

INTRODUCTION TO THE COURSE PORTFOLIO IN OPERATIONS MANAGEMENT

Mannheim Master in Management (M.Sc.), Fall 2021

Mannheim | September-02, 2021

Area Operations Management



Welcome to operations management

LOGISTICS & SUPPLY CHAIN MANAGEMENT



Prof. Fleischmann

PRODUCTION MANAGEMENT



Prof. Stolletz

SERVICE OPERATIONS MANAGEMENT



Prof. Schön

PROCUREMENT



Prof. Bode

OPERATIONS MANAGEMENT (Assistant Prof.)

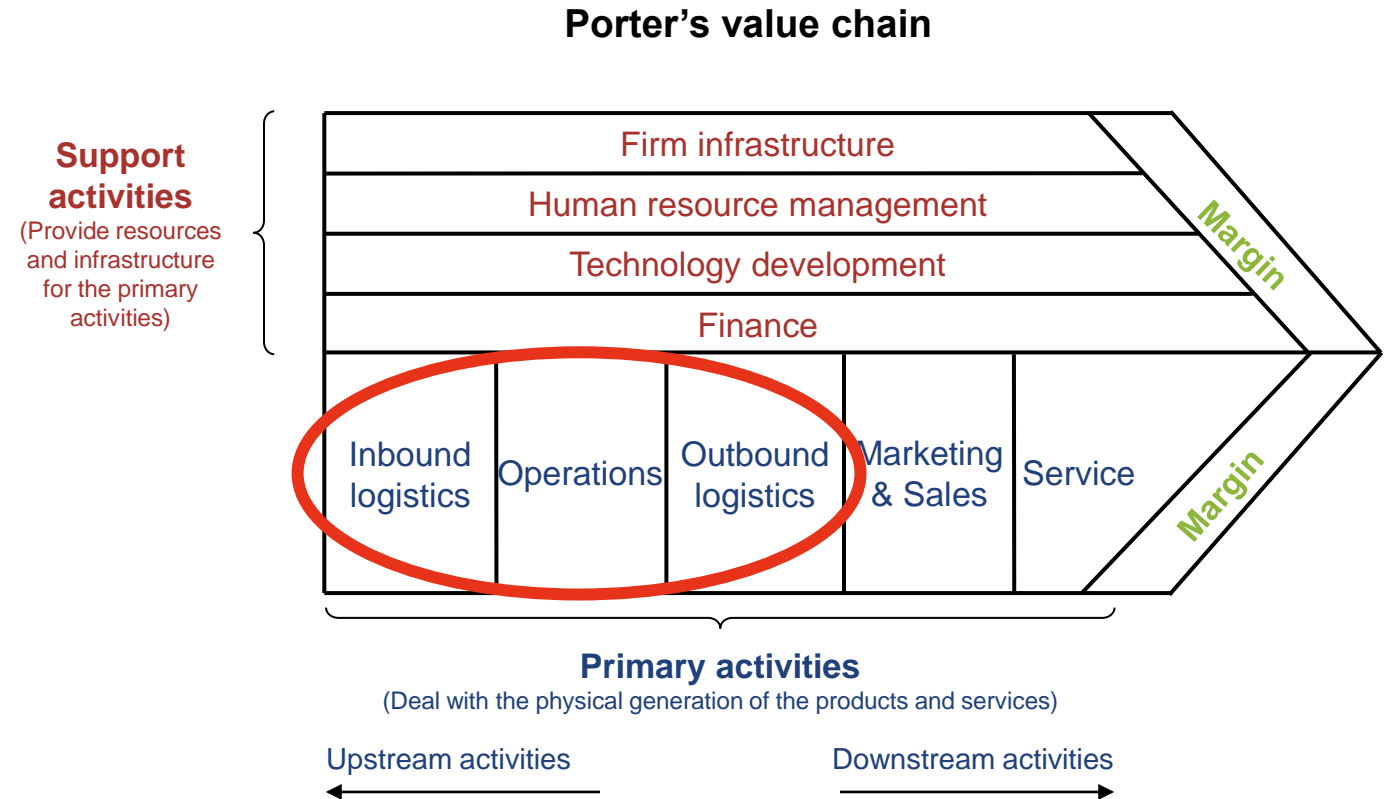


Prof. Sonntag

What is Operations Management?

The heart of doing business: Matching **supply** and **demand**!

- Operations Management is responsible for **creating** and **delivering** a company's **products and services**. In other words, Operations Management is about delivering on the promises made to the customer – and about allowing these promises to be made in the first place.
- The discipline is paramount to the **creation of any business value**. Carefully designed and well executed operations provide an important source of competitive advantage.



Operations and supply chain management as a strategic differentiator

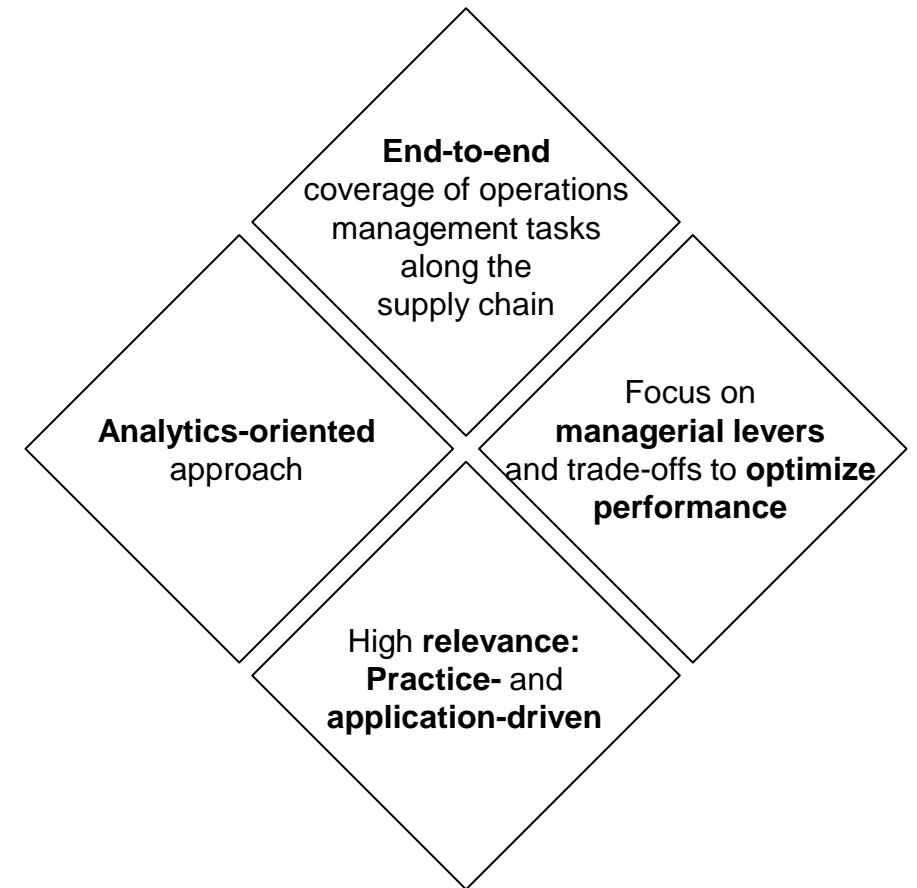


just to name a few...

