Course Overview:

INTRODUCTION

Operations management is a central field in virtually every modern business organization, in the manufacturing as well as in the service sector. Clearly, the acquisition of excellence in the design and management of processes a prerequisite for obtaining cost efficiency. Furthermore, the increasing level of competitiveness in today’s markets, the raising environmental concerns and the emergence of phenomena such as outsourcing and offshoring make operational excellence very difficult to achieve and imitate. This competence becomes therefore a source of competitive advantage and long-term driver of profitability.

The concepts covered in the course are relevant to organizations that operate in a wide range of sectors. Understanding the mechanisms that enable firms to achieve operational excellence is a fundamental need for organizations that strive to improve their internal operations both in the manufacturing and in the service sector. It is also a key competence for consulting companies that are called to analyse and streamline the processes of their clients. Finally, understanding operations is also important for many financial firms that often need to assess the value of a business based on the quality of its operations. Accordingly, operations management is a fundamental discipline both for students who envisage a career in industry, as well as for those who have interests in the consulting or in the financial sectors.

The course has the following objectives: i) to provide a general introduction to the field and to show how it is central to most managerial situations; ii) to develop an awareness of the principal operational issues that arise in all businesses and to provide students with a set of instruments that will enable them to successfully address these issues and - ultimately, iii) to demonstrate how excellence in designing and managing operations is a primary driver of business success. Accordingly, the course will provide the basic terminology, concepts and tools for describing, analysing and improving business processes. It will also provide fundamental knowledge on operations strategy and process analysis and generate insights on how data and managerial opinions can be effectively used for analysing and solving complex business cases.

As a holistic approach is a necessary condition to successfully manage operations, throughout the course you will have the opportunity to observe the problems on hand from many different perspectives corresponding to different roles in a business organization. Accordingly, in different sessions you will be encouraged to wear different hats: from that of a COO who deals with the complexity of the whole system to that of a CIO who needs to select the most appropriate technology to support operations, to that of project manager who needs to meet specific project deadlines and target budgets.
Needless to say, 10 sessions are too limited a time to cover in an exhaustive and comprehensive fashion all the topics we plan to address. You are therefore asked to consider this course for what it truly is: a general introduction to the field of operations management; an opening of windows that identifies sources of knowledge that you will eventually exploit to acquire further and more specific competences throughout your future career.

**Learning Objectives:**

The course has several pedagogical objectives.

The first objective is to understand the importance of processes in modern organizations. A process is a set of functions or activities that contribute to delivering products and services in order to meet the customer's needs. A process is where the input-to-output transformation occurs in either manufacturing or service environments. Therefore, a process is what adds value.

A second learning objective is to understand how and when operational excellence can contribute to the achievement of competitive advantage. At the end of the course you should be able to understand how organizations, through the transformation of inputs into outputs, create superior value to customers and build competitive advantage.

A third learning objective is the acquisition of a set of key instruments you can use as a manager to control and improve operations. Besides illustrating the underlying principles of these tools, we will challenge your managerial skills and ask you to apply them in real settings.

At the end of each session (especially the sessions that illustrate the use of a quantitative technique) you should be able to:
- master the basic methodological instruments presented;
- understand the main domain of application for the technique learned, identify its strengths and be aware of its limitations and possible caveats;
- analyse in a critical fashion the application of the technique in different business settings (manufacturing, services etc…).

The course is subdivided into four broad thematic areas:
- analyzing and improving processes: (sessions 1-3)
- leveraging technology to promote operational excellence (sessions 4-6)
- managing supply chains (session 7-9)
- service operations (session 10)

In order to highlight the challenges associated with real operations and to help you apply to a practical case the concepts learned in class, the course includes a practical exercise (the Littlefield simulation) in which you will be asked to team up with your colleagues and run a virtual factory for two weeks, possibly outperforming the other teams. **Each team must be composed of four members from the same stream.** In order to be able to participate in the game you MUST form a team before the beginning of week 3.

For all teams involved the simulation will most likely start in week 3 (Tuesday April 22 at 19:00) and it will end in week 5 after 2 weeks of operations. These dates may be subject to changes and will be confirmed in due course by the instructor. More precise details on the
game and a final schedule for its administration will be communicated in class as the course proceeds.

