Academic Introduction
Master of Science
Operations Research and Business Analytics

Prof. Dr. Elmar Lukas, 03/04/2020
Welcome!

- **Program Director:**
  Prof. Dr. Elmar Lukas

- **Chair of Financial Management and Innovation Finance**
  - G22-B102a
  - [www.ifm.ovgu.de](http://www.ifm.ovgu.de)

- **Consultation only on appointment**
  - Registration via email required
  - [LS_ifm@ovgu.de](mailto:LS_ifm@ovgu.de)
The ORBA Program: Overview

- **Degree:** Master of Science
- **Duration:** 4 Semesters regular study time
- **Language:** English exclusively
- **Type:** Research-oriented, theoretical
- **Credits:** 120 ECTS (including Master thesis)
- **Enrollment:** Winter and summer term
The ORBA Program: Objectives

- Quantitative Modelling and Algorithms
- Analytical Tools and Skills
- Data Analysis and Big Data Methods

Application of the tools and skills for decision support in:
- Supply Chain Management
- Financial Engineering

The ORBA study program is based on a cooperation between the departments/faculties of Economics and Management (WW), Computer Science (INF) and Mathematics (MATH).
## The ORBA Program: Structure (Example Summer)

### Core Areas
- Min 15 Credits in “Methods of Computer Science”
- Min 15 Credits in “Quantitative Methods”

### Specialization
- Supply Chain Management or Financial Engineering

### Detailed Lecture Catalogue

<table>
<thead>
<tr>
<th>1st Semester</th>
<th>Methods of Computer Science (5 CP)</th>
<th>Methods of Computer Science (5 CP)</th>
<th>Quantitative Methods (5 CP)</th>
<th>Elective (5 CP)</th>
<th>Elective (5 CP)</th>
<th>Specialization (5 CP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd Semester</td>
<td>Methods of Computer Science (5 CP)</td>
<td>Quantitative Methods (5 CP)</td>
<td>Quantitative Methods (5 CP)</td>
<td>Specialization (5 CP)</td>
<td>Seminar (10 CP)</td>
<td></td>
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<tr>
<td>3rd Semester</td>
<td>Elective (5 CP)</td>
<td>Elective (5 CP)</td>
<td>Elective (5 CP)</td>
<td>Project (15 CP)</td>
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<tr>
<td>4th Semester</td>
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<td>Master-Thesis with Research Seminar (30 CP)</td>
</tr>
</tbody>
</table>

- Methods of Computer Science (min. 15 CP)
- Quantitative Methods (min. 15 CP)
- Specialization (min. 35 CP, including Seminar & Project)
- Electives (min. 10 CP)
Core Areas (min. 15 credits each)

- Methods of Computer Science (INF)
  - Introduction to Computer Science for Engineers (Schulze)
  - Machine Learning (Nürnberger)
  - Datenbanken 1 (Database Concepts) (Saake)
  - Introduction to Software Engineering for Engineers (Schulze)
  - Data Mining I (Spiliopoulou)

- Quantitative Methods
  - Concepts and Algorithms of Optimization (MATH, Sager)
  - Econometrics (WW, Noth)
  - Stochastic Models in Production & Logistics (WW, Sachs/Rippe)
  - Stochastic Processes (MATH, Wendler)
  - Business Forecasting (WW, Kleber)
You have to choose one specialization
  - Financial Engineering
  - Supply Chain Management

In the chosen specialization, you have to take the following courses:
  - two compulsory electives,
  - one seminar,
  - one scientific project,
  - master thesis.

You do not have to register for a specialization! Just choose the courses which you are interested in, and you will be automatically assigned to a specialization.
Specializations: Lectures

- Commonly lecture + exercise = 5 ECTS

- Financial Engineering
  - Financial Engineering
  - Company Valuation

- Supply Chain Management
  - Advanced Computational Transportation
  - Inventory Management
  - Supply Chain Management
Electives: Examples

- **Chair in Entrepreneurship**
  - Business Planning (WW, Raith)

- **Chair in Accounting and Control**
  - Dezentrale Unternehmenssteuerung (WW, Schöndube-Pirchegger)

- **Chair in E-Business**
  - Multicultural and Interactive Marketing Communication (WW, Sadrieh)

- **Some lectures from Core Areas and Specializations**
  - Business Forecasting (WW, Kleber)
  - Supply Chain Management (WW, Rippe)
  - Advanced Computational Transportation (WW, Neufeld)
In each semester, a **Seminar** and a **Project** will be offered for your specialization.