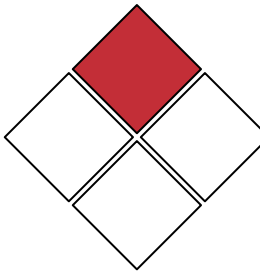
Our Approach

Operations management in Mannheim builds on four pillars

- Our overall goal is to develop and disseminate knowledge that facilitates better decision-making on managerial levers and trade-offs along the entire supply chain, including logistics, production, service operations, and procurement.
- **Four pillars** characterize our approach:
 - **End-to-end** coverage of operations management tasks along the supply chain
 - Focus on **managerial levers** and trade-offs to **optimize performance**
 - **Analytics-oriented** approach
 - High **relevance: Practice- and application-driven**

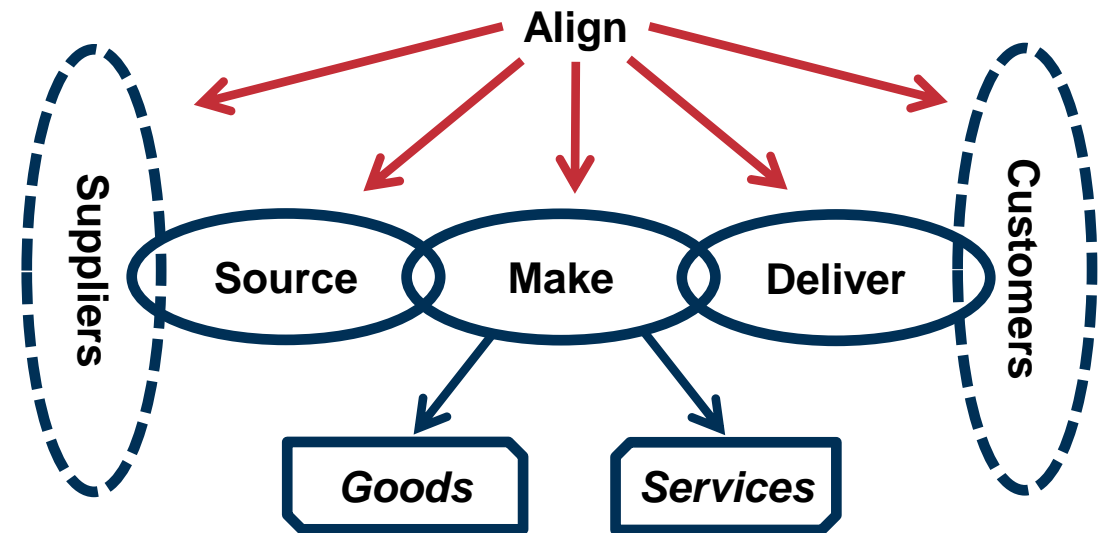


End-to-end coverage of operations management tasks along the supply chain

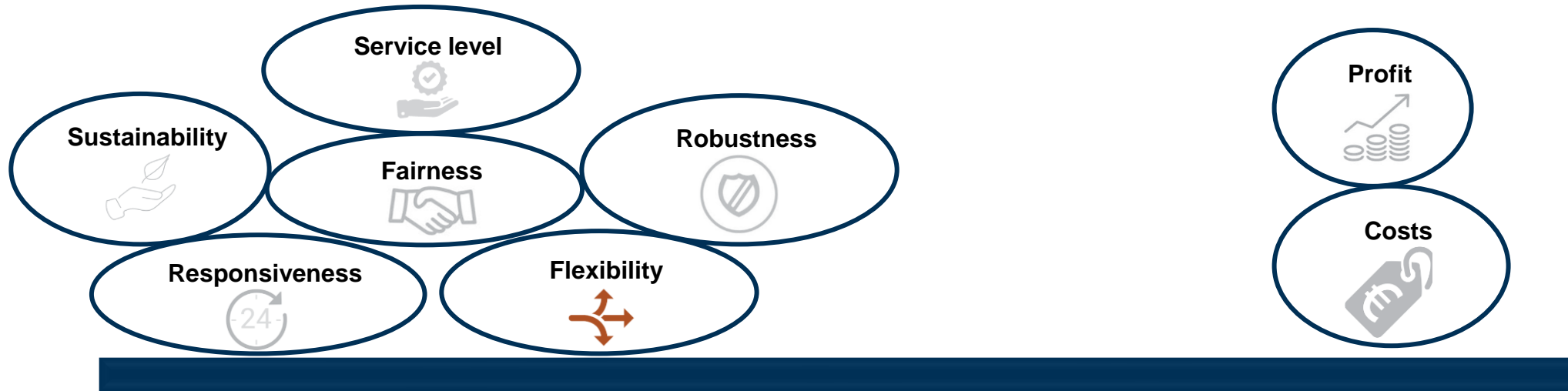
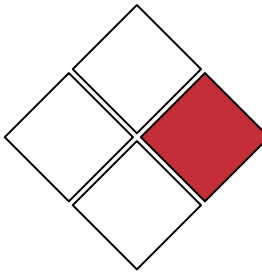


Our collective **areas of expertise** cover the **full scope** of Operations Management, ranging...

- ...from **sourcing** to **distribution**
- ...from discrete **manufacturing** to process industries
- ...from physical **goods** to **services**
- ...from **focal** company to supply chain **coordination**



Focus on managerial levers and trade-offs to optimize performance



Capacity:

Strategic, proactive, networks, ...

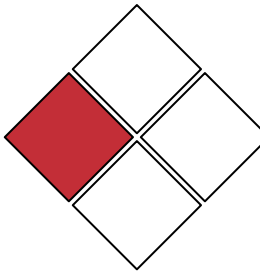
Processes:

Operations concepts, scheduling, lean management, ...

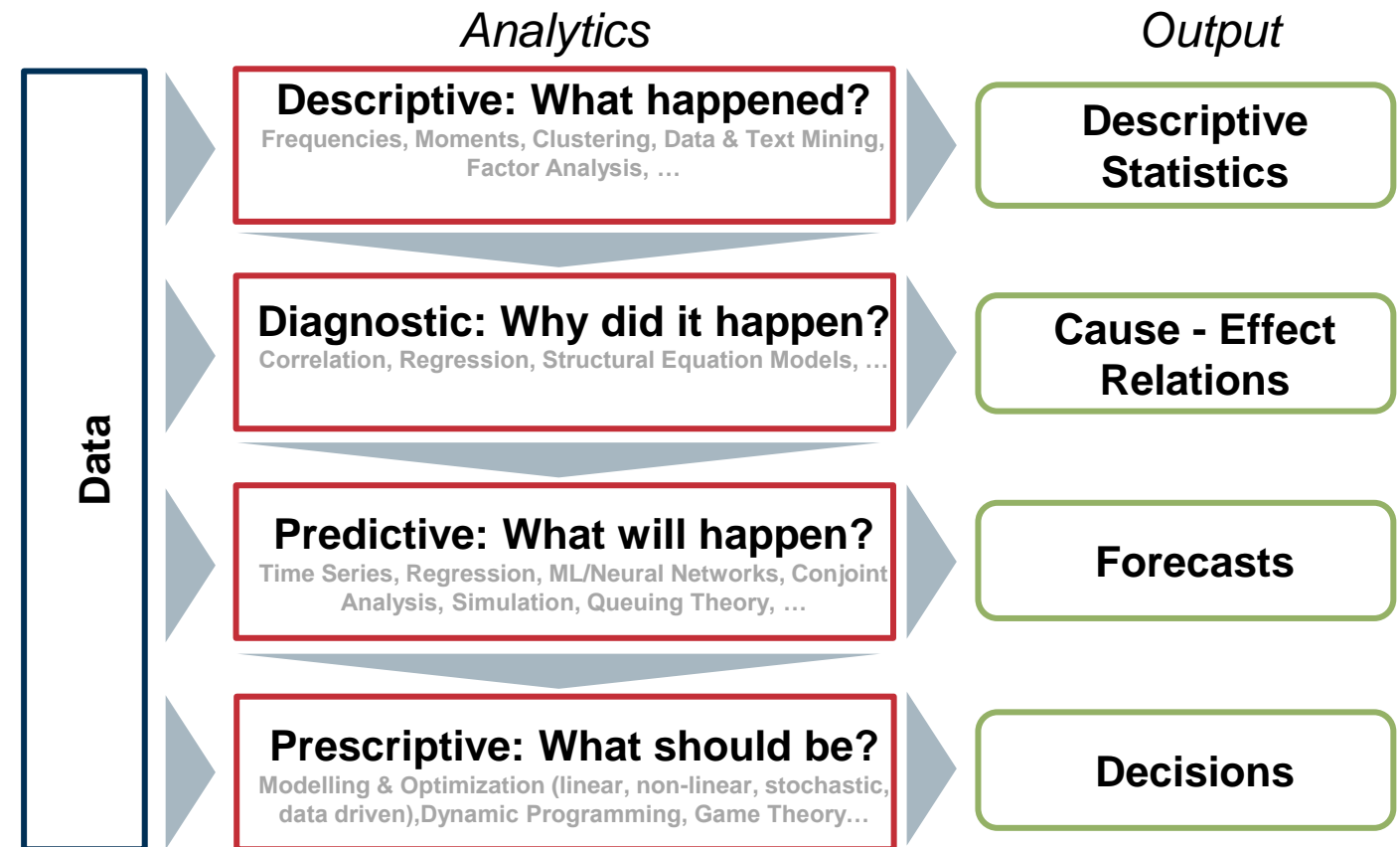
Performance Management:

KPIs, revenue management, benchmarks, ...

