



**OIDD-680**

**Operations Strategy Practicum**

**Spring 2016**

(Revised January 5, 2016)

**Locations:** Spring Break in Germany and various company visits reachable from the Philadelphia Campus during the semester

**Dates:** Spring Semester 2016

- Lectures, Case Discussions
- Visits to German and US manufacturing plants, logistics centers and service provider facilities
- Presentations by senior managers

**Credit:** 1.0 Credit Unit (consisting of two 0.5 Credit Unit segments)

**Course Instructor**

Morris A. Cohen  
Panasonic Professor of Manufacturing and Logistics  
OPIM Department  
546 Jon M. Huntsman Hall  
Tel: 215-898-6431 (office)  
[cohen@wharton.upenn.edu](mailto:cohen@wharton.upenn.edu)

**Participating Faculty**

Arnd Huchzermeier  
Professor, Otto Beisheim School of Management, WHU University

**Course TA**

Sebastian Seehusen  
[seehusen@wharton.upenn.edu](mailto:seehusen@wharton.upenn.edu)

**Course Overview and Learning Goals**

This course will focus on the management of operations at manufacturing and service facilities located within the US and Germany, that are used either by domestic corporations or by foreign multinational companies. Our emphasis will be on the evolving patterns of operations strategies adopted by firms for producing products, sourcing manufacturing, distributing products, delivering services and managing product design as well as on programs for enhancing quality, productivity and flexibility. We will focus on the formulation and execution of such strategies for a collection of firms in the context of the current dynamics of global competition. The course will consist of a set of site visits and in-class sessions which include lectures, case discussions and management speakers who will describe their company's current strategy.

Our course is motivated by the fact that many manufacturing and service producing firms are re-examining the structure of their global supply chains, internal processes and sourcing strategy in response to the uncertainties and risks they face in these turbulent times. These adjustments are occurring against a backdrop of fundamental change to the environment in which companies operate. For decades a dominant strategy in manufacturing has been to outsource to low cost global suppliers. This has led to the transfer of millions of manufacturing jobs and development activities out of the US, Japan and Europe and into low labor cost countries such as China, India and Vietnam. Today this trend is being challenged by a movement by some companies to “re-shore” their manufacturing by bringing it back or at least moving it closer to their developed country market, i.e. by “near-shoring” to locations such as Mexico or Eastern Europe. At the same time many firms continue to select offshore locations for outsourcing of material inputs and services. Similar arguments for global sourcing and re-shoring can also be made for firms that act as suppliers of services such as Business Process Outsourcing, Customer Service Support, Product Design and Software Development. Moreover there have been major technology developments affecting production automation, logistics and smart, connected product design which are contributing to this re-structuring.

This course will consider the current status of operations strategy and process management primarily from the perspective of major multi-national firms, although we will also interact with startup companies. The goal is to provide the class with the opportunity to interact with senior executives from these companies, which are headquartered and/or operating in the US and Germany, to explore current thinking and state-of-the-art practices concerning their global operations. Learning will be facilitated by providing students with the opportunity to observe company operations in action under the guidance of company management. These interactions will facilitate an exchange of ideas that will identify managerial challenges and concerns. It will also ascertain current practices and intentions of participating companies. Moreover, the course will consider various models and frameworks that have been developed in the economics, public policy, operations and management literatures for dealing with strategies for global supply chain sourcing, technology management and process improvement. We will also consider how technology developments are impacting current operations strategy (e.g. automation, E-commerce, Internet of Things). Our objective is to develop an understanding of the drivers of operations strategy decisions, at present and in the future, in order to identify opportunities for improvement and barriers to implementation.

We will explore these issues through the lens of visits to a specific group of multinational and emerging companies located in Germany and in the mid-Atlantic region of the US. The companies will be chosen to cover a range of manufacturing and service industries where global sourcing, productivity and coordination are key issues e.g. aerospace and defense, automotive, consumer electronics and computers, consumer products, entertainment, health care products, medical equipment, pharmaceuticals, logistics, and semiconductor. This course will build off of the learning based on a Global Modular Course on this topic that has been offered in Japan over the past three years and from a version of the course that was offered to students participating in the Wharton SiSF (Semester in San Francisco) program in the Fall of 2014 and 2015.