Finally in the “European field trip” we will visit the operations of a company outside the UK. You will have the opportunity to observe how the concepts and frameworks discussed in class are applied in real operational settings. Further details about the field trip will be provided by the MBA office.

Readings
The package contains both required and optional readings. You are not required to complete optional readings before coming to class. However, you are advised to review this material after each session to improve your understanding of the topics addressed and to develop additional insights. Whenever necessary, additional material will be posted on-line as the course proceeds.

Textbook
The main reference textbook for this course is:

For a more detailed analysis of some topics you can also consult the following textbook (on reserve in the library):
- Hopp and Spearman: Factory Physics. 2nd edition. Irwin / McGraw-Hill (focused mainly on manufacturing operations);

### Summary of Cases

<table>
<thead>
<tr>
<th>Session Number</th>
<th>Case Name</th>
<th>Date of Issue</th>
<th>Country Setting</th>
<th>Industry</th>
<th>Nationality of Firm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Benihana</td>
<td>2004</td>
<td>U.S.</td>
<td>Food</td>
<td>U.S.</td>
</tr>
<tr>
<td>2</td>
<td>Toyota</td>
<td>1992</td>
<td>U.S. / Int'l</td>
<td>Automotive</td>
<td>Japan, Int'l</td>
</tr>
<tr>
<td>3</td>
<td>DAV</td>
<td>1996</td>
<td>Germany</td>
<td>Insurance</td>
<td>Germany</td>
</tr>
<tr>
<td>4</td>
<td>Esterline Technologies</td>
<td>2006</td>
<td>US</td>
<td>Aerospace</td>
<td>US</td>
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<tr>
<td>5</td>
<td>M&amp;S and Zara</td>
<td>2002</td>
<td>Int'l</td>
<td>Apparel</td>
<td>U.K.</td>
</tr>
<tr>
<td>6</td>
<td>Team New Zealand</td>
<td>1997</td>
<td>NZ / Int'l</td>
<td>Shipbuilding</td>
<td>Spain</td>
</tr>
<tr>
<td>7</td>
<td>Tork Corporation</td>
<td>2005</td>
<td>International</td>
<td>Consumer Durables</td>
<td>New Zealand</td>
</tr>
<tr>
<td>8</td>
<td>The Co-operative group –</td>
<td>2004</td>
<td>International</td>
<td>Food</td>
<td>USA</td>
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<td></td>
<td>Fairtrade chocolate</td>
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<td>UK</td>
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### Assessment
The learning occurred in the course will be assessed by means of three main instruments:

- A group assignment in which you will be required to analyse the results of the Littlefield simulation game described above. The assessment will be based primarily on the quality of your analysis and partly on how well your group performed in the game vis à vis other teams. The write-up must be maximum 4 pages (double-spaced, 12-font) plus up to 2 pages of exhibits. The assignment must be e-mailed to OTMassignment@london.edu no later than Friday, May 9th, at 9:00am GMT.

Further information will be given in class.

- The quality of your individual contribution to classroom discussion

- A final exam (closed book). More details will be given during the course

### Key Dates for Assignments

<table>
<thead>
<tr>
<th>Title of Assignment</th>
<th>Week Due</th>
<th>Individual or Group</th>
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</thead>
<tbody>
<tr>
<td>Littlefield Simulation</td>
<td>Summer Term Week 5</td>
<td>Group</td>
</tr>
<tr>
<td>Final Exam</td>
<td>Summer Term Week 10</td>
<td>Individual</td>
</tr>
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### Note on Class Contribution

On the MBA Programme, all students are expected to play an active role in their own learning. As a result, individual contributions to the classroom environment will form an important part of your programme experience, particularly in the core courses. In recognition of this, class contribution will count towards the faculty’s assessment of your performance in each course. There are two important principles behind this:

- To facilitate an environment whereby students can share relevant thoughts, insights and experiences which advance discussions and the general learning in class.

- To assist in the development of your skills in being able to ‘think on your feet’, develop a succinct argument as well as learning how to challenge peers in a constructive way. Such skills will serve you well throughout your MBA and beyond.