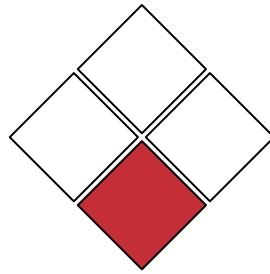
Analytics-oriented approach



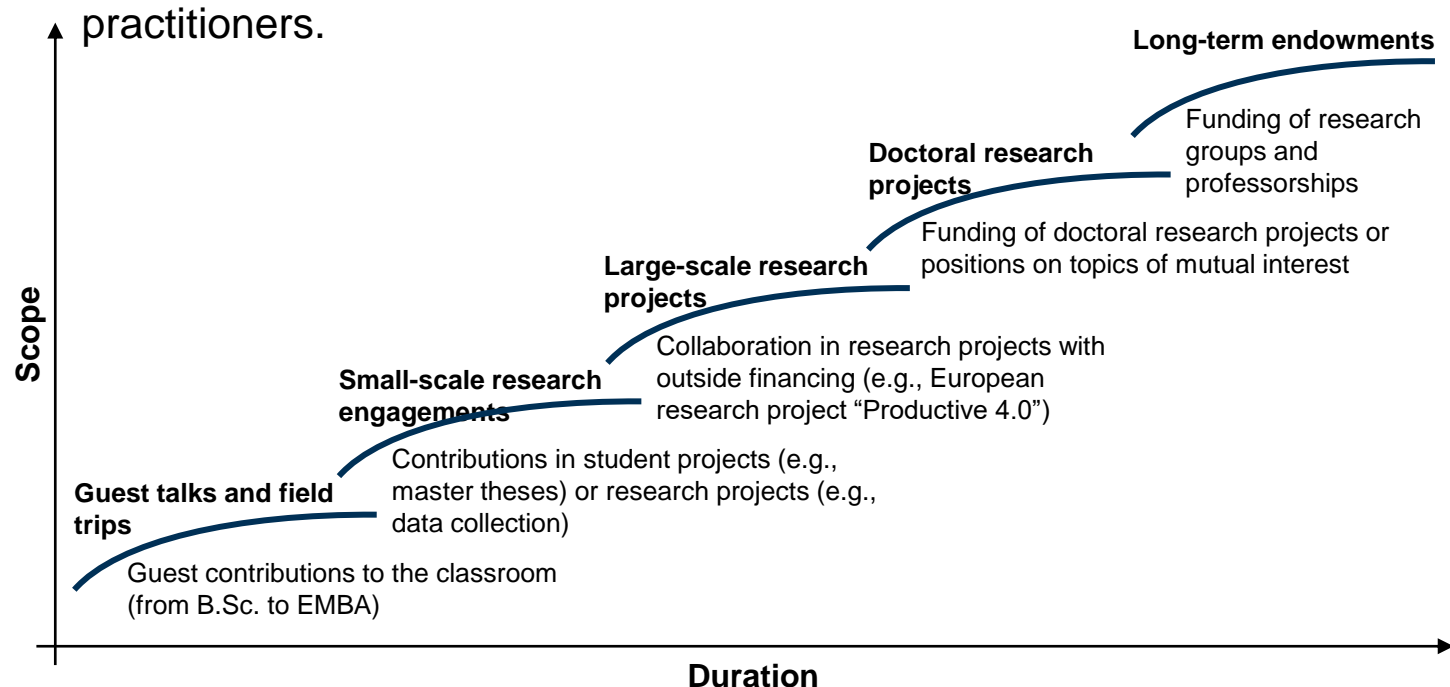
- We address the complexities of **managerial decision making** by means of analytics
- Our expertise includes a wide range of **advanced analytical methods** from the fields of operations research, data science, econometrics, and the social sciences
- We combine **methodological expertise** and **intimate domain knowledge** in relevant areas of operations management
- We see analytics as a means to an end
- We focus on how to **generate value** from data by enabling **better decisions**



High relevance: Practice- and application-driven



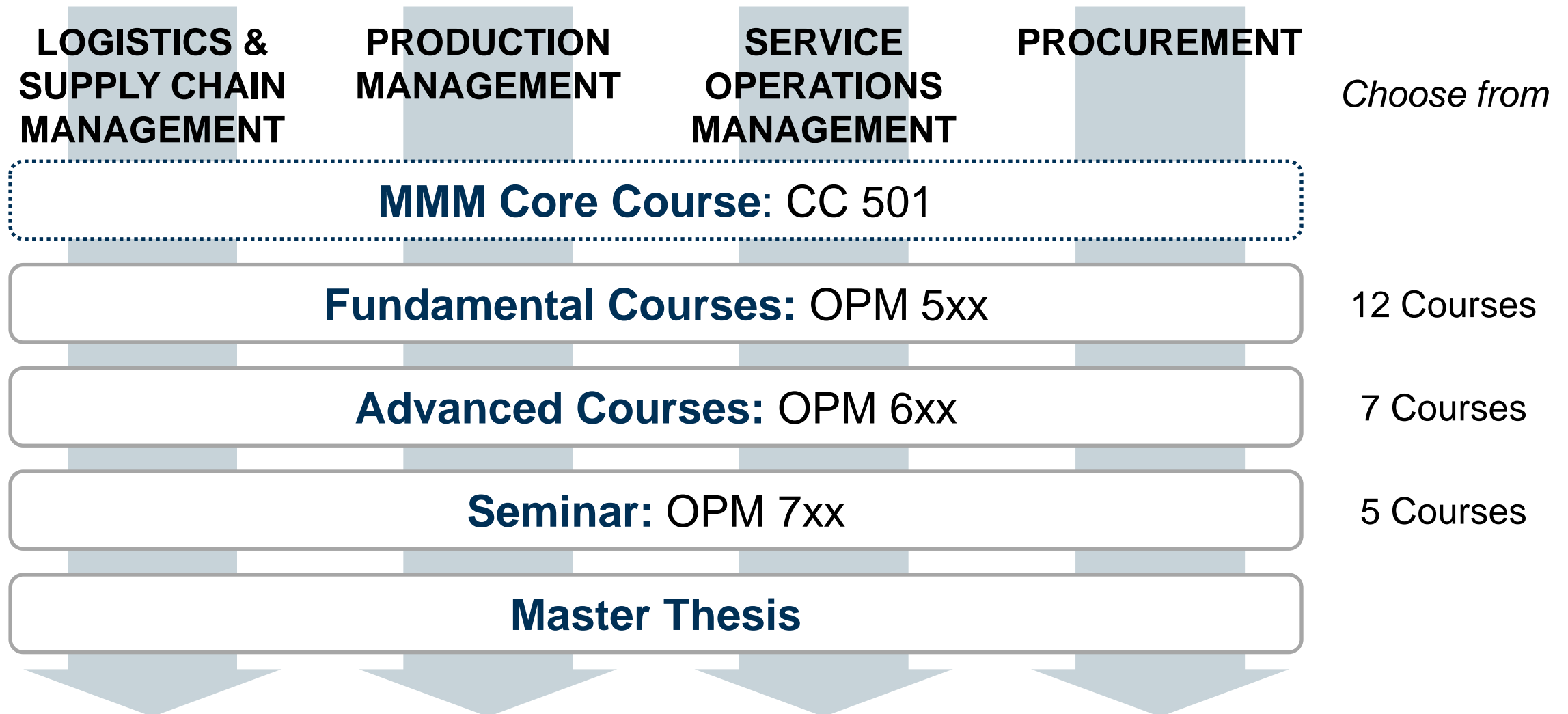
- Practice- and application-driven means that our research and teaching activities are informed by **problems facing the practice of operations management**.
- We collaborate with a **wide range of partners from the corporate world** and provide a **forum for exchange** between faculty, students, and practitioners.