### **Course Organization and Requirements**

The course will include an intense week of company visits in Germany during the spring break (March 6 – March 13, 2016), several US company visits on Fridays, (to be scheduled) and several class sessions at Wharton, (to be scheduled at a convenient time during the semester). The class

sessions to be held at Wharton will include lectures, case discussions and guest speakers. Students will be responsible for travel expenses (flight to Germany and for the land arrangements in Germany and the US). We estimate that these expenses will be about \$2,300 for the course (for the full semester, shared occupancy, excluding the cost of the flight to Germany). ***It will be necessary to register for the course (as a 1 CU course), and pay a deposit fee for the expenses in order to reserve your place in the course.*** Enrollment will be limited due to capacity restrictions imposed by the companies that we will be visiting.

### **Pre-requisites**

Students taking this course should have completed the core course, OPIM 611, “Managing the Productive Core of the Firm: Quality and Productivity” or an equivalent course or have had work experience that focuses on operations and supply chain management. It is also recommended that students should take OPIM 615, “Managing the Productive Core of the Firm: Operations Strategy” to complement their learning in this course.

### **Grading and assignments**

Grades are based on (1) class participation which includes class discussions, contribution to the group report and attendance to the company visits (25%); (2) analysis of 2 assigned cases, each with an individual, written report (20%); (3) analysis of a recent example of supply chain restructuring in a global company, selected from an industry that is relevant to our explorations of issues in the US and/or Europe (25%). This will be a group report; and (4) a final, individual paper offering reflections on what you observed and learned during the site visits (30%). If you miss any of the company visits your participation grade will be reduced.

The 2015 SiSF course, included visits to the following companies:

- Amazon (Fulfillment Center in California and HQ in Seattle)
- Boeing Commercial Aircraft (Everett Washington)
- Costco (Seattle)
- Starbucks (Seattle)
- McKesson (Wharton West San Francisco)
- US Navy (San Diego)
- Taylor Guitar (San Diego)
- Cisco (Wharton West San Francisco)
- Google (Wharton West San Francisco)
- Kyocera (Tijuana Mexico)
- Mattel (Tijuana Mexico)
- Medtronic (Tijuana Mexico)
- Welch Allyn (Tijuana Mexico)
- Plantronics (Tijuana Mexico)

The schedule for the course includes a series of company visits in Germany during the week of Spring break (March 6 to March 13). The class will begin the German segment in Frankfurt and we will visit about a dozen companies as we work our way to Berlin during the week of March 6. There will also be several site visits to various company sites (on Fridays), that are accessible from the Philadelphia campus that have been scheduled throughout the Spring semester, (see below).

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The schedule is subject to change but has been confirmed. The companies to be visited during the spring break tour in Germany are listed in the table on page 7. The companies to be visited locally are:

- Janssen Pharmaceuticals, Inc. and Johnson & Johnson
- Amerisource Bergen

The following is the full schedule for the course, including the domestic and German segments.

Dates	Session	Location	
1/27/2016 - 6 pm - 7:30 pm	Opening class and Operations Strategy lecture	Wharton	
2/10/2016 - 6 pm - 7:30 pm	Logistics and Distribution Strategy	Wharton	
2/19/2016 - 8:30 am - 4:00 pm	Corporate Visit to Amerisource Bergen distribution center	Bethlehem PA	
2/24/2016 - 6 pm - 7:30 pm	Case #1 Discussion	Wharton	
3/06 - 3/12, 2016	Trip to Germany	Germany	
4/6/2016 - 6 pm - 7:30 pm	Case #2 Discussion	Wharton	
4/8/2016 - 8:30 am - 4:00 pm	Corporate Visit to Janssen/Johnson & Johnson - large molecule facility	Malvern PA	
4/20/2016 - 6 pm - 7:30 pm	Analytic Paper Group Presentations	Wharton	
4/27/2016 - 6 pm - 7:30 pm	Final Debrief Class	Wharton	

### Case Assignments (Individual assignments - 20% of your overall grade)

The cases assigned in this course include issues relevant to:

- Supply Chain Risk Management
- Globalization and Operations Strategy
- Automation and Technology Trends and Their Impact on Operations
- Emerging Business Models

We will use cases that connect to the companies and industries that we will be visiting during the course.

