

Module Handbook (<https://modhb.uni-kl.de/>)

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## Course of Study "Mathematics" (B.Sc.)

Department	[MAT] Mathematik
Degree	[B.Sc.] Bachelor (B.Sc.)
Course of Study	Mathematics
State	[NORM] Active
Short Name	<b>B.Sc. Mathematics</b>
Additional informations	<a href="https://www.uni-kl.de/fileadmin/ha-4/42-Pruefung/Pruefungsordnungen/Bachelor/Bachelor-PO_Mathematik.pdf">Examination regulations</a> ( <a href="https://www.uni-kl.de/fileadmin/ha-4/42-Pruefung/Pruefungsordnungen/Bachelor/Bachelor-PO_Mathematik.pdf">https://www.uni-kl.de/fileadmin/ha-4/42-Pruefung/Pruefungsordnungen/Bachelor/Bachelor-PO_Mathematik.pdf</a> ) <a href="https://www.mathematik.uni-kl.de/studium/studiengaenge/bachelor-mathematik/">Homepage of the Course of Study</a> ( <a href="https://www.mathematik.uni-kl.de/studium/studiengaenge/bachelor-mathematik/">https://www.mathematik.uni-kl.de/studium/studiengaenge/bachelor-mathematik/</a> )

### Section *Fundamentals of Mathematics*

Fundamentals

P MAT-10-1-M-2 (/mhb/modules/MAT-10-1-M-2/) Fundamentals of Mathematics 28.0 CP

### Section *Pure Mathematics*

Core Modules (non specialised)

P MAT-12-10A-M-2 (/mhb/modules/MAT-12-10A-M-2/) Pure Mathematics A 10.0 CP

P MAT-12-10B-M-3 (/mhb/modules/MAT-12-10B-M-3/) Pure Mathematics B 9.0 CP

P MAT-12-10C-M-3 (/mhb/modules/MAT-12-10C-M-3/) Pure Mathematics C 9.0 CP

WP MAT-16-10R-M-3 (/mhb/modules/MAT-16-10R-M-3/) Proseminar (Pure Mathematics) 3.0 CP

### Section *Applied Mathematics*

Core Modules (non specialised)

P MAT-14-10A-M-3 (/mhb/modules/MAT-14-10A-M-3/) Applied Mathematics A 9.0 CP

P MAT-14-10B-M-3 (/mhb/modules/MAT-14-10B-M-3/) Applied Mathematics B 9.0 CP

P MAT-14-10C-M-3 (/mhb/modules/MAT-14-10C-M-3/) Applied Mathematics C 9.0 CP

WP MAT-16-10P-M-3 (/mhb/modules/MAT-16-10P-M-3/) Proseminar (Applied Mathematics) 3.0 CP

## Section *Mathematical Modelling*

Core Modules (non specialised)

P **MAT-14-00-M-3** (/mhb/modules/MAT-14-00-M-3/) Mathematical Modelling 16.0 CP

## Section *Computer Science*

Core Modules (non specialised)

This section is not part of the study programme if computer science has been selected as subsidiary subject (see below).

P **MAT-INF-10-M-3** (/mhb/modules/MAT-INF-10-M-3/) Computer Science for Mathematicians 8.0 CP

## Section *Mathematical Specialisation*

Specialisation

P **MAT-30-10A-M-4** (/mhb/modules/MAT-30-10A-M-4/) Mathematical Specialisation A 9.0 CP

P **MAT-30-10B-M-4** (/mhb/modules/MAT-30-10B-M-4/) Mathematical Specialisation B 9.0 CP

## Section *Internship / Elective Area*

Internship / Occupational Modules

In this section, modules amounting to 15 - 20 credit points (CP) are to be successfully completed, including one of **[MAT-25-10-M-4]** (/mhb/modules/MAT-25-10-M-4/) *Practical Training Mathematics* or **[MAT-25-10E-M-4]** (/mhb/modules/MAT-25-10E-M-4/) *Practical Training Mathematics (extended)*.

If **[MAT-25-10-M-4]** (/mhb/modules/MAT-25-10-M-4/) is selected, complementary modules amounting to 6 - 10 CP must be successfully completed. In particular, the following modules are permitted:

- **[MAT-AT-10-M-1]** (/mhb/modules/MAT-AT-10-M-1/) *Work Techniques in Mathematics*
- **[INF-02-16-M-2]** (/mhb/modules/INF-02-16-M-2/) *Project Management*.
- **[MAT-25-20-M-4]** (/mhb/modules/MAT-25-20-M-4/) *Elective Module Specialisation Mathematics*
- **[MAT-25-20E-M-4]** (/mhb/modules/MAT-25-20E-M-4/) *Elective Module Specialisation Mathematics (extended)*.