Examples

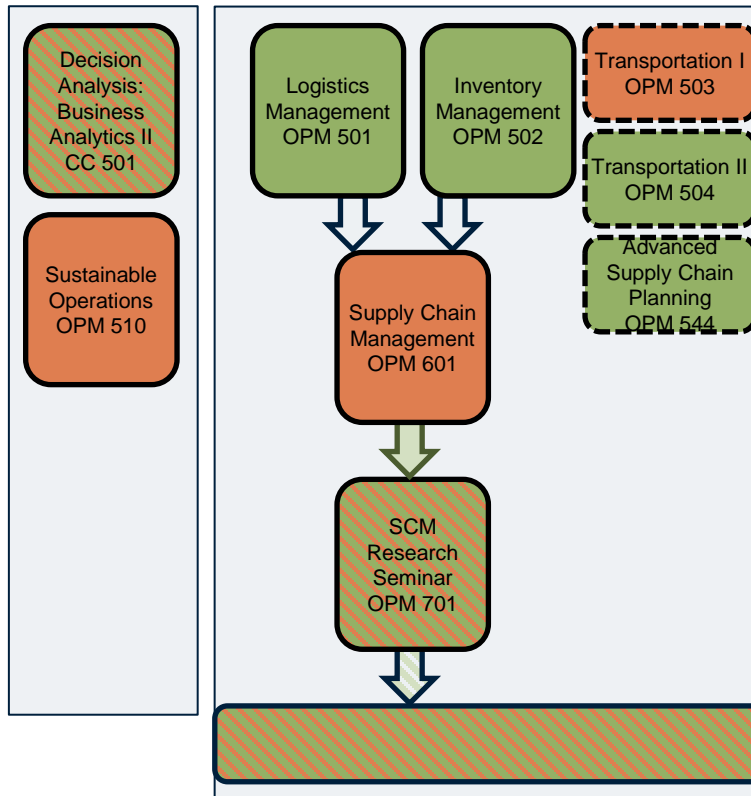


Program structure

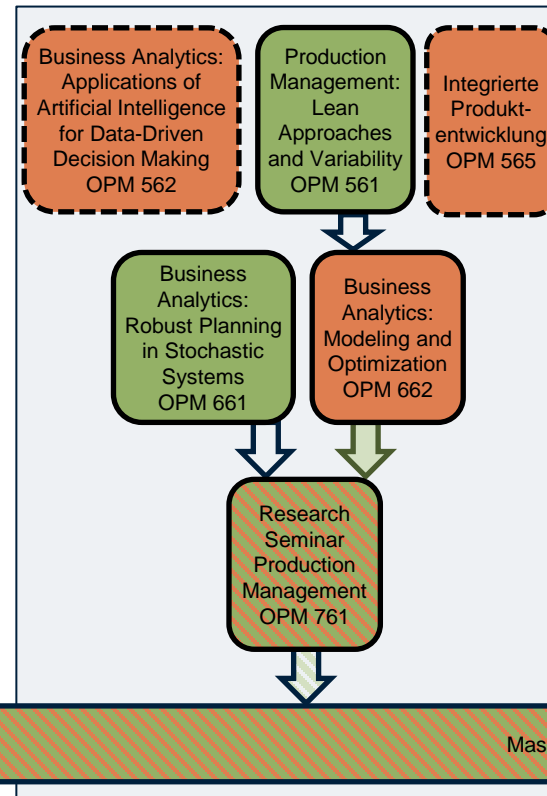


Broad choice and much flexibility

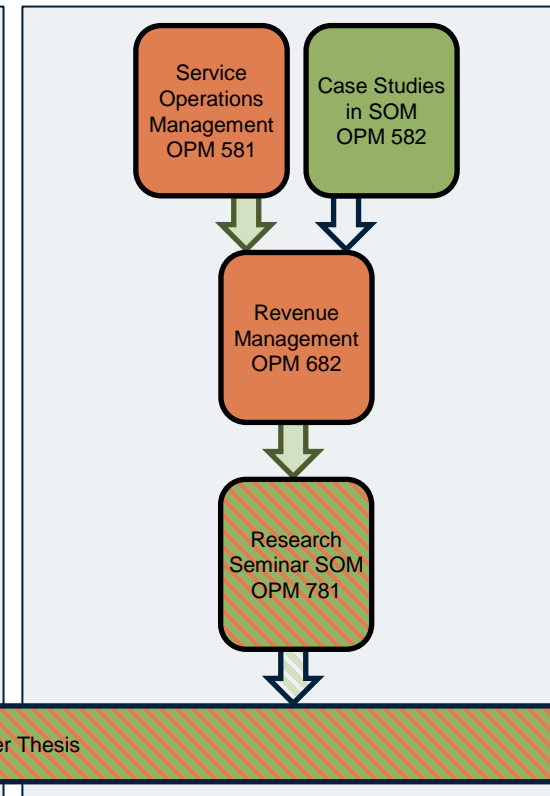
LOGISTICS & SUPPLY CHAIN MANAGEMENT



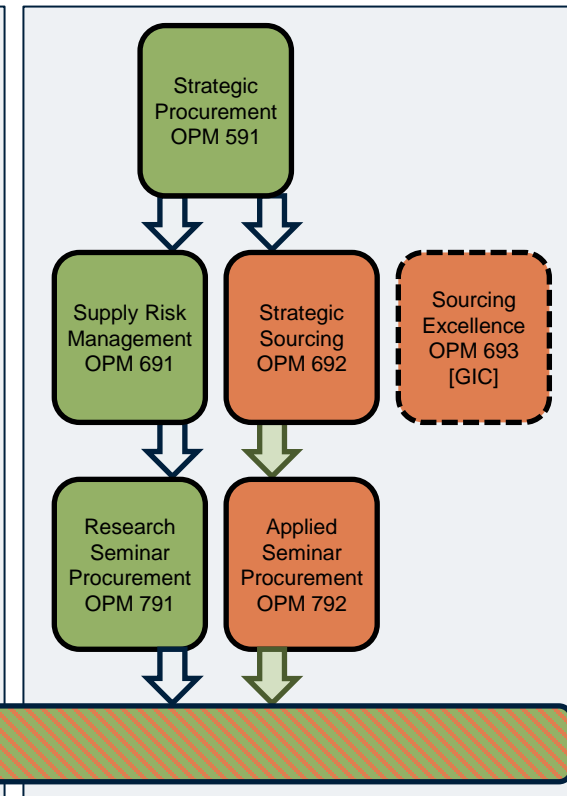
PRODUCTION MANAGEMENT



SERVICE OPERATIONS MANAGEMENT



PROCUREMENT



Core Course

Supplementary Course

Fall Term

Spring Term

Both Terms

The Chairs and Their Course Offerings

Logistics & Supply Chain Management

Logistics & Supply Chain Management is about managing the flow of products and materials along the supply chain to serve the customer.

Key processes include:

- **Transportation** of products between different sites and organizations
- Storage of products in **inventory** to assure availability
- **Coordination and alignment** of activities between different supply chain members

Current focal topics at the chair:

- Last-mile distribution / e-groceries
- Closed-loop / sustainable supply chains
- Data-driven supply chain planning
- Inventory management for seasonal products

Start OPM 501:

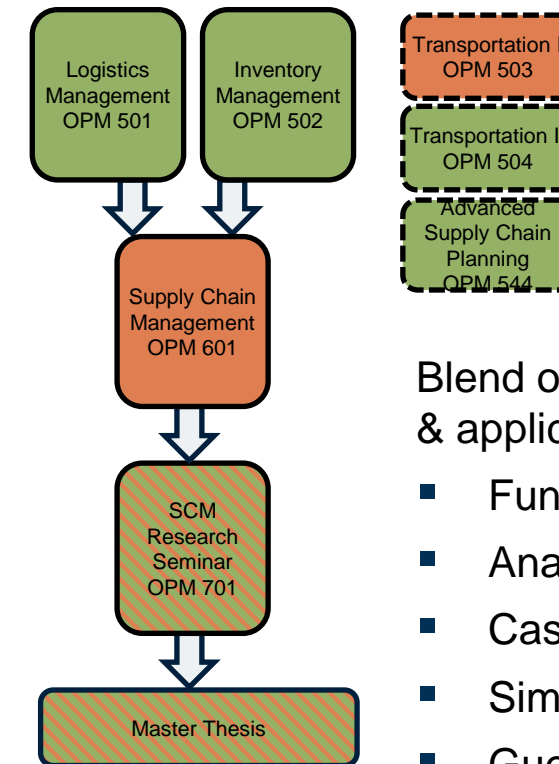
Monday, 13.9., 15:30, SN 169*

Start OPM 502:

Tuesday, 14.9., 10:15, O 151*

*on campus + online streaming

Course portfolio:



Blend of analytics & applications:

- Fundamental concepts
- Analytical tools
- Case studies
- Simulation games
- Guest lectures

More information: <https://www.bwl.uni-mannheim.de/en/fleischmann/>

Production Management

Production Management is about the design and management of manufacturing capacities.