Two individual course reports must be submitted.

### **First Case Assignment**

Boeing encountered an unusual supply chain problem during its 787 Dreamliner product development and manufacturing process, related to a small and unlikely source of difficulty, namely shortages and delays in the supply of fasteners needed to hold the airframe together. Read the case, **Boeing: The Fight for Fasteners**, by Moses Lee and Ravi Anupindi (Tauber Institute, U. of Michigan case 1-428-787, 2009) and prepare a 1,000 word paper (*plus or minus 5%; double-spaced; put word count and your name at the top*) that addresses the following questions:

1. *What were the causes of the fastener crisis at Boeing? How was the problem ignored for so long? What effect did the 787 Dreamliner project have on fastener supply?*
2. *What are the key elements of the Fastener Procurement Model (FPM)?*
3. *Describe the material, information, and financial flows between Boeing, fastener manufacturers (suppliers) and Tier-1 partners under FPM.*
4. *How should Boeing enhance its coordination with its suppliers in order to deal with the crisis?*
5. *What are the costs, benefits and risks of a supplier coordination strategy, such as FPM as described in the case, from the perspective of Boeing, fastener manufacturers, Tier-1 partners, and other stakeholders.*
6. *How could the FPM program be improved?*

You should also read the article by Chris Tang, and Josh Zimmerman, **Mitigating New Product Development Risks – The Case of the Boeing 787 Dreamliner**, Chapter 11 in M.S. Sodhi and C.S. Tang. *Managing Supply Chain Risk*. Springer. 2012, and **Update on Boeing Fastner Case, 2016**, which is based on recent input from the company, as you prepare your answers to the case.

We will discuss this case in class on **Feb. 24**. Your paper, which includes answers to all 6 questions, is due on **TBD**, posted on Canvas.

### **Second Case Assignment**

On March 11, 2011 a major earthquake struck Tohoku Japan. It had a devastating impact on global supply chains. Read the case, **Cisco SCRM in Action: 2011 Tohoku Earthquake**, by Ravi Anupindi (Tauber Institute, U. of Michigan case 1-429-284, 2013) and also read **Supply Chain Risk Management at Cisco: Response to H1N1** (U. of Michigan case 1-428-881), – read pages 2 through top of page 9 for a description of Cisco’s approach to risk management. Prepare a 1,000 word paper (*plus or minus 5%; double-spaced; put word count and your name at the top*) that addresses the following questions:

1. *What are the major challenges facing Cisco as result of supply chain disruptions caused by the earthquake? What are the principal impacts that it can expect?*
2. *How should Cisco manage the crisis, i.e. in the short term and in the long term?*
3. *What metrics should be used by Cisco to support Supply Chain Risk Management (SCRM)? What data would you need to estimate these metrics? At what organizational level (plant, product, supply chain, business unit) would it be appropriate to apply these metrics? What may be typical uses of these metrics? How can technology support SCRM?*
4. *What is the strategic advantage of a SCRM system and should it vary based on the type of risk, e.g. natural disaster (earthquake, tsunami, hurricane), supplier disruption, political event (terrorist attack, conflict, etc.)? If so, how?*
5. *Comment on Cisco’s SCRM process and how they dealt with the Tohoku crisis. What are its major strengths? Do you see any weaknesses?*

6. *How would the role and design of an SCRM vary by industry? In particular, how should automotive or aerospace companies deal with this problem?*

You should also read the following articles (posted on Canvas) as you prepare your answers to the case:

1. D. Reynolds, "Lessons From Tohoku", Wharton Magazine, January 26<sup>th</sup>, 2012,
2. D. Simchi Levi, "From Super Storms to Factory Fires: Managing Unpredictable Supply-Chain Disruptions", Harvard Business Review, Jan-Feb 2014.
3. A. Pollack and S. Lohr, "A Japanese Plant Struggles to Produce a Critical Auto Part", New York Times, April 27, 2011.