Whilst the precise measurement techniques may vary from course to course, to reflect the individual course content and structure, the central focus will always be on the quality of your class contribution as opposed to the quantity. This focus on quality ensures that all students benefit from the classroom experience and all have an opportunity to contribute.
CLASS SCHEDULE AND ASSIGNMENTS

Session 1a
Operational excellence as a source of competitive advantage

Frameworks or Concepts covered:
In this first session we will discuss what operations management is, why it is important for organizations in the 21st century and how we will study it. We will also discuss some fundamental concepts in operations such as the notion of tradeoff and the need to align operational design and strategic-level objectives.

Preparation:

**Essential readings:**
- Chase-Aquilano-Jacobs: Chapter 1 (Introduction to the field) p 4-21

**Questions:**
None

**Optional readings:**
None

 Session 1b
Designing and managing processes

Frameworks or Concepts covered:
In this session we will review the fundamental elements of process design and discuss the factors that affect process efficiency. We will dedicate special attention to study the role of variability. We will understand why it has a detrimental impact on both manufacturing and services operations and we will discuss some techniques to limit this impact. Please bring your laptop in the lecture theatre (we need at least one laptop every other student).

Preparation:

**Essential readings:**
- Case: Benihana of Tokyo (HBS 9-673-057) – Benihana simulation instructions
- Chase-Aquilano-Jacobs: Chapter 5 (Process Analysis) p152-179

**Questions:**
We will run the simulation together in and try to answer questions 2, 4, 6 and 8. Please download the simulation as described in the Benihana simulation instructions before coming to class.

**Optional readings:**
None.
Session 2

Lean Operations

Frameworks or Concepts covered:
This session reviews some of the most widely used models to run operations (from MRP to JIT and lean operations) with the objectives to identify their strengths, their weaknesses and their optimal domains of application. The session will also provide some insights into the Total Quality Management philosophy. The key learning points from this session will be particularly useful for the field trip.

Preparation:

Essential readings:
- Case: Toyota Motor Manufacturing, U.S.A., Inc. (HBS 9-693-019)
- Chase-Aquilano-Jacobs: Chapter 12 (Lean Production) p468-491

Questions:
- What actions should Doug Friesen take to solve the seat problem?
- If the current approach is in line with TPS. If not, why?

Optional readings:
- Chase-Aquilano-Jacobs: Chapter 8 (Quality Management) p318-345
- Article: Spear, S. and Kent Bowen, H. Decoding the DNA of the Toyota Production System (HBR 2904)

Session 3a

Controlling and improving processes

Frameworks or Concepts covered:
Principles of process improvement, the TQM philosophy and its operational instruments. Statistical Process Control (SPC) and Process Capability Analysis. Particular emphasis will be dedicated to the application of these techniques to the service sector.

Preparation:

Essential readings:
- Case: Deutsche Allgemeinversicherung (HBS 9-696-084).

Questions:
- Evaluate the application of the SPC programme at DAV. What is the underlying logic? What would you do differently? Why?
- Consider the process of the Policy Extension Group. Estimate the 3-sigma control limits for the process in its first 12 weeks of operation.
- What are the primary differences between a manufacturing and a service industry in relation to the application of SPC?
Session 3b
Introduction to the Littlefield Simulation

Frameworks or Concepts covered:
This short session is dedicated to the description of the simulation environment used for the group assignment.

Preparation:
None before the class: but please read the introductory note to the Littlefield simulation in your course package before the game starts (most likely the game will start on Tuesday, April 22\textsuperscript{nd} at 19:00 GMT; the final date and time will be confirmed in class).

Also, you may find the following references useful when playing the game (i.e you do not need to read them before coming to class, but you may want to take a look at them while playing the game):
- note on queueing systems (available on line before the session).
- p586-627 in the Chase-Aquilano-Jacobs book. Focus especially on the paragraph on "Fixed-Order quantity models" (p597-603). We will NOT cover this material in class, but you are welcome to contact the course instructor, Andrea Masini, at any time if you need help with it.