If the chosen specialisation is either Optimisation and Stochastics or Analysis and Stochastics then the module **[MAT-60-15-M-4]** (/mhb/modules/MAT-60-15-M-4/) is also selectable.

The grades of the modules included in this area are not taken into account when calculating the grade for the Bachelor's examination.

WP	<b>MAT-25-10-M-4</b> (/mhb/modules/MAT-25-10-M-4/)	Practical Training Mathematics	9.0 CP
WP	<b>MAT-25-10E-M-4</b> (/mhb/modules/MAT-25-10E-M-4/)	Practical Training Mathematics (extended)	15.0 CP
WP	<b>MAT-AT-10-M-1</b> (/mhb/modules/MAT-AT-10-M-1/)	Work Techniques in Mathematics	3.0 CP
WP	<b>INF-02-16-M-2</b> (/mhb/modules/INF-02-16-M-2/)	Project Management	6.0 CP
WP	<b>MAT-25-20-M-4</b> (/mhb/modules/MAT-25-20-M-4/)	Elective Module Specialisation Mathematics	3.0 CP
WP	<b>MAT-25-20E-M-4</b> (/mhb/modules/MAT-25-20E-M-4/)	Elective Module Specialisation Mathematics (extended)	6.0 CP
WP	<b>MAT-60-15-M-4</b> (/mhb/modules/MAT-60-15-M-4/)	Foundations in Financial Mathematics	3.0 CP

## Section *Bachelor Thesis*

Thesis

P **MAT-BA-M-4** (/mhb/modules/MAT-BA-M-4/) Bachelor Thesis (B.Sc. Mathematics/Business Mathematics) 10.0 CP

When enrolling in the study programme, a subsidiary subject (minor) must be selected from the following list:

## Biology

In this subsidiary topic, three compulsory modules (with a total of 16 CP) as well as the following compulsory elective modules must be taken:

- **Elective module Zoology (5 CP):** Selection of one of the modules **[BIO-GM7-M-2]** (/mhb/modules/BIO-GM7-M-2/) or **[MAT-BIO-M3-M-2]** (/mhb/modules/MAT-BIO-M3-M-2/);
- **Elective module Microbiology and Biochemistry (6 Cp):** Selection of one of the modules **[BIO-GM13-M-2]** (/mhb/modules/BIO-GM13-M-2/) or **[MAT-BIO-G11-M-2]** (/mhb/modules/MAT-BIO-G11-M-2/).

P	<b>MAT-BIO-M2-M-2</b> (/mhb/modules/MAT-BIO-M2-M-2/)	Structures and Functions of Plants (for Mathematics Students)	<b>6.0 CP</b>
P	<b>MAT-BIO-G4-M-2</b> (/mhb/modules/MAT-BIO-G4-M-2/)	Genetics (for Mathematics Students)	<b>4.0 CP</b>
P	<b>BIO-GM12-M-2</b> (/mhb/modules/BIO-GM12-M-2/)	Grundmodul 12: Humanbiologie	<b>6.0 CP</b>
WP	<b>BIO-GM7-M-2</b> (/mhb/modules/BIO-GM7-M-2/)	Grundmodul 7: Zoologie	<b>5.0 CP</b>
WP	<b>MAT-BIO-M3-M-2</b> (/mhb/modules/MAT-BIO-M3-M-2/)	Structures and Functions of Animals (for Mathematics Students)	<b>5.0 CP</b>
WP	<b>BIO-GM13-M-2</b> (/mhb/modules/BIO-GM13-M-2/)	Grundmodul 13: Mikrobiologie	<b>6.0 CP</b>
WP	<b>MAT-BIO-G11-M-2</b> (/mhb/modules/MAT-BIO-G11-M-2/)	Biochemistry (for Mathematics Students)	<b>6.0 CP</b>

## Chemistry

In this subsidiary topic, two compulsory modules (with a total of 14 CP) as well as the following compulsory elective modules must be completed:

- **Elective module(s) Physical Chemistry (10 CP):** Selection of the module **[CHE-BaEd-06-M-1]** (/mhb/modules/CHE-BaEd-06-M-1/) or the two modules **[CHE-BaCh-13-M-1]** (/mhb/modules/CHE-BaCh-13-M-1/) and **[CHE-BaCh-14-M-1]** (/mhb/modules/CHE-BaCh-14-M-1/);
- **Elective module Chemistry (3 - 5 CP):** Selection of one of the modules **[CHE-BaCh-05-M-1]** (/mhb/modules/CHE-BaCh-05-M-1/), **[CHE-BaCh-061-M-1]** (/mhb/modules/CHE-BaCh-061-M-1/) or **[MAT-CHE-08-M-1]** (/mhb/modules/MAT-CHE-08-M-1/).