Read the case and think about the assignment questions. We will discuss this case in class at Wharton West on **April 6**. James Steele, who was director of Cisco's SCRM program at the time of the quake, has provided us with a report on how Cisco's SCRM system actually operated during the crisis. We will review his comments in our discussion of the case. Your paper is due on **TBD**, posted on Canvas.

### **Analytic paper (Team assignment - 25% of your overall grade)**

Prepare an analytical paper that identifies a company that has recently adjusted or modified its operations strategy concerning issues such as supply chain design and management, global sourcing, use of technology, product design, etc. and addresses the questions listed below. You will propose your choice of focal firm to the faculty for approval; we will try to avoid duplication since these papers will be a resource for the entire class once completed. Papers should be written by a group consisting of 4 students, the required length is 2,250 words (*plus or minus 5%; double-spaced; put word count and your name at the top*).

**Recommended Industries:** Aerospace and Defense; Apparel; Appliances; Automobiles; Computers/Information and Communication Technologies (ICT); Consumer Electronics; Consumer Packaged Goods; E-Commerce; Entertainment; Gaming; Logistics and Distribution; Health Care and Pharmaceuticals; Retail; Semiconductor Manufacturing and Semiconductor Equipment; Toys.

The class session on **April 20** will be devoted to group presentations of their analytic paper. The written copy of the paper and the presentation materials used in the class are due on **TBD**.

### **Final reflection paper (Individual assignment - 30% of your overall grade)**

This individual assignment is an opportunity to reflect on what you have learned in the course and through the site visits. It is worth 30% of your grade and is due on **TBD**, posted on Canvas. You should give your thoughts on 1) the current status, 2) future trends and 3) key drivers of operations strategy and sourcing decisions in the industries we visited. Our guideline for length is 750 words, roughly three pages, although this is a recommended, but not required, length; your paper can be either shorter or longer, as long as it captures your thoughtful reflections on your experience in the course.

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**Schedule: Wharton study tour, Germany  
March 6 to 12, 2016**

Date	Visit	Address	Transfer / distance	Hotel
Sunday March 6, 2016  7:00 pm	<p><b><u>Arrival day</u></b></p> <p>Taxi from Frankfurt Airport to hotel</p> <p>Opening orientation session</p>			Hilton Garden Inn  The Squire, Am Flughafen  60549 Frankfurt am Main
Monday March 7, 2016  8.30  9.00-11.00  11.00-12.30	<p>Transfer from hotel to Lufthansa</p> <p>Visit of <b>Deutsche Lufthansa AG</b></p>	Deutsche Lufthansa AG  Lufthansa Basis, Tor 20  60546 Frankfurt/Main	10 km	Motel One Hotel  Heilbronner Straße 325  70469 Stuttgart

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1.30-4.30	Transfer from Lufthansa to EvoBus  Visit of <b>EvoBus / Mercedes Trucks</b>	<b>EvoBus</b> GmbH  Mercedes-Benz Werk <b>Mannheim</b> Hanns-Martin-Schleyer-Straße 21-57  68301 <b>Mannheim</b>	80 km	
5.00	Transfer to Stuttgart		135 km	

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<p>Tuesday March 8, 2016</p>				<p>Drahthammer Schloßl Drahthammerstraße30 92224 Amberg</p>
<p>8.30</p>	<p>Transfer to engine factory of Mercedes Benz (in Stuttgart)</p>	<p>Porsche Zentrum Stuttgart</p>	<p>3 km</p>	
<p>9.00 - 12.00</p>	<p>Visit of <b>Mercedes Benz</b></p>	<p>Porscheplatz 9</p>		
		<p>70435 Stuttgart</p>		
<p>12.30-2.45</p>	<p>Transfer to KUKA</p>	<p>KUKA Roboter GmbH</p>	<p>187 km</p>	
<p>3.00 – 6.00</p>	<p>Visit of <b>KUKA Roboter GmbH</b></p>	<p>Zugspitzstraße 140</p>		
		<p>86165 Augsburg</p>		
<p>6.00</p>	<p>Transfer to Amberg</p>		<p>208 km</p>	