Note: since the number of participants can be limited in a seminar/project, **you have to register**, sometimes even before the next semester starts!

Professors will announce seminars and projects in ongoing classes at the end of the semester.

Find all information about requirements on the professors’ webpages, e.g.

- Supply Chain Management: Dr. Kirschstein, Dr. Kleber, Dr. Neufeld
- Financial Engineering: Prof. Lukas, Prof. Reichling

Seminars and projects can only be retaken twice!

Withdrawal is usually possible until two weeks after the start of the seminar/project.
**Application** at preferred chair is necessary
- Application at Chair of Financial Management and Innovation Finance via form (see website)
- Deadline for Chair of Management Science and Chair of Operation Management is 01.07. for winter semesters and 01.02. for summer semesters (see websites)

**Admission requirements:**
- min. 75 CP, among which
- min. 15 CP in both core areas, each, and
- 10 CP in at least one seminar

- 22 weeks incl. 4 weeks reading time
- Max. **one retake** in the following semester
Where Can I Find Learning Material?

- Almost all lecturers provide their material online via https://elearning.ovgu.de
- Access class material and receive announcements via email.
- There is also a “course” entitled Master Program ORBA containing relevant announcements for ORBA students: https://elearning.ovgu.de/course/view.php?id=4017
- Password: ORBA19
All official documents can be found on the ISP webpage
- [http://www.isp.ovgu.de/Study+Documents/Master.html](http://www.isp.ovgu.de/Study+Documents/Master.html)

It is strongly recommended to read the study/exam regulation documents and module handbook entries for the classes you consider to choose!

For each module you want to take, you have to register officially via LSF. No registration, no exam!
- Do not miss the deadlines!
  See here: [Examination Office WW](#)
- **Deadlines differ for INF courses!**
  See [Examination Office INF](#)

Seminar and project registration is done through the particular professor’s office.
Study and Exam Regulations (2/2)

- Exams are usually offered only once at the end of the lecture time.
- **Withdrawal from exams** is usually possible if done timely. Check information from the module handbook/examination office!
- **If you fail an exam**, you can retake it as often as you want, or choose another module/exam to take in the next semester.
  - Note that not all exams are offered every semester!
- Already taken (and passed) exams cannot be retaken.
- **Post-exam review is possible.** See announcement on the professor‘s webpage.
The workload for one module is measured in **credit points** (CP). Most modules have a workload of 5 CP.

**ECTS = European Credit Transfer System**
- 1 CP = 30 hour workload for students
- 5 CP = 150 hour workload for students

To pass some modules, **tutorials and submitting homework** are required!
- See announcements in class/ check module handbook!

Even if not mandatory, we strongly recommend participation in lectures and tutorials! Be prepared for the tutorials!

Preparation for the exams starts **NOW!**
More Information

- **ISP Office**: For general questions on your ORBA schedule
  - Ms. Grit Voigt, Tuesday/Thursday 10-12 am, [www.isp.ovgu.de](http://www.isp.ovgu.de), isp@ovgu.de

- **Examination Offices**: For formal questions on deadlines, exams, grades
  - For **WW, MATH modules**: Dr. Toni Richter, pruefungsamt@ovgu.de
  - For **INF modules**: Ms. Warnecke-Timme, pa@cs.uni-magdeburg.de

- **Lecture Catalogue and Exam Registration**: LSF

- **Official ORBA Study Regulation Documents**: ISP Office

- For **ORBA questions** that could not be resolved by above entities:
  - Study Program Director Prof. Lukas, LS_ifm@ovgu.de