## Mathematics BSc

**Matriculation Fall 2019**

| Program-Specific Modules | Type | Assessment | Period | Status[1] | Sem. | CP |
|---|---|---|---|---|---|---|
| **Year 1 - CHOICE** | | | | | | 45 |
| *Take the mandatory CHOICE modules listed below, this is a requirement for the Math program.* | | | | | | |
| **Unit: Foundations of Mathematics** (default minor) | | | | | | 15 |
| **CH-200** | **Module: Analysis I** (default minor) | | | m | 1 | 7.5 |
| CH-200-A | Analysis I | Lecture | Written examination | Examination period | | 5 |
| CH-200-B | Tutorial Analysis I | Tutorial | | | | 2.5 |
| **CH-201** | **Module: Linear Algebra** (default minor) | | | m | 2 | 7.5 |
| CH-201-A | Linear Algebra | Lecture | Written examination | Examination period | | 5 |
| CH-201-B | Tutorial Linear Algebra | Tutorial | | | | 2.5 |
| **Unit: Applied Mathematics** | | | | | | 7.5 |
| **CH-202** | **Module: Applied Mathematics** | | | m | 2 | 7.5 |
| CH-202-A | Advanced Calculus | Lecture | Written examination | Examination period | | 5 |
| CH-202-B | Numerical Software Lab | Lab | Lab report | | | 2.5 |
| **Unit: CHOICE** (own selection) | | | | me | 1/2 | 22.5 |
| *Students take three further CHOICE modules (22.5 CP) from those offered for all other study programs.[2]* | | | | | | |
| **Year 2 - CORE** | | | | | | 45 |
| *Take all modules listed below or replace mandatory elective ("me") modules (15 CP) with suitable CORE modules from other study programs.* | | | | | | |
| **Unit: Default Minor Track** | | | | | | 15 |
| **CO-500** | **Module: Number Theory** | | | me | 3 | 5 |
| CO-500-A | Number Theory | Lecture | Written examination | Examination period | | 5 |
| **CO-501** | **Module: Discrete Mathematics** | | | me | 4 | 5 |
| CO-501-A | Discrete Mathematics | Lecture | Written examination | Examination period | | 5 |
| **CO-502** | **Module: Undergraduate Seminar** | | | m | 3+4 | 5 |
| CO-502-A | Undergraduate Seminar I | Seminar | Presentation | During the semester | 3 | 2.5 |
| CO-502-B | Undergraduate Seminar II | Seminar | | | 4 | 2.5 |
| **Unit: Core Mathematics** | | | | | | 15 |
| **CO-503** | **Module: Introductory Algebra** | | | m | 3 | 7.5 |
| CO-503-A | Introductory Algebra | Lecture | Written examination | Examination period | | 5 |
| CO-503-B | Tutorial Introductory Algebra | Tutorial | | | | 2.5 |
| **CO-504** | **Module: Analysis III** | | | m | 4 | 7.5 |
| CO-504-A | Analysis III | Lecture | Written examination | Examination period | | 5 |
| CO-504-B | Tutorial Analysis III | Tutorial | | | | 2.5 |
| **Unit: Profile Mathematics or Minor Study Program** | | | | me | 3+4 | 15 |
| *Take 15 CP of Mathematics Specialization modules or substitute Specialization modules to pursue a minor* | | | | | | |
| **Year 3 - CAREER** | | | | | | 45 |
| **CA-INT-900** | **Module: Internship / Startup and Career Skills** | | | m | 4/5 | 15 |
| CA-INT-900-0 | Internship / Startup and Career Skills | | Report / Business Plan | During the 5th semester | | 15 |
| **CA-MATH-800** | **Module: Seminar / Thesis Mathematics** | | | m | 6 | 15 |
| CA-MATH-800-T | Thesis Math | Thesis | Thesis | 15th of May | | 12 |
| CA-MATH-800-S | Thesis Seminar Math | Seminar | Presentation | During the semester | | 3 |
| **Unit: Specialization Mathematics** | | | | me | 5+6 | 15 |
| *Take a total of 15 CP of specialization modules.[3]* | | | | | | |
| CA-S-MATH-802 / 801 | Module Rotation: Complex Analysis (A) – Real Analysis (B) | Lecture | Written examination | Examination period | 3/5 | 5 |
| CA-S-MATH-809 / 806 | Module Rotation: Topology (A) – Foundations of Mathematical Physics (B) | Lecture | Written examination | Examination period | 3/5 | 5 |
| CA-S-MATH-810 / 811 | Module Rotation: Applied Dynamical Systems Lab (A) – Stochastic Methods Lab (B) | Lecture | Project | During the semester | 3/5 | 7.5 |
| CA-S-MATH-807 / 805 | Module Rotation: Partial Differential Equations (A) – Dynamical Systems (B) | Lecture | Written examination | Examination period | 4/6 | 5 |
| CA-S-MATH-808 / 812 | Module Rotation: Algebra (A) – Algebraic Topology (B) | Lecture | Written examination | Examination period | 4/6 | 5 |
| CA-S-MATH-803 / 804 | Module Rotation: Stochastic Processes (A) – Numerical Analysis (B) | Lecture | Written examination | Examination period | 4/6 | 5 |