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Wednesday March 9, 2016				Steigenberger Hotel Thüringer Hof Karlsplatz 11 99817 Eisenach
8.00	Transfer to Siemens		3 km	
8.30-11.30	Visit of <b>Siemens AG</b>	Siemens AG, A&D AS EWA Werner-von-Siemensstr. 50 92224 Amberg		Evening: Option: Visit to Wartburg
12.00-2.30	Transfer from Amberg to Eisfeld		190 km	
3.00-6.00	Visit of <b>Feintechnik GmbH Eisfeld</b> (Harry's razor blade)	Feintechnik GmbH Eisfeld Seeweg 4 98673 Eisfeld / Thüringen		
6.00	Transfer to Eisenach		105 km	

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Thursday March 10, 2016				Steigenberger Hotel Sanssouci Allee nach Sanssouci 1 144741 Potsdam
8.00-08.30	Transfer from Eisenach to Seebach		13 km	
08.30-11.30	Visit of <b>Deckel- Maho Seebach GmbH</b>	DECKEL MAHO Seebach GmbH Neue Straße 61 99846 Seebach		
12.00-1.30	Transfer from Seebach to Erfurt		75 km	
2.00-5.00	Visit of <b>Zalando Logistics Center</b>	Zalando Logistikzentrum In der Hochstedter Ecke · 99098 Erfurt		
5.00	Transfer to Potsdam		267 km	
Friday March 11, 2016				Motel One Berlin-Leipziger Platz Leipziger Platz 12 10117 Berlin
07:00				

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<p>09.00-2.00</p> <p>2.00-3.30</p> <p>3.00 – 6.00</p> <p>6.00</p> <p>7:00</p>	<p><b>Transfer to BMW</b></p> <p><b>Visit of BMW Motorrad Werk</b></p> <p>Transfer to Audibene</p> <p>Visit of a <b>Audibene</b></p> <p>Transfer to the hotel</p> <p>Dinner (Wharton Alumnae)</p>	<p>BMW Motorrad</p> <p>Am Juliusturm 14-38</p> <p>13599 Berlin</p> <p>Audibene GmbH</p> <p>Schönhauser Allee 53</p> <p>10437 Berlin</p>	<p>36 km</p> <p>15 km</p> <p>5 km</p>	
<p>Saturday March 12, 2016</p>	<p>Free day to tour Berlin</p> <p>or</p> <p>Return to Philadelphia</p>			<p>Motel One Berlin-Leipziger Platz</p> <p>Leipziger Platz 12</p> <p>10117 Berlin</p>

**Company profiles:**

**Lufthansa**

Lufthansa Passenger Airlines is known throughout the world for its outstanding quality and excellent service. Its route network covers more than 200 destinations in some 80 countries with main hubs located in Frankfurt am Main and Munich.



Lufthansa Passenger Airlines offers exciting tasks in onboard service or passenger handling on the ground, for pilots but also in such commercial areas as product marketing or sales. Its parent company Lufthansa German Airlines is responsible for all of the Group's central functions. Here, lawyers, personnel developers, finance and accounting experts or controllers for example, can find exciting professional challenges.

**EvoBus GmbH Mercedes-Benz Werk Mannheim**

EvoBus GmbH is Daimler AG's largest European subsidiary. With their **DAIMLER** brands Mercedes-Benz, Setra, OMNI*plus* and *BusStore*, they are the leading full-line provider in the European bus market and have a global presence, as well. As part of the Daimler Buses business unit, they are not only Europe's largest bus manufacturer but also one of the leading bus manufacturers worldwide.



**Porsche**

In an age when most of its competitors have been absorbed into larger profitably — independent maker of high-performance sports cars. The Porsche name has become synonymous with sports cars and racecars because that is what company founders Ferdinand Porsche and his son Ferdinand set out to build when they first set up shop with 200 workers in 1948. To date, Porsche cars have won an estimated 24,000 auto races around the world, including more than 50 class wins at Le Mans.



