Exemplary elective options for different specialization tracks (starting in the summer semester)

Each student must choose (exactly) one specialization. Prior enrollment in a particular specialization is not required. The area of specialization is finally determined by the choice of the corresponding seminar. In particular, it is possible to attend lectures from different modules during the first semester(s) in order to get an overview.

For students starting in the summer semester, this document shows two paths through each specialization track. These paths are examples only and can be easily adapted to individual preferences and interests. Indeed, this is just an informal presentation; only the study and examination regulations are legally binding.

For detailed information on each module, please refer to the module catalog; see also the corresponding course description on Moodle.

Colour code (ECTS points awarded for successful completion of a module are given in brackets)

xxxxx	mandatory for all students
xxxxx	mandatory when choosing the respective specialisation track
xxxxx	potential choice within the respective specialisation track

Machine Learning

Semester	Classical	EMOS
1 (summer)	Statistical Modelling I (9) Statistical Inference (9) Deep Learning (6) Regression for Correlated Data (6)	Statistical Modelling (9) Supervised Learning (6) EMOS Colloquium (3) Basic Concepts and Official Statistics on Households, Enterprises, Economies, and Populations (6) Deep Learning (6)
2 (winter)	Statistical Modeling II (3)[1] Consulting I (3) Supervised Learning (6) Optimization (6) Automated Machine Learning (6) Computational Social Science (6)	Statistical Inference (9) Basic Concepts and Structures in Official Statistics (6) EMOS Internship I (3) Optimization (6) Data Collection and Questionnaire Design (6)
3 (summer)	Consulting II (9) Seminar: Machine Learning (9) Current Research in Machine Learning (6) Applied Machine Learning (6)	EMOS Internship II (9) Seminar: EMOS (9) Current Research in Machine Learning (6) Applied Machine Learning (6)
4 (winter)	Master's Thesis + Disputation (30)	Master's Thesis + Disputation (30)

[1] These 3 Ects can be completed in any semester.

Methodology and Modeling

Semester	Classical	Applied
1 (summer)	Statistical Modelling I (9) Statistical Inference (9) Regression for Correlated Data (6) Decision Theory (6)	Statistical Modelling I (9) Statistical Inference (9) Regression for Correlated Data (6) Decision Theory (6)
2 (winter)	Statistical Modelling II (3)[2] Consulting I (3) Supervised Learning (6) Survival Analysis (6) Measurement and Modelling in Social Sciences (6) Spatial Statistics (6)	Statistical Modelling II (3) Consulting I (3) Supervised Learning (6) Survival Analysis (6) Complex Samples and Data Structures (6) Advanced Programming (6)
3 (summer)	Consulting II (9) Seminar: Methodology and Modelling (9) Methodological Discourses in Statistics and Data Science (6) Stochastic Processes (6)	Consulting II (9) Seminar: Methodology and Modelling (9) Advanced Mathematical Concepts for Statistics and Data Science (6) Design of Experiments (6)
4 (winter)	Master's Thesis + Disputation (30)	Master's Thesis + Disputation (30)

[2] These 3 Ects can be completed in any semester.

Econometrics

Semester	Focus Data Science	Classical
1 (summer)	Statistical Modelling I (9) Statistical Inference (9) Econometric Theory (6) Deep Learning (6)	Statistical Modelling I (9) Statistical Inference (9) Econometric Theory (6) Regression for Correlated Data (6)
2 (winter)	Statistical Modeling II (3)[3] Consulting I (3) Supervised Learning (6) Causal Inference (6) Nonparametric Econometrics (6) Optimization (6)	Statistical Modeling II (3) Consulting I (3) Supervised Learning (6) Causal Inference (6) Nonparametric Econometrics (6) Advanced Applied Econometrics (6)
3 (summer)	Consulting II (9) Seminar: Econometrics (9) Machine Learning in Econometrics (6) Automated Machine Learning (6)	Consulting II (9) Seminar: Econometrics (9) Time Series (6) Stochastic Processes (6)
4 (winter)	Master's Thesis + Disputation (30)	Master's Thesis + Disputation (30)

[3] These 3 Ects can be completed in any semester.

Social Statistics and Data Science

Semester	Focus Data Science	EMOS
1 (summer)	Statistical Modelling I (12)[4] Supervised Learning (6) Data Collection and Questionnaire Design (6) Decision Theory (6)	Statistical Modelling (9) Statistical Inference (9) Basic Concepts and Official Statistics on Households, Enterprises, Economies, and Populations (6) Data Collection and Questionnaire Design (6)
2 (winter)	Statistical Inference (9) Consulting I (3) Complex Samples and Data Structures (6) Computational Social Science (6) Optimization (6)	Supervised Learning (6) Basic Concepts and Structures in Official Statistics (6) Complex Samples and Data Structures (6) Measurement and Modelling in Social Sciences (6) EMOS Colloquium (3) EMOS Internship II (3)
3 (summer)	Consulting II (9) Seminar: Social Statistics and Data Science (9) Deep Learning (6) Advanced Programming (6)	Seminar: EMOS (9) EMOS Internship II (9) Regression for Correlated Data (6) Decision Theory (6)
4	Master's Thesis + Disputation (30)	Master's Thesis + Disputation (30)

[4]3 Ects of this module can be completed in any semester.

Biostatistics

Semester	Classical	Focus Data Science
1 (summer)	Statistical Modelling I (9) Statistical Inference (9) Diagnostic Accuracy Studies (6) Regression for Correlated Data (6)	Statistical Modelling I (12) Supervised Learning (6) Diagnostic Accuracy Studies (6) Deep Learning (6)
2 (winter)	Statistical Modelling II (3)[5] Consulting I (3) Supervised Learning (6) Preclinical and Clinical Studies (6) Statistical Methods in Epidemiology (6) Survival Analysis (6)	Consulting I (3) Statistical Inference (9) Preclinical and Clinical Studies (6) Survival Analysis (6) Optimization (6)
3 (summer)	Seminar: Biostatistics (9) Consulting II (9) Selected Software for Applied Statistics (SAS) (3) Selected Topics of Biostatistics (3) Design of Experiments (6)	Seminar: Biostatistics (9) Consulting II (9) Analysis of High-dimensional Biological Data (6) Selected Software for Applied Statistics (SAS) (3) Selected Topics of Biostatistics (3)
4	Master's Thesis + Disputation (30)	Master's Thesis + Disputation (30)

[5] These 3 Ects can be completed in any semester.