P	<b>MAT-CHE-01-M-1</b> (/mhb/modules/MAT-CHE-01-M-1/)	General and Inorganic Experimental Chemistry (for Mathematics Students)	<b>9.0 CP</b>
P	<b>CHE-BaCh-09-M-1</b> (/mhb/modules/CHE-BaCh-09-M-1/)	Grundmodul: Organische Chemie I	<b>5.0 CP</b>
WP	<b>CHE-BaCh-13-M-1</b> (/mhb/modules/CHE-BaCh-13-M-1/)	Grundmodul: Physikalische Chemie I	<b>5.0 CP</b>
WP	<b>CHE-BaCh-14-M-1</b> (/mhb/modules/CHE-BaCh-14-M-1/)	Grundmodul: Physikalische Chemie II	<b>5.0 CP</b>
WP	<b>CHE-BaEd-06-M-1</b> (/mhb/modules/CHE-BaEd-06-M-1/)	Modul 6: Physikalische Chemie - Grundlagen	<b>12.0 CP</b>
WP	<b>CHE-BaCh-061-M-1</b> (/mhb/modules/CHE-BaCh-061-M-1/)	Grundmodul: Anorganische Chemie I	<b>3.0 CP</b>
WP	<b>CHE-BaCh-05-M-1</b> (/mhb/modules/CHE-BaCh-05-M-1/)	Grundmodul: Analytische Chemie	<b>5.0 CP</b>
WP	<b>MAT-CHE-08-M-1</b> (/mhb/modules/MAT-CHE-08-M-1/)	Toxicology I für Natural Scientists	<b>3.0 CP</b>

## Electrical Engineering

In this subsidiary topic, five compulsory modules (with a total of 27 CP) must be completed:

P	<b>EIT-DSV-101-M-2</b> (/mhb/modules/EIT-DSV-101-M-2/)	Fundamentals of Electrical Engineering I	<b>6.0 CP</b>
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P	EIT-FUN-102-M-2 (/mhb/modules/EIT-FUN-102-M-2/)	Fundamentals of Electrical Engineering II	6.0 CP
P	EIT-EIS-314-M-2 (/mhb/modules/EIT-EIS-314-M-2/)	Fundamentals of Information Processing	6.0 CP
P	EIT-EOT-601-M-3 (/mhb/modules/EIT-EOT-601-M-3/)	Theoretical Electrical Engineering I	5.0 CP
P	EIT-EOT-602-M-4 (/mhb/modules/EIT-EOT-602-M-4/)	Theoretical Electrical Engineering II	5.0 CP

## Computer Science

In this subsidiary topic, two compulsory modules (with a total of 18 CP) as well as the following compulsory elective modules must be completed:

- **Theory:** Selection of one of the modules [INF-02-05\_MAT-M-2] (/mhb/modules/INF-02-05-M-2/) or [INF-02-04-M-2] (/mhb/modules/INF-02-04-M-2/)
- **Computer Science Systems (12 CP):** Selection of modules from [INF-00-12-M-2] (/mhb/modules/INF-00-12-M-2/), [INF-02-02-M-2] (/mhb/modules/INF-02-02-M-2/), [INF-02-09-M-2] (/mhb/modules/INF-02-09-M-2/), [INF-02-11-M-2] (/mhb/modules/INF-02-11-M-2/) and/or [INF-02-13-M-2] (/mhb/modules/INF-02-13-M-2/).

With the approval of the examination board, other modules are also permitted for the elective area of computer science systems.

P	INF-02-01-M-2 (/mhb/modules/INF-02-01-M-2/)	Foundations of Programming	10.0 CP
P	MAT-INF-10-M-3 (/mhb/modules/MAT-INF-10-M-3/)	Computer Science for Mathematicians	8.0 CP
WP	INF-02-05_MAT-M-2 (/mhb/modules/INF-02-05-M-2/)	Logic and Semantics of Programming Languages	5.0 CP
WP	INF-02-04-M-2 (/mhb/modules/INF-02-04-M-2/)	Formal Languages and Computability	6.0 CP
WP	INF-00-12-M-2 (/mhb/modules/INF-00-12-M-2/)	Information Systems	8.0 CP
WP	INF-02-02-M-2 (/mhb/modules/INF-02-02-M-2/)	Modelling of Software Systems	4.0 CP
WP	INF-02-09-M-2 (/mhb/modules/INF-02-09-M-2/)	Digital Systems and Computer Architecture	8.0 CP
WP	INF-02-11-M-2 (/mhb/modules/INF-02-11-M-2/)	Artificial Intelligence	4.0 CP
WP	INF-02-13-M-2 (/mhb/modules/INF-02-13-M-2/)	Communication Systems	4.0 CP