Session 4
Leveraging technology to foster operational excellence

Frameworks or Concepts covered:
In today's dynamic market information technology is often regarded as a key enabler of business process excellence. Yet, extracting value from IT investments remain difficult. This session discusses the main advantages and the major risks of IT-based operations. It also uses the example of a large ERP implementation to highlight the risks associated with complex information technology projects.

Preparation:

\textbf{Essential readings:}
- Case: \textit{Esterline Technologies:Lean Manufacturing} (HBS 9-906-417)
- Chase-Aquilano-Jacobs: Managerial note on Enterprise Resource Planning : p 496-509

\textbf{Questions:}
- How would you judge Esterline Technologies’ approach to IT management?
- Would you agree with the opinion that IT systems hamper lean manufacturing as they interfere with efforts to reduce waste and simplify processes?
- Should the IT function be considered as a strategic asset or run as a cost center?
- How should the firm deal with conflicting standardization needs from their major customers?

\textbf{Optional readings:}
- Article: Davenport, T. \textit{Putting the Enterprise into the Enterprise System} (HBR 3574)
Session 5
Process innovation in the apparel industry

Frameworks or Concepts covered:
By comparing two alternative strategies to design and operation supply chains in highly variable environment (the apparel industry), this session discusses how process innovation may become a source of sustained competitive advantage. The session also examines the role of IT to support business processes.

Preparation:
Essential readings:
Case: Marks & Spencer and Zara: Process Competition in the Textile Apparel Industry (INSEAD 602-010-1)
Read through: Chase-Aquilano-Jacobs, chapter 15 (Inventory control), only paragraph on the Newsvendor model

Questions:
- Compare the supply chains of M&S with that of Zara. In what do the differ? (structure, operational practices, etc)
- How does the supply chain structure support the company’s business strategy in the two cases?
- Is the strategy adopted by Zara replicable in other contexts? Provide examples to motivate your answer.
- Identify companies in other industries where excellence in supply chain management generated competitive advantage.
- What insights does the Newsvendor framework provide to analyse the problems faced by M & S and Zara?

Optional readings:
- Fisher, M. What is the Right Supply Chain for your Products? (HBR 97205)
- Christensen and Overdorff, Meeting the Challenge of Disruptive Change (HBR 3456)

Session 6a
The new product development process

Frameworks or Concepts covered
This session analyses and discusses the processes through which organizations develop new products and services. We will use the example of the Team New Zealand to examine the importance of experimentation and the role of technology and simulation tools in facilitating new product development activities.

Preparation:
Essential readings:
- Case: Team New Zealand (A) (HBS 9-697-040)
- Chase-Aquilano-Jacobs: Chapter 4 (product design), p 108-133
Questions:
- How would you evaluate Team New Zealand's use of simulation in the design process? What are its advantages and disadvantages? How did their approach to simulation differ from that used by other syndicates?
- Which yacht construction strategy should Team New Zealand follow? Why? How much improvement would you expect from each?
- What would you advise Team New Zealand to do: Two similar boats now, two different boats now, or one boat now and one boat later?

Optional readings:
- Article. Thomke, S. Enlightened Experimentation: The New Imperative for Innovation (HBR R0102D)

Session 6b
De brief of Littlefield Simulation

Framework or Concepts covered:
This session will use the de-brief of group assignment on Littlefield Simulation as an opportunity to review the main topics of the first part of the course and to discuss some exam questions

Preparation:
None, but the Littlefield group assignment must be completed and e-mailed to OTMassignment@london.edu by no later than Friday, May 9th, at 9:00am GMT. The write-up must be maximum 4 pages (double-spaced, 12-font) plus up to 2 pages of exhibits.

Session 7a
Supply Chain Dynamics

Frameworks or Concepts covered:
This session will explore the dynamics of multi-tiered supply chains through a computer simulation from Darden Business School Publishing colloquially known as “The Beer Game”.

Preparation:
Essential readings:
- Chase-Aquilano-Jacobs: Chapter 10 (Supply Chain Strategy) p404-423

Questions:
- No preparation necessary for the simulation exercise.

Optional readings:
- None
Session 7b
Competitive Cost Analysis

Frameworks or Concepts covered:
This session will consist of a short lecture on Competitive Cost Analysis, a key technique for understanding the tradeoffs in a Supply Chain Strategy.