**KUKA Roboter GmbH**

As a pioneer in robotics and automation technology, KUKA Robotics is one of the leading manufacturers of robotic systems worldwide. KUKA offers a unique and wide range of industrial robots and robot systems, covering all common payload categories and robot types. The matching controllers and software for a variety of scenarios round out KUKA's product portfolio.



KUKA, together with its system partners, has automation solutions perfectly tailored to its customers' applications and industries – or can develop robotic systems for individual needs.

KUKA offers a comprehensive range of services, including collaborative planning, start-up and maintenance to help its customers realize the full potential of KUKA products. In case of urgency, KUKA's technical support is available 24 hours a day.



### **Siemens AG**

With more than 5,000 employees Siemens Amberg is one of the largest Siemens location in Bavaria. The Siemens electronics factory was founded in 1948 and was awarded »Fabric of the Year« and »Best Factory Europe«.

The Siemens low and medium voltage division maintains their central low voltage competence center in Amberg. In the international, high innovative »Center of Competence« new innovative technologies for a safe and flexible low voltage energy distribution are developed



### **Feintechnik GmbH Eisfeld**

Only totally precise cutting technology can give a perfect shave. In Germany the name Feintechnik has been associated with the perfect shave for over 90 years.

Feintechnik is an independent European manufacturer and supplier of quality razors (shaving systems and disposable razor) and razor blades under private label. Decades of experience, top-quality blade-cutting technology and long-term growth are testament to its stability and a successful symbiosis of tradition and innovation.

Having grown in a region that is itself honed by diversity in terms of ideas and expertise, they stand for constant development with an edge in quality. State-of-the-art production technologies, a highly qualified team, continuous development and refinement of know-how as well as a forward-looking corporate structure are the pillars that guarantee their boundless expertise.

Efficient, flexible, quick to respond and supported by their own development department, which constantly works on improving the tried and true while also exploring and harnessing new things, they can offer a wide range of integrated system solutions for razors.

### Deckel- Maho Seebach GmbH



Two strong companies, GILDEMEISTER and Mori Seiki, have set up a worldwide leading partnership. The combination of innovative power and engineering expertise plus a unique product portfolio in machine tool building come together under one name: DMG MORI SEIKI. GILDEMEISTER Aktiengesellschaft has therefore become DMG MORI SEIKI AKTIENGESELLSCHAFT, representing tradition, precision and technological leadership on a global scale - a strong, reliable and long-term partner for customers across the world. In total, 7,013 employees contribute to our company's success.

The "Machine Tools" segment is our core segment and includes the group's new machines business with the business divisions of turning, milling and ULTRASONIC / LASERTEC, as well as the ECOLINE product range and electronics. At DMG MORI SEIKI AKTIENGESELLSCHAFT the production plants have been arranged in associations across all locations in order to consolidate core technological expertise. This gives rise to the Turning Association, the Milling Association, the Milling and Processing Association as well as the ECOLINE Association.



### Zalando

Zalando SE is a multinational e-commerce company that specializes in selling shoes, clothing and other fashion and lifestyle products online. The company was founded in Germany in 2008 by Robert Gentz and David Schneider, initially under the name Ifansho and since then has expanded to offer its retail services in a total of fourteen European countries. Currently, Zalando is operationally active in Germany, Austria, Switzerland, France, Belgium, the Netherlands, Italy, Spain, Poland, Sweden, Denmark, Finland, Norway and the UK.

The company's headquarters are in Berlin. Zalando initially specialized in the sale of footwear but has since grown to encompass other areas of fashion, lifestyle and sports.

### BMW Motorrad

The BMW Berlin Plant has a long tradition as production site for motorcycles.



Overall area	220,000 m <sup>2</sup>
Workforce	approx. 2,000
Apprentices	80

Product Range	Series R / K / F / G / S / C
Daily production	up to 700 units

**audibene**



audibene is an innovative supplier for high quality hearing aid devices at affordable prices. Their goal is it to give an expertly and neutral advise to their customers. On [www.audibene.de](http://www.audibene.de) they offer an extensive and use-oriented information.

With more than 700 partner audiologists located all over Germany, audibene guarantees a personal and individual provisioning with modern hearing aids.

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