

## Preliminary model schedules for the academic years 2022-23 and 2023-24 in the master's programme for mathematics and statistics by study track and specialization

The courses that are in **bold** will be split into 5-credit courses or replaced in the academic year 2023-24.

The optional studies marked in **blue** can be taken from any degree programme including **MAST**.

### Model schedules for students who started their studies in the academic year 2022-23

#### Mathematics study track:

##### **Analysis specialization**

Academic year 2022-23

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
<b>Functional analysis</b>	<b>Functional analysis</b>	Harmonic analysis I	Harmonic analysis II
Topology II	Topology II	<b>Partial differential equations I</b>	<b>Partial differential equations I</b>
Case studies in mathematics and statistics	Case studies in mathematics and statistics	5 credits of optional studies	Introduction to complex analysis

Academic year 2023-24

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
Master's thesis	Master's thesis	Master's thesis	Master's thesis
<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>
Real analysis IIa	Real analysis IIb	5 credits of optional studies	
Sobolev spaces	Sobolev spaces		

##### **Algebra, topology, geometry specialization**

Academic year 2022-23

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
Topology II	Topology II	Algebra II	Algebra II

<b>Functional analysis</b>	<b>Functional analysis</b>	De Rham theory	De Rham theory
5 credits of optional studies	5 credits of optional studies	5 credits of optional studies	5 credits of optional studies

Academic year 2023-24

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>
Master's thesis	Master's thesis	Master's thesis	Master's thesis
Homotopy theory	Homotopy theory	5 credits of optional studies	
5 credits of optional studies	5 credits of optional studies		

## Mathematical logic

Academic year 2022-23

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
Mathematical logic	Mathematical logic	Model theory	Model theory
10 credits of optional studies	10 credits of optional studies	Logic and databases	Introduction to quantum computation
		5 credits of optional studies	5 credits of optional studies

Academic year 2023-24

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>
Master's thesis	Master's thesis	Master's thesis	Master's thesis
Dependence logic	Dependence logic	Axiomatic set theory	Axiomatic set theory
5 credits of optional studies			

## Mathematical physics specialization

Academic year 2022-23

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
Navier stokes equations I	Navier stokes equations II	Introduction to mathematical physics A	Introduction to mathematical physics B
<b>Functional analysis</b>	<b>Functional analysis</b>	Coagulation dynamics	10 credits of optional studies
5 credits of optional studie	5 credits of optional studies	5 credits of optional studies	

Academic year 2023-24

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>
Master's thesis	Master's thesis	Master's thesis	Master's thesis
Stochastic analysis I	Stochastic analysis II	5 credits of optional studies	
5 credits of optional studies	5 credits of optional studies		

### **Applied mathematics study track:**

#### **Applied analysis specialization**

Academic year 2022-23

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
Convex analysis and optimization I	Convex analysis and optimization II	<b>Partial differential equations I</b>	<b>Partial differential equations I</b>
<b>Functional analysis</b>	<b>Functional analysis</b>	Computational methods I	Computational methods II
5 credits of optional studie	5 credits of optional studies	5 credits of optional studies	5 credits of optional studies

Academic year 2023-24

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>
Master's thesis	Master's thesis	Master's thesis	Master's thesis
10 credits of optional studies	10 credits of optional studies	5 credits of optional studies	

#### **Mathematical modelling specialization**

Academic year 2022-23

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
Introduction to mathematical biology I	Introduction to mathematical biology II	Spatial models in ecology and evolution	Spatial models in ecology and evolution
Evolution and the theory of games I	Evolution and the theory of games II	Stochastic population models	Stochastic population models
Probability theory I	5 credits of optional studies	5 credits of optional studies	5 credits of optional studies

Academic year 2023-24

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>
Master's thesis	Master's thesis	Master's thesis	Master's thesis
Mathematical modelling I	Mathematical modelling II	Adaptive dynamics	Adaptive dynamics
5 credits of optional studies			

### Insurance and financial mathematics specialization

Academic year 2022-23

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
Case studies in insurance mathematics	Case studies in insurance mathematics	Life insurance mathematics I	Life insurance mathematics II
Case studies in mathematics and statistics	Case studies in mathematics and statistics	Mathematical finance I	Mathematical finance II
Probability theory I	Probability theory II	5 credits of optional studies	5 credits of optional studies
Financial economics	Financial economics		

Academic year 2023-24

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>
Master's thesis	Master's thesis	Master's thesis	Master's thesis
Risk theory	Risk theory	Advanced risk theory	
5 credits of optional studies	5 credits of optional studies		

### Mathematics of imaging specialization

Academic year 2022-23

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
Inverse problems I	Inverse problems II	15 credits of optional studies	15 credits of optional studies
10 credits of optional studies	Introduction to real and fourier analysis		

	Inverse problems project work		
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Academic year 2023-24

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>
Master's thesis	Master's thesis	Master's thesis	Master's thesis
Functional analysis I	10 credits of optional studies	5 credits of optional studies	
5 credits of optional studies			

### Probabilistic modelling

Academic year 2022-23

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
Probability theory I	Probability theory II	15 credits of optional studies	Spatial modelling and Bayesian inference
Computational statistics I	10 credits of optional studies		10 credits of optional studies
5 credits of optional studies			

Academic year 2023-24

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>
Master's thesis	Master's thesis	Master's thesis	Master's thesis
Mathematical modelling I	Mathematical modelling II	5 credits of optional studies	
5 credits of optional studies	5 credits of optional studies		

### Stochastics specialization

Academic year 2022-23

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
Probability theory I	Probability theory II	15 credits of optional studies	15 credits of optional studies
<b>Functional analysis</b>	<b>Functional analysis</b>		

5 credits of optional studies	Stochastic differential equations with applications to biology and finance		
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Academic year 2023-24

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>
Master's thesis	Master's thesis	Master's thesis	Master's thesis
Mathematical modelling I	Mathematical modelling II	5 credits of optional studies	
Stochastic analysis I	Stochastic analysis II		

### Statistics study track:

#### Statistics specialization

Academic year 2022-23

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
Multivariate analysis	Survival and event history analysis I	Time series analysis II	Asymptotic statistical inference
Computational statistics I	Time series analysis I	10 credits of optional studies	Survival event history analysis II
Probability theory I	Generalized linear models II		5 credits of optional studies

Academic year 2023-24

1 <sup>st</sup> period	2 <sup>nd</sup> period	3 <sup>rd</sup> period	4 <sup>th</sup> period
<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>	<b>Master's thesis seminar</b>
Master's thesis	Master's thesis	Master's thesis	Master's thesis
Causal inference: foundation, application and assumptions	Robust regression	5 credits of optional studies	
5 credits of optional studies	5 credits of optional studies		