Preparation:

Essential readings:

Questions:
- How does Competitive Cost Analysis support Supply Chain Strategy?
- What causes “Economies of Scale”?

Optional readings:
- None

Session 8a
Outsourcing

Frameworks or Concepts covered:
This session examines a disguised case regarding a company facing a decision to outsource its low end product line. Students will be expected to extrapolate a Competitive Cost Analysis of a low-end product across the full product line of Room Air Conditioners using the competitive cost techniques covered in the prior lecture and the technical notes.

Preparation:

Essential readings:
- “When Offshoring Isn’t a Sure Thing”, strategy+business, (Summer 2004), pages 26-31

Questions:
- What are the primary cost drivers for room air conditioning? How do the drivers differ between LG and Tork?
- Is LG’s cost advantage in the small room air conditioning unit sustainable? What are the key risks?
- Does LG’s advantage extend to the larger range of room air conditioning products? Note: Use case data from the small units to extrapolate across the product line making reasonable assumptions. Hard numbers expected, not just opinions.
- How should Tork respond to the LG offer? Why?

Optional readings:
Session 8b
Offshoring and Global Supply Chains

Frameworks or Concepts covered:
This session consists of a lecture covering twelve “Global Proverbs” for managing a global supply chain. The session will also solicit input from the students regarding the key challenges of managing a global footprint and your own thoughts on some appropriate proverbs.

Preparation:

Essential readings:
- Lee, Hau L., “The Triple A Supply Chain” (HBR R0410F)
- Arruñada, B and Vázquez X. H., “When your Contract Manufacturer Becomes Your Competitor (HBR R609J)

Questions:
- What are the major challenges in managing a global supply chain?
- Reflect on the following global proverbs and their application to managing a global supply chain. Come prepared to share your interpretation of the proverbs within that context.
  1. In a calm sea every man is a pilot (Spanish)
  2. Wonder is the beginning of wisdom (Greek)
  3. Though a tree grow ever so high, the falling leaves return to the ground (Malay)
  4. Who begins too much accomplishes little (German)
  5. The wise adapt themselves to circumstances, as water molds itself to the pitcher (Chinese)
  6. The reverse side has a reverse side (Japanese)
  7. Time is money (American)
  8. When its time has arrived, the prey becomes the hunter (Persian)
  9. Do not look where you fell, but where you slipped (African)
  10. Feather by feather the goose can be plucked (French)
  11. Trust Allah, but tie your camel (Muslim)
  12. You must live with a person to know a person (Irish)
- Alternatively, offer your own proverb from your culture and discuss its applicability to managing a global supply chain.

Optional readings:
- “Gap: Clean, wholesome and American? A storm over the use of child labour clouds Gap’s pristine image”, The Economist, November 1st 2007
- “Secrets, Lies, and Sweatshops”, Business week, (4011, 2006), Pages 50-58
Session 9
Sustainable and ethical operations

Frameworks or Concepts covered:
This session examines complex issues of how might supply chain relationships lead to a genuinely ethical responsibility for the actions of supply chain partners. In this session we examine the issues facing the co-operative group in deciding whether to and how to be a leader in ethical sourcing.

Preparation:

Essential readings:
- Case: The Co-operative Group – Fairtrade Chocolate (LBS 704-056-1)
- Chase-Aquilano-Jacobs: Chapter 2

Questions:
1. What are the dilemmas facing Terry Hudghton and David Croft in developing a policy on Fairtrade chocolate.
2. How much power and influence does the Co-op have on its supply chain partners?
3. Should the major chocolate manufacturers – e.g. Cadbury, Mars, Nestle, Hershey etc. be offering Fairtrade chocolate as part of their portfolio of products and brands?
4. What case would you put forward to the board?

Session 10
Service profit Chain Interactive Simulation

Frameworks or Concepts covered:
The service profit chain framework examines the links between internal service quality (quality of service delivered to employees), customer service quality/satisfaction and financial performance. In this simulation, students will run a financial service company for a period of up to 10 years (if they are not fired by the game!). The objective is to maximize cumulative profit during your tenure as CEO of the firm.

Preparation:

None