| Jacobs Track Modules (General Education) | Type | Assessment | Period | Status[1] | Sem. | CP |
|---|---|---|---|---|---|---|
| | | | | | | 15 |
| **Unit: Methods / Skills** | | | | | | 10 |
| **JTMS-MAT-09** | **Module: Calculus and Elements of Linear Algebra I** | | | m | 1 | 5 |
| JTMS-09 | Calculus and Elements of Linear Algebra I | Lecture | Written examination | Examination period | | 5 |
| **JTMS-MAT-10** | **Module: Calculus and Elements of Linear Algebra II** | | | m | 2 | 5 |
| JTMS-10 | Calculus and Elements of Linear Algebra II | Lecture | Written examination | Examination period | | 5 |
| **Unit: Language** | | | | | | 5 |
| German is the default language. Native German speakers take modules in another offered language. | | | | | | |
| **JTLA** | **Module: Language 1** | | | m | 1 | 2.5 |
| JTLA-xxx | Language 1 | Seminar | Various | Various | | 2.5 |
| **JTLA** | **Module: Language 2** | | | me | 2 | 2.5 |
| JTLA-xxx | Language 2 | Seminar | Various | Various | me | 2.5 |
| **Unit: Methods / Skills** | | | | | | 10 |
| **JTMS-MAT-12** | **Module: Probability and Random Processes** | | | m | 3 | 5 |
| JTMS-12 | Probability and Random Processes | Lecture | Written examination | Examination period | | 5 |
| **JTMS-MAT-13** | **Module: Numerical Methods** | | | m | 4 | 5 |
| JTMS-13 | Numerical Methods | Lecture | Written examination | Examination period | | 5 |
| **Unit: Language** | | | | | | 5 |
| German is default language. Native German speakers take modules in another offered language. | | | | | | |
| **JTLA** | **Module: Language 3** | | | m | 3 | 2.5 |
| JTLA-xxx | Language 3 | Seminar | Various | Various | me | 2.5 |
| **JTLA** | **Module: Language 4** | | | m | 4 | 2.5 |
| JTLA-xxx | Language 4 | Seminar | Various | Various | me | 2.5 |
| | | | | | | 15 |
| **Unit: Big Questions** | | | | | | 10 |
| **JTBQ** | **Module: Big Questions** | | | m | 5/6 | 10 |
| Take a total of 10 CP of Big Questions modules with each 2.5 or 5 CP | Lecture | Various | Various | me | | |
| **Unit: Community Impact Project** | | | | | | 5 |
| **JTCI-CI-950** | **Module: Community Impact Project** | | | m | 5 | 5 |
| JTCI-950 | Community Impact Project | Project | Project | Examination period | | |

| Total CP | 180 |
|---|---|

[1] Status (m = mandatory, me = mandatory elective)
[2] For a full listing of all CHOICE / CORE / CAREER / Jacobs Track modules please consult the CampusNet online catalogue and /or the study program handbooks.
[3] Each of the listed specialization modules is offered biennially; the letter A refers to odd-numbered calendar years, the letter B refers to even-numbered calendar years.