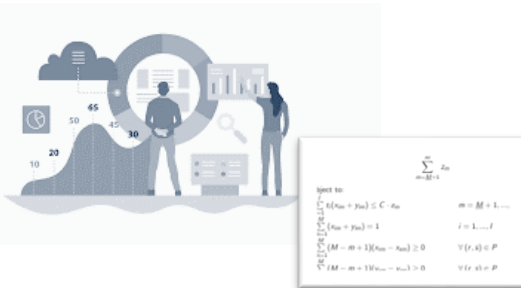
This includes:

- Capacity planning
- Operations planning and scheduling
- Lean management
- Decision support and tools
- Managing uncertainties



Productive 4.0

<https://youtu.be/Hq0HTPrIPGI>



Detailed introduction via zoom:

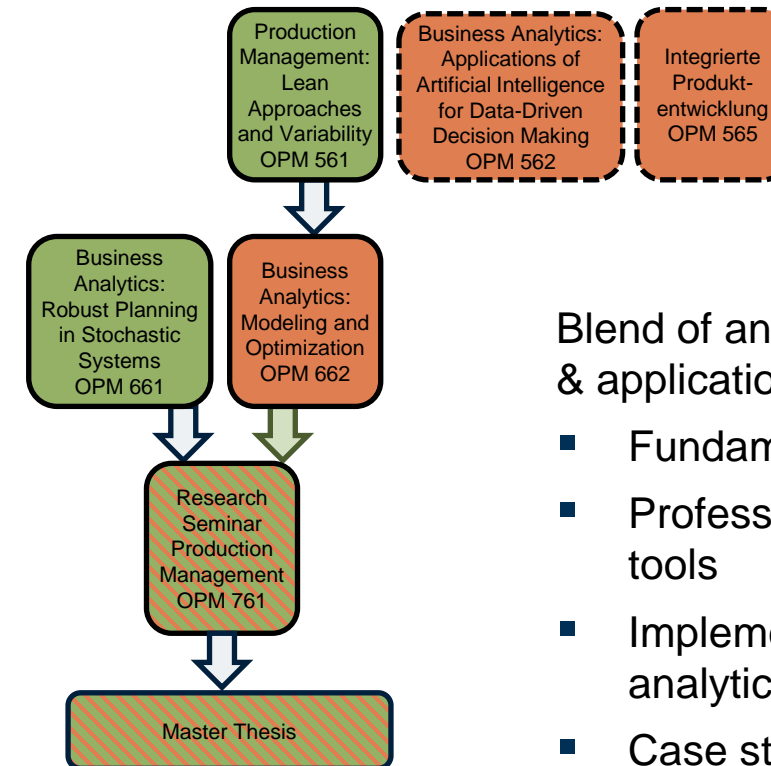
Wednesday, 8.9., 10:15-11:45

(see www.bwl.uni-mannheim.de/en/stolletz/news)

Start OPM 561: Wednesday 15.9.

Start OPM 661: Thursday 16.9.

Course portfolio:



Blend of analytics & applications:

- Fundamental concepts
- Professional analytics tools
- Implementing operations analytics in Python
- Case studies & field trips
- Guest lectures

More information: www.bwl.uni-mannheim.de/en/stolletz/teaching/master/

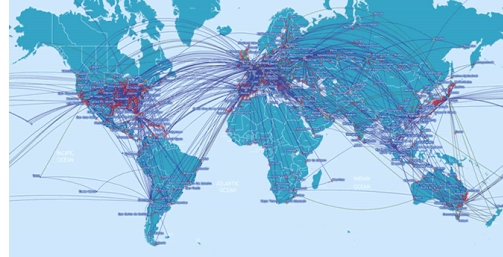
Service Operations Management

Services pose particular challenges to managers: intangible nature, perishability, customer involvement.

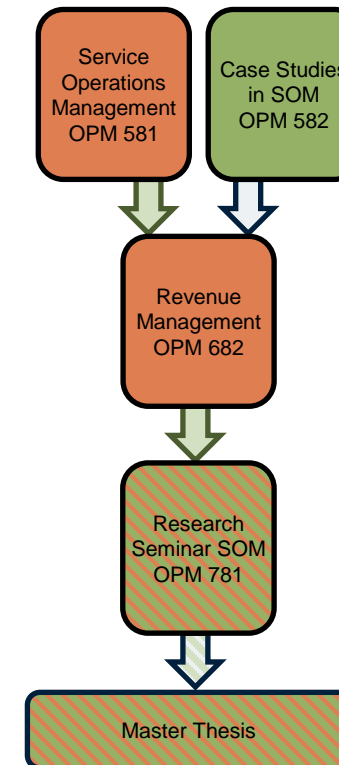
Managing services requires tight integration between operations, marketing, strategy, technology, and organizational issues.

Decisions include

- **Strategic issues** such as the design of service products, processes, networks
- **Tactical and operational issues** such as capacity and revenue management, transport scheduling



Abfahrt / Departure / Départ					
Zeit / Time	Über / via	Ziel / Destination	Glöts / Platform / Quai		
13:21 RE 10016	Bochum - Essen - Duisburg	Krefeld	Monchengladbach	11	
13:25 IC 2322	Münster - Osnabrück - Bremen	Hbf	Kiel	10	
13:32 RB 29019	Do-Signal Iduna Park - Do-Tierpark	Ludenscheid		3	
13:35 RB 89934	Do-Derne - Lünen - Werne	Münster (Westf) H		21	
13:37 IC 2049	Hagen - Wuppertal Hbf - Solingen	Köln Hbf		11	
13:37 IC 2212	Essen - Düsseldorf Hbf - Köln Hbf	Stuttgart Hbf		16	
13:39 ICE 1148	Hannover - Bielefeld - Hannover	Berlin Hbf (S-Bahn)		8	
13:41 S 5	Do-Barop - Witten - Wetter - Hagen	Monchengladbach		5	
13:45 RE 10120	Bochum - Essen - Duisburg - Düsseldorf	Aachen Hbf		16	
13:47 S 2	Do-Mengede - Castroop-Rauvel	Essen Hbf		6	
13:48 ICE 1049	Hannover - Bielefeld - Hannover - Berlin	Berlin Ostbahnhof		10	
13:52 IC 2011	Essen - Köln Hbf - Mainz Hbf - Heidelberg	Stuttgart Hbf		11	



Our focus:

- Relevant concepts
- Quantitative modeling and tools
- Data-driven decision making
- Case studies and real applications
- Guest lectures

More information: <https://www.bwl.uni-mannheim.de/schoen/>

Procurement

*Procurement is an MBA's dream –
Everything is strategy
and everything is deal!*

The McKinsey Quarterly

Procurement is about the provision of external resources at the right time, quality, quantity, and cost. This involves:

- **Strategic issues:** make-or-buy decisions, operating model designs, strategic supply base planning etc.
- **Tactical issues:** category optimization using demand, commercial, and technical levers, etc.
- **Operational issues:** executing the purchase-to-pay process, working capital management, etc.

