

**ORIENTATION PROGRAM**  
**For students of Master programs**  
**School of Business and Economics**  
**Winter term 2021/22**

<b>Digital</b> Monday, October 11, 09:30 a.m. to 3 p.m.:	Central HU welcoming and information event <a href="https://www.hu-berlin.de/de/studierende/veranstaltungen/zentrale-orientierungsveranstaltungen">https://www.hu-berlin.de/de/studierende/veranstaltungen/zentrale-orientierungsveranstaltungen</a>
<b>In presence</b> Monday, October 11, 4 to 5:30 p.m. Location: Spandauer Str. 1, room 201	<b>Welcome meeting for all Master programs</b> from the Dean of the School of Business and Economics and the Student's Council of the School of Business and Economics.
<b>In presence</b> Monday, October 11, 5:30 to 6:30 p.m. Location: Spandauer Str. 1, room 201	<b>Information regarding study abroad</b> , International Office
<b>In presence</b> Wednesday, October 13, 5:30 p.m. Location: Spandauer Str. 1, room 125	<b>Welcome meeting MEMS</b> (MA in Economics and Management Science)
<b>In presence</b> Monday, October 18, 10 to 11 a.m. Location: Spandauer Str. 1, room 125	<b>Welcome meeting MA Statistik</b>
Monday, October 18	Opening ceremony of academic year 2021/2022 – enrollment celebration of Humboldt Universität zu Berlin

**The courses of the winter semester start on October 19, 2021!**

## Preparatory Courses

### Mathematics Preparatory Course

Location: Spandauer Str. 1, room 220  
Lecturer: Miriam Ruprecht

Daily 10.00 – 17.00 (incl. breaks):

Tuesday, October 12  
Wednesday, October 13  
Thursday, October 14

Content:

The purpose of this course is to review and practice basic mathematical concepts that will be useful throughout your master studies at our faculty. Topics will include:

Basic Matrix Algebra (Systems of linear equations, Determinants, Eigenvalues)  
Differential Calculus (of real and multivariate functions, Taylor series)  
Optimization (of real and multivariate functions, with and without side constraints)

## Integral Calculus

The course is open to all Master students and will be taught in English.

### **Advanced Mathematics (digital)**

Lecturer: Kainat Khowaja

Daily 10.00 – 17.00 (incl. breaks):

Tuesday, October 12

Wednesday, October 13

Thursday, October 14

Content:

This background course on mathematics aims to provide fundamental mathematical knowledge essential for advanced economic analysis. Although open to all master students, it is specifically tailored to those wishing to directly pursue the advanced Y-track of courses. Therefore in content and form, this intensive course is intended to deliver methods beyond refreshing advanced calculus and linear algebra. The course solely deals with deterministic mathematics. For some theorems formally rigorous proofs are presented in order to make participants more comfortable with - and ideally to provide some intuition for – constructing and understanding of mathematical proofs. Throughout the course proper use of notation will be stressed. Topics presented in class constitute the minimal required program given the above aim, and the maximal feasible program given time. Self study should cover topics skipped in class, as well as the areas of personal weakness.

Course Structure:

- Sets, Relations, Preferences
- Vector Spaces and Linear Algebra
- Topology and Convex Optimization
- Differential calculus

The registration in the respective Moodle course is obligatory: <https://moodle.hu-berlin.de/course/view.php?id=106668>

### **Econometrics Preparatory Course (digital)**

Lecturer: Wangzhen Xia and Ana Enriquez

Content:

1. Motivation
2. The Simple Regression Model ( OLS: assumptions, model and estimator, Goodness-of-Fit, Statistical properties of the OLS estimator)
3. The Multiple Regression Model (Model, Interpretation of coefficients, Gauss-Markov-Theorem)
4. Inference & Hypothesis Testing (Testing a single parameter: the t-Test, Testing a linear combination of parameters, Testing multiple linear restrictions: the F-Test, Confidence intervals, OLS asymptotics)
5. Heteroscedasticity and Autocorrelation
6. Maximum-Likelihood-Estimation (The Likelihood function, The ML estimator, Properties)

There will be online lecture videos and two alternative exercise dates via zoom on Friday, October 15, 9:00 to 12:00 and 13:00 to 16:00. Further information, the zoom links and lecture videos are accessible on Moodle from October 11, 2021:

<https://moodle.hu-berlin.de/course/view.php?id=106920>

(Enrollment key: econprep21)