, Thursday
	Topics: Analyzing Business Processes Using Value Stream Mapping What is Simulation?
	Requirements: Keep working on Case 1 – New Balance Athletic Shoe, Inc. due March 01, 2017. Bring your laptop
	Recommended Reading: What Really Happened to Toyota by R. E. Cole, MIT Sloan Management Review, 52, 29-36. Virginia Mason Medical Center – HBS: 606044-PDF-ENG
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Week 5	Dates: 09 March 2017, Thursday
	Topic: Analyzing Business Process Flows Introduction to Simulation with Arena
	Requirements: Bring your laptop
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Week 6	Dates: 16 March 2017, Thursday
	Topics: Analyzing Business Process Flows (Continued) Introduction to Simulation with Arena (Continued)
	Requirements: Reading 3: “Don't Tweak Your Supply Chain--Rethink It End to End” by H. L. Lee, Harvard Business Review, 2010, 88 (10), 62-69. Bring your laptop to class Start working on Case 2 – CRU Computer Rentals due March 22, 2017.
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Week 7	Dates: 23 March 2017, Thursday
	Topics: Analyzing Business Process Flows (Continued) Introduction to Simulation with Arena (Continued)
	Requirements: Bring your laptop to class Reading 4: Making Supply Meet Demand in an Uncertain World by M.L. Fisher, J.H. Hammond, W.R. Obermeyer and A. Raman, Harvard Business Review, May-June 1994, 83-93. Keep working on Case 2 – CRU Computer Rentals due March 22, 2017 .
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Week 8	Dates: 30 March 2017, Thursday
	Topics: Process Variability Input Analysis - Specifying Simulation Parameters & Distributions
	Requirements: Bring your laptop to class
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Midterm Exam	Date and place to be announced. Note that the exam can be on a Saturday too.
	Requirements: All topics covered in weeks 1-7 or 1-8 depending on the exam date.

Week 9	Dates: 13 April 2017, Thursday
	Topics: Process Variability (Continued) Managing Service Operations
	Requirements: Bring your laptop to class
Recommended Readings:	Work for the midterm exam on April 01, 2017 Wednesday. The Psychology of Waiting Lines, by D. H. Maister, in <i>The Service Encounter</i> , 2005, J. D. Czepiel, M. R. Solomon, and C. F. Surprenant, eds. Lexington, MA: Lexington Books, 113-124. Sof-Optics, Inc (A) – HBS: 681052-PDF-ENG
Week 10	Dates: 20 April 2017, Thursday
	Topics: Improving Manufacturing Processes Modeling Detailed Manufacturing Operations with Arena
	Requirements: Bring your laptop to class
Week 11	Dates: 27 April 2017, Thursday
	Topics: Improving Manufacturing Processes (Continued) Modeling Detailed Manufacturing Operations with Arena (Continued) Statistical Analysis of Output from Terminating Simulations
	Requirements: Reading 5: Big Data: The Management Revolution by A. McAfee and E. Brynjolfsson, 2012, Harvard Business Review, 90 (10), 60-66. Bring your laptop to class Start working on Case 3 – Massachusetts General Hospital's Pre-Admission Testing Area (PATA) due May 03, 2017.
Week 12	Dates: 04 April 2017, Thursday
	Topics: Improving Service Operations Statistical Analysis of Output from Terminating Simulations
	Requirements: Bring your laptop to class Reading 6: Breaking the Trade-off Between Efficiency and Service by F. X. Frei, 2006, Harvard Business Review, 84 (11), 92-101. Keep working on Case 3 – Massachusetts General Hospital's Pre-Admission Testing Area (PATA) due May 03, 2017.
Week 13	Dates: 11 May 2017, Thursday
	Topics: Improving Service Operations (Continued) Comparing Two Scenarios in Arena Output Analyzer
	Requirements: Bring your laptop to class Work on your term project due May 18, 2017 Friday 23:55.
Week 14	Dates: 18 May 2017, Thursday
	Topics: Project Presentations
	Requirements: Keep working on your term project due May 18, 2017 Friday 23:55.
	Final Exam Date and place to be announced by Student Resources
	Requirements: All topics covered in weeks 7-13 or 8-13 depending on the midterm exam's topics. Questions from your term project might also be asked.