## Mechanical Engineering

In this subsidiary topic, five compulsory modules (with a total of 27 CP) must be completed:

P	MV-TM-7-M-1 (/mhb/modules/MV-TM-7-M-1/)	Applied Mechanics I	5.0 CP
P	MV-TM-8_MAT-M-1 (/mhb/modules/MV-TM-8-M-4/)	Applied Mechanics II	6.0 CP
P	MV-TM-9_MAT-M-1 (/mhb/modules/MV-TM-9-M-4/)	Engineering Mechanics III	6.0 CP
P	MV-SAM-24-M-4 (/mhb/modules/MV-SAM-24-M-4/)	Fluid Mechanics I	5.0 CP
P	MV-TD-18-M-4 (/mhb/modules/MV-TD-18-M-4/)	Thermodynamics I	5.0 CP

## Physics

In this subsidiary topic, two compulsory modules (with a total of 27 CP) must be completed:

P	MAT-PHY-EX-M-4 (/mhb/modules/MAT-PHY-EX-M-4/)	Experimental Physics I/II (for Mathematicians)	18.0 CP
P	MAT-PHY-TH-M-4 (/mhb/modules/MAT-PHY-TH-M-4/)	Theoretic Foundations of Classical Physics (for	9.0 CP

## Economics and Business Sciences

In this subsidiary topic, three compulsory modules (with a total of 15 CP) as well as the following compulsory elective modules must be completed:

- **Core module Business Economics (6 CP):** Selection of one of the modules **[WIW-BWL-INV-M]** (/mhb/modules/WIW-BWL-INV-M/), **[WIW-BWL-MAR-M]** (/mhb/modules/WIW-BWL-MAR-M/) or **[WIW-BWL-PRO-M-1]** (/mhb/modules/WIW-BWL-PRO-M-1/);
- **Elective module Economic Sciences (6 - 8 CP):** Selection of an additional module (or two additional modules) from the list below.

With the approval of the examination board, also other modules in the field of economics and business sciences (with a total of 6 - 8 CP) are admissible for the elective module.

P	<b>WIW-BWL-BWG-M-1</b> (/mhb/modules/WIW-BWL-BWG-M-1/)	Business and Management Basics	5.0 CP
P	<b>WIW-VWL-MIK-M-1</b> (/mhb/modules/WIW-VWL-MIK-M-1/)	Basics of Economics and Microeconomics	6.0 CP
P	<b>WIW-BWL-KER4-M-1</b> (/mhb/modules/WIW-BWL-KER4-M-1/)	Cost Accounting	4.0 CP
WP	<b>WIW-BWL-INV-M-1</b> (/mhb/modules/WIW-BWL-INV-M-1/)	Investment and Financing	6.0 CP
WP	<b>WIW-BWL-MAR-M-1</b> (/mhb/modules/WIW-BWL-MAR-M-1/)	Marketingmanagement	6.0 CP
WP	<b>WIW-BWL-PRO-M-1</b> (/mhb/modules/WIW-BWL-PRO-M-1/)	Production Management	6.0 CP
WP	<b>WIW-BWL-GLF-M-1</b> (/mhb/modules/WIW-BWL-GLF-M-1/)	Basics in Leadership	6.0 CP
WP	<b>WIW-VWL-MAK-M-1</b> (/mhb/modules/WIW-VWL-MAK-M-1/)	Intermediate Macroeconomics	6.0 CP
WP	<b>WIW-BWL-SWP-M-1</b> (/mhb/modules/WIW-BWL-SWP-M-1/)	Tax and business auditing	6.0 CP
WP	<b>WIW-BWL-STM-M-1</b> (/mhb/modules/WIW-BWL-STM-M-1/)	Strategic Management	6.0 CP
WP	<b>WIW-BWL-LOG1-M-1</b> (/mhb/modules/WIW-BWL-LOG1-M-1/)	Logistics I	3.0 CP
WP	<b>WIW-BWL-LOG2-M-2</b> (/mhb/modules/WIW-BWL-LOG2-M-2/)	Logistics II	3.0 CP