Current focal topics at the chair

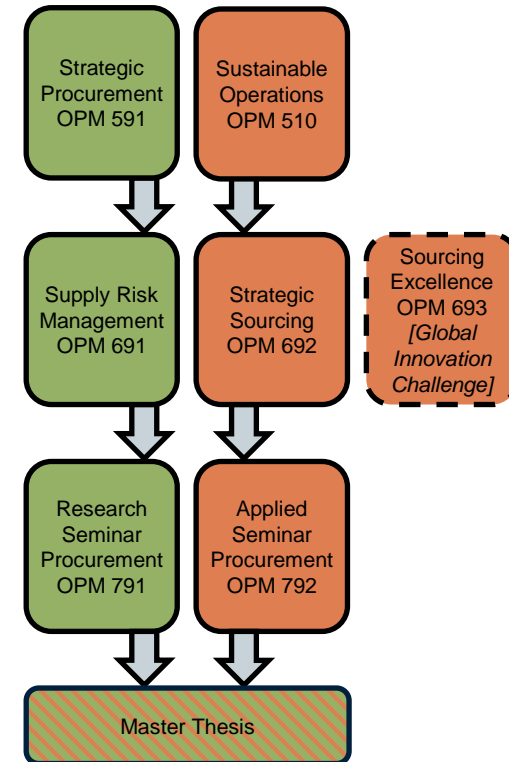
- Risk, disruptions, and resilience
- Interfirm relationships
- Transparency and visibility
- Sustainability/CSR in supply chains
- Software procurement
- Digitalization and procurement of the future

Detailed intro: **Monday, Sept-06, 12:00, [BWL-ZOOM-17](#)** [OPM 591]

Start OPM 591: **Monday, Sept-06, 12:00, [BWL-ZOOM-17](#)**

Start OPM 691: **Thursday, Sept-09, 10:15, [BWL-ZOOM-16](#)**

Course portfolio



Our teaching focus:

- Management theory and empirical insights
- Relevant concepts and tools
- Case studies and industry applications

More information: <http://procurement.bwl.uni-mannheim.de>

Operations Management (Assistent Prof.)

Start CC 501:

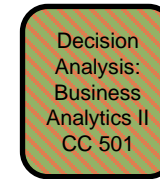
Friday, 10.9., 12:00, ZOOM-BWL-17

Operations Management is about designing and managing the processes of producing and delivering goods and services.

Key processes include:

- **Scheduling** of production activities on e.g. a single machine
- **Forecasting** demands to set production quantities
- **Distribution** of the right goods and services at the right place, right time and right quality

Course portfolio:



- Decision making under certainty and multiple objectives
- Decision making under uncertainty
- Decision making under imperfect information
- Cognitive biases

More information: Ilias group

Graduating in Operations Management

Planning your study program

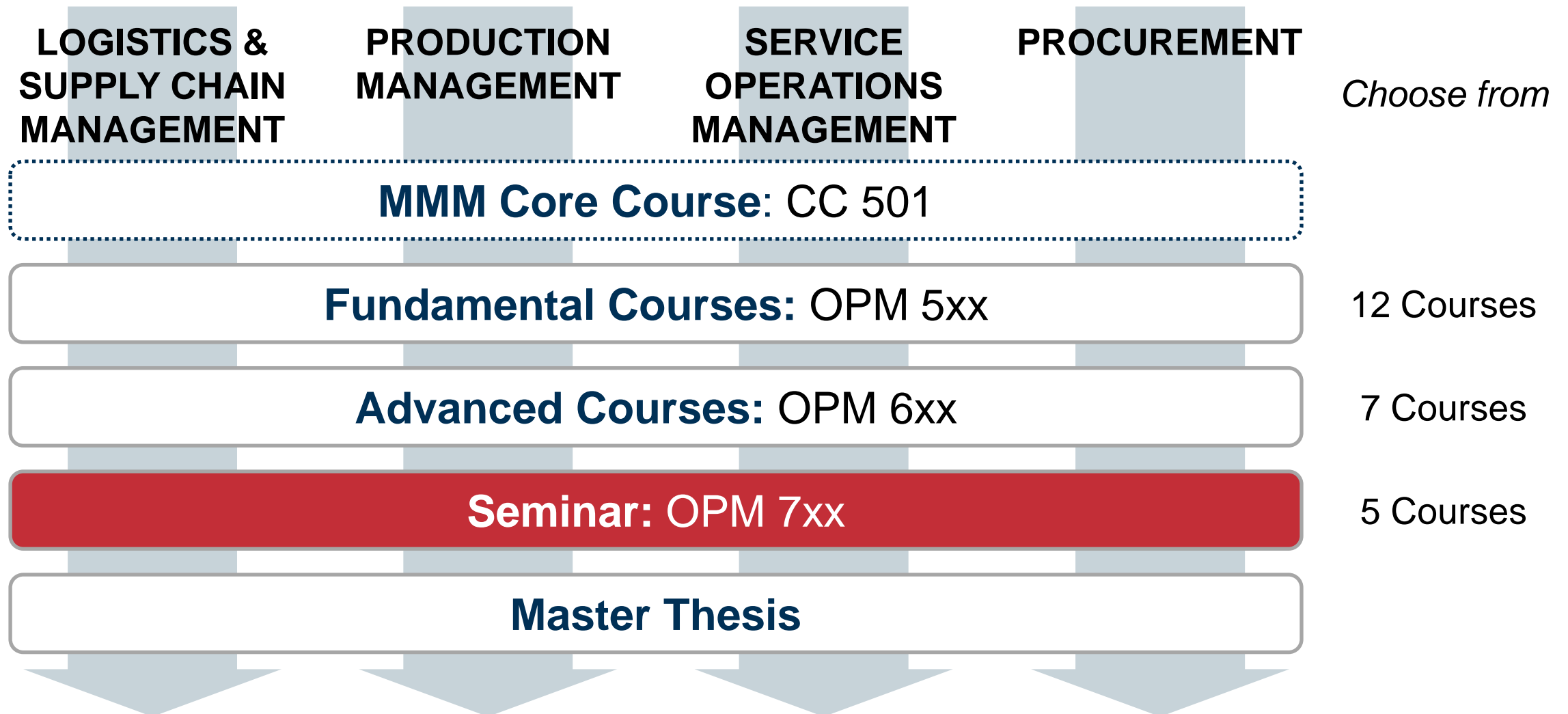
Many opportunities to **customize**:

- Wide range of course offerings, covering the full domain of operations management
- Flexibility to combine courses across chairs
- Flexibility to complement portfolio with courses from other areas
- Flexibility to fit in semester abroad or internship

⇒ **Design your own study program!**

⇒ **Important element: Seminars OPM 7xx**

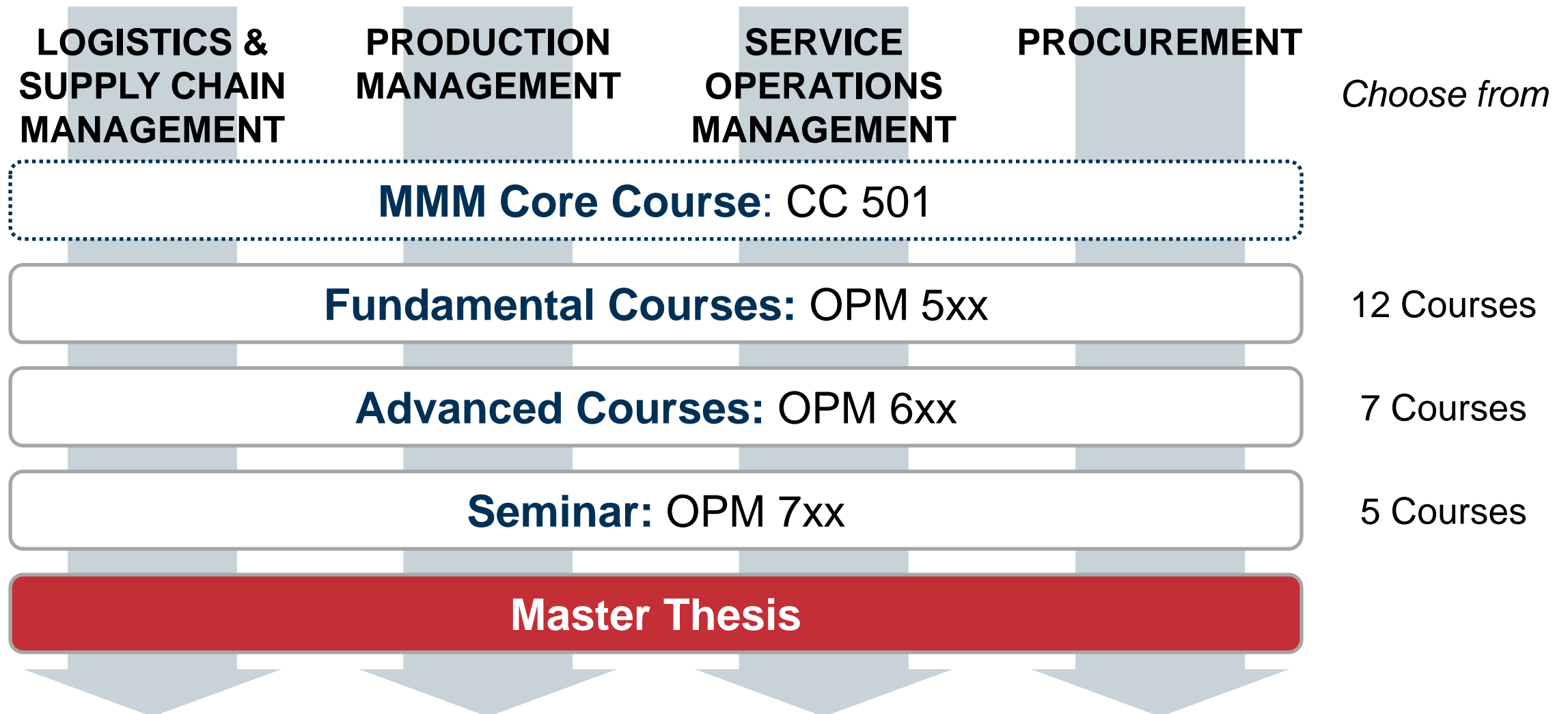
Program structure



Seminars (OPM 7xx)

- Goal: Preparation for Master Thesis
- Insight into scientific literature
- Selection of current topics in operations management
- Two types:
 - **Research Seminar:** Literature based and/or quantitative analysis
 - **Applied Seminar (OPM 792):** In collaboration with companies
- **Admission:**
 - Application at end of each term (details see home pages)
- **Requirements:**
 - At least one module OPM 6xx

Program structure



Master thesis

- Participants write their master thesis at one of the chairs of area, depending on the attended **core courses**.
- **Requirements:**
 - At least one course OPM 7xx and one course OPM 6xx
- **Starting date:** Any
- Application by e-mail (see chairs' homepages)
- **Topics:**
 - Different topics offered by each chair (see homepages)
 - Practice-oriented topics welcome (in cooperation with a company)
 - Own suggestions possible (to be coordinated)

Master thesis: Examples of research-oriented topics

■ Optimization studies

- Demand-management for online-grocery
- Artificial intelligence approaches for the performance evaluation of flow production lines

■ Theoretical / conceptual modeling

- Supply chain management and the circular economy
- Fairness in operations management

■ Quantitative empirical research

- Empirical investigation of innovativeness in buyer-supplier relationships using archival data
- An analysis of financial distress of suppliers in the Automotive industry

■ Qualitative empirical research

- Case studies on sustainable sourcing

■ Field research

- Truck handling operations at loading bays

■ Literature studies

- Coordination in closed-loop supply chains
- Planning and management of production ramp-ups

Master thesis: Examples of in-company topics

- Strategic and tactical distribution planning in the sugar industry: Case Study at **Südzucker**
- Influencing Factors of Inventory Management: A Case Study on the European Parts Distribution Centre of **John Deere**
- Implementation of an Online Delivery Service in Retail Grocery Industry – Case Study at **REWE**
- Development of a safety stock concept for the agrochemical supply chain (with **BASF**)
- Inventory Reduction through VMI – A Case Study at **Procter & Gamble**
- Simulation-based Slot Scheduling of Truck Handling Operations at the **Lufthansa Cargo** Hub in Frankfurt
- Supervised learning approaches for yield prediction in semiconductor manufacturing (with **Bosch**)
- Simultaneous Ramp-up and Allocation Planning in the Automotive Industry at **Daimler AG**



Career outlook

- The qualifications you gain with our courses open a wide range of career options in industry, consulting, and academia.

- Starting positions of our alumni are for example:

- **Trainee**
- **Supply Chain Planner**
- **Consultant**
- **Account manager**
- **Project controller**
- **Procurement manager**
- **PhD Student**
- ...



Summary

More information

- More information on specific courses: Chair home pages + student portal
- Course companion sites on e-learning platform ILIAS:
 - Detailed schedules
 - Announcements
 - Class material: Slides, readings, spreadsheets,...
 - ➔ Register for the courses you would like to attend

Questions?



Get involved!

Mannheim Supply Chain Students

Student initiative focused on Operations Management

- Field trips
- Company talks
- Offers for jobs and internships

Learn more on [Facebook](#)



M S C S

Mannheim Supply Chain Students



See you in Operations!

<http://www.bwl.uni-mannheim.de/operations>

Supplementary Information

Course offering by term

Fall 2021

Spring 2022

Core Courses			
501	Decision Analysis	501	Decision Analysis
Chair of Logistics and Supply Chain Management			
501	Logistics Management	503	Transportation I
502	Inventory Management	601	Supply Chain Management
504	Transportation II	701	Research Seminar
544	Advanced Supply Chain Planning		
701	Research Seminar		
Chair of Production Management			
561	Production Management: Lean Approaches and Variability	662	Business Analytics: Modeling and Optimization
661	Business Analytics: Robust Planning in Stochastic Systems	761	Research Seminar
761	Research Seminar		
Chair of Service Operations Management			
582	Case Studies in Service Operations Management	581	Service Operations Management
781	Research Seminar	781	Research Seminar
Endowed Chair of Procurement			
591	Strategic Procurement	692	Strategic Sourcing
691	Supply Risk Management	792	Applied Seminar Procurement
791	Research Seminar Procurement		
Joint Courses			
		510	Sustainable Operations Management

Schedule Fall Term 2021

	Monday	Tuesday	Wednesday	Thursday	Friday
B1 (08:30-10:00)				OPM 504 Transportation II	CC 501 Decision Analysis
B2 (10:15-11:45)		OPM 502 Inventory Management	OPM 561 Production Management: Lean Approach and Variability	OPM 691 Supply Risk Management	
B3 (12:00-13:30)	OPM 591 Strategic Procurement				CC 501 Decision Analysis
B4 (13:45-15:15)	OPM 561 Production Management: Lean Approach and Variability			OPM 502 Inventory Management	OPM 582 Case Studies in SOM
B5 (15:30-17:00)	OPM 501 Logistics Management	OPM 591 Strategic Procurement	OPM 501 Logistics Management	OPM 661 Business Analytics: Robust Planning in stochastic systems	
		OPM 661 Business Analytics: Robust Planning in stochastic systems			
B6 (17:15-18:45)					

Additional offerings:

- Advanced Supply Chain Planning (OPM 544): Blocked course, Oct. 23 – Oct. 25
- Research Seminars OPM 701, OPM 761, OPM 781, OPM 791

Lecture

Exercise class

Mix of lectures and exercise classes

Example study plans for an Operations Management Profile

- **General Operations Management (OPM) Profile**
=> Thesis at any OPM chair
- **OPM Profile, Supply Chain Management Focus**
=> Thesis in Supply Chain Management (Prof. Fleischmann)
- **OPM Profile, Production Management Focus**
=> Thesis in Production Management (Prof. Stolletz)
- **OPM Profile, Service Operations Focus**
=> Thesis in Service Operations (Prof. Schön)
- **OPM Profile, Procurement Focus**
=> Thesis in Procurement (Prof. Bode)

Example study plan: General Operations Management Profile

1st Semester - Fall

Course Title	ECTS
OPM 502 - Inventory Management	6
OPM 561 - Production Management: Lean Approaches and Variability	6
OPM 591 - Strategic Procurement	6
CC 501 - Decision Analysis	6
CC 502 - Applied Econometrics	6

= 30 ECTS

2nd Semester - Spring

Course Title	ECTS
OPM 581 - Service Operations Management	6
OPM 601 – Supply Chain Management	6
OPM 662 - Business Analytics: Modeling and Optimization	6
OPM 682 - Revenue Management	6
OPM 692 – Strategic Sourcing	6

= 30 ECTS

3rd Semester - Fall

Course Title	ECTS
OPM 701/761/781/791 – Research Seminar	6
CC 504 - Corporate Social Responsibility	4
BE 510 - Business Economics I	6
Additional Modules (OPM or other)	16

= 30 ECTS

4th Semester - Spring

Course Title	ECTS
BE 511 – Business Economics II	6
Thesis at an OPM chair	24

= 30 ECTS

Σ = 120 ECTS

Example study plan*: SCM Focus

1st Semester - Fall

Course Title	ECTS
OPM 501 - Logistics Management	6
OPM 502 - Inventory Management	6
OPM 561 - Production Management or OPM 591 Strategic Procurement	6
CC 501 - Decision Analysis	6
BE 510 - Business Economics I	6

= 30 ECTS

2nd Semester - Spring

Course Title	ECTS
OPM 601 – Supply Chain Management	6
OPM 503 – Transportation II	4
OPM 581 - Service Operations Management	6
BE 511 – Business Economics II	6
Additional Modules (OPM or other)	8

= 30 ECTS

3rd Semester - Fall

Course Title	ECTS
OPM 701 - Research Seminar SCM	6
OPM 504 – Transportation I	4
OPM 544 – Advanced Supply Chain Planning	4
OPM 561 - Production Management or OPM 591 Strategic Procurement	6
CC 504 - Corporate Social Responsibility	4
Additional Module (OPM or other)	6

= 30 ECTS

4th Semester - Spring

Course Title	ECTS
CC 502 - Applied Econometrics	6
Thesis in SCM (Prof. Fleischmann)	24

= 30 ECTS

Σ = 120 ECTS

* can be modified to accommodate an exchange term or an internship in either Fall or Spring

Example study plan: Analytics & Production Management Focus

1st Semester - Fall

Course Title	ECTS
OPM 561 - Production Management: Lean Approaches and Variability	6
OPM 661 - Business Analytics: Robust Planning in Stochastic Systems	6
OPM 502 - Inventory Management	6
OPM 591 - Strategic Procurement	6
<i>Additional analytics-oriented courses</i>	6
30 ECTS	

2nd Semester - Spring

Course Title	ECTS
OPM 562 - Business Analytics: Applications of AI for Data-Driven Decision Making	6
OPM 662 - Business Analytics: Modeling and Optimization	6
OPM 581 - Service Operations Management	6
CC 501 - Decision Analysis	6
<i>Additional analytics-oriented courses</i>	12
30 ECTS	

Analytics-oriented courses

Course Title	ECTS
Area Operations:	
• OPM 501 - Logistics Management	6
• OPM 582 - Case Studies in SO Management	6
• OPM 601 - Supply Chain Management	6
• OPM 682 - Revenue Management	6
• OPM 691 - Supply Risk Management	4
• OPM 692 - Strategic Sourcing	6
• ...	
Other Areas:	
• IS 554 – Computational Thinking	8
• ...	
Electives (other School):	
• Computer Science	14-24 18-20
• Mathematics	

3rd Semester - Fall

Course Title	ECTS
OPM 761 - Research Seminar Production Management (Prof. Dr. Raik Stolletz)	6
CC 502 - Applied Econometrics or CC 503 - Empirical Methods	6
CC 504 - Corporate Social Responsibility	4
BE 510 - Business Economics I	6
<i>Additional analytics-oriented courses</i>	8
30 ECTS	

4th Semester - Spring

Course Title	ECTS
BE 511 - Business Economics II	6
Thesis	24
30 ECTS	

Σ = 120 ECTS

Example study plan: Analytics & Production Management Focus (with exchange semester)

1st Semester - Fall

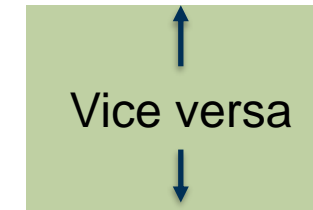
Course Title	ECTS
OPM 561 - Production Management: Lean Approaches and Variability	6
OPM 661 - Business Analytics: Robust Planning in Stochastic Systems	6
OPM 502 - Inventory Management	6
OPM 591 - Strategic Procurement	6
BE 510 - Business Economics I	6
30 ECTS	

2nd Semester - Spring

Course Title	ECTS
OPM 662 - Business Analytics: Modeling and Optimization	6
OPM 581 - Service Operations Management	6
BE 511 - Business Economics II	6
CC 501 - Decision Analysis	6
CC 503 - Empirical Methods	6
30 ECTS	

3rd Semester - Fall (Exchange Semester)

Course Title	ECTS
Courses about Operations Management, Analytics, Management Science, Operations Research	26
Corporate Social Responsibility (replacing CC504)	4
30 ECTS	



4th Semester - Spring

Course Title	ECTS
OPM 761 - Research Seminar Production Management (Prof. Dr. Raik Stolletz)	6
Thesis	24
30 ECTS	

$\Sigma = 120$ ECTS

Example study plan: Service Operations Focus

1st Semester - Fall

Course Title	ECTS
CC 501 - Decision Analysis	6
OPM 501 - Logistics Management	6
OPM 561 - Production Management: Lean Approaches and Variability	6
OPM 582 - Case Studies in Service Operations Management	6
<i>Additional modules</i>	<i>6</i>

= 30 ECTS

2nd Semester - Spring

Course Title	ECTS
CC 504 – Corporate Social Responsibility	4
OPM 581 - Service Operations Management	6
OPM 682 – Revenue Management	6
<i>Additional modules</i>	<i>14</i>

= 30 ECTS

3rd Semester - Fall

Course Title	ECTS
CC 502 - Applied Econometrics or CC 503 - Empirical Methods	6
BE 510 – Business Economics I	6
OPM 661 - Business Analytics: Robust Planning in Stochastic Systems	6
OPM 781 - Research Seminar Service Operations Management	6
<i>Additional modules</i>	<i>6</i>

= 30 ECTS

4th Semester - Spring

Course Title	ECTS
BE 511 – Business Economics II	6
Thesis in Service Operations Management (Prof. Schön)	24

= 30 ECTS

Σ = 120 ECTS

Example study plan: Service Operations Focus (2)

<i>Additional modules</i>
Course Title
Area Operations: <ul style="list-style-type: none">• OPM 501 – Logistics Management (6 ECTS)• OPM 601 – Supply Chain Management (6 ECTS)• OPM 591 – Strategic Procurement (6 ECTS)• OPM 662 – Business Analytics (6 ECTS)• OPM 691 – Supply Risk Management (6 ECTS)• OPM 692 – Strategic Sourcing (6 ECTS)• ...
Other Areas: <ul style="list-style-type: none">• MKT 510 – Price and Product Management (6 ECTS)• MKT 560 – Services Marketing (4 ECTS)• IS 510 – Prozessmanagement (6 ECTS)• IS 554 – Computational Thinking (8 ECTS)• IS 615 – Design Thinking and Lean Development in Enterprise Software Development (6 ECTS)• IS 602 – Business Intelligence and Business Analytics Systems• MAN 646 – HR Analytics (6ECTS)• ...

Example study plan*: Procurement Focus

1st Semester - Fall

Course Title	ECTS
CC 501 – Decision Analysis	6
OPM 501 – Logistics Management	6
OPM 502 – Inventory Management	6
OPM 591 – Strategic Procurement	6
<i>Additional modules</i>	6

= 30 ECTS

2nd Semester - Spring

Course Title	ECTS
CC 504 – Corporate Social Responsibility	4
OPM 601 – Supply Chain Management	6
OPM 692 – Strategic Procurement	6
OPM 792 – Applied Seminar Procurement [Option 1]	[6]
<i>Additional modules</i>	8 – 14

= 30 ECTS

3rd Semester - Fall

Course Title	ECTS
CC 502 or CC 503	6
BE 510 – Business Economics I	6
OPM 691 – Supply Risk Management	4
OPM 791 – Research Seminar Procurement [Option 2]	[6]
<i>Additional modules</i>	8 – 14

= 30 ECTS

4th Semester - Spring

Course Title	ECTS
BE 511 – Business Economics II	6
Thesis in Procurement (Prof. Bode)	24

= 30 ECTS

Σ = 120 ECTS

* can be modified to accommodate an exchange term or an internship in either Fall or Spring