

The MA Program

Requirements

No Thesis Option

- Approved program of study
- Passing 28 credits of graduate courses
- Passing the Comprehensive Exam at the Master level

Thesis Option

- Approved program of study
- A Master Thesis (with 10-25 research credits (580))

Typical Course

Typical Program

- Year 1: Take courses and do Master thesis research
- Year 2: Work on Master thesis and do additional courses.

Accelerated Program

Only possible if you are very well prepared

- Year 1: Take courses and do Master thesis research
- First Summer: Do research and write and defend the Master thesis

It is also possible to graduate from the Master program in three semesters.

Preparing for a PhD Program

To be admitted to a PhD program you need strong recommendation letters. Letters written by a course instructor are not the best, because usually they do not know you well enough. Since the letter is already needed in December, it is hard to get a good letter that makes a difference if you are applying to a PhD program after your first semester. To get a good letter you have to work closely with a faculty member starting from the beginning of the semester. Do not neglect the special studies because that will be the basis of the recommendation letter.

To have a good chance to be admitted to a PhD program you need to have mostly if not all A grades (A or A-) in the courses. **Do not overload yourself.**

Applications after 3 semesters in our program are typically more successful than those after just one semester.

Approved Program I

Default Program for preparation for admission to a PhD program with Master Thesis Research

F1	S1
503 (MM) 511 (QM) 585 Special Studies in QM 598 Graduate Seminar Elective	504 Computational Methods 505 (EM) 585 Special Studies in EM 599 Graduate Seminar Elective
F2 595 Master Thesis	S2 (if needed) 595 Master Thesis

Try to work with a research group during the Summer. Note that with one or two B grades in graduate courses you will most likely not be admitted in a top 50 PhD program.

Approved Program II

Advanced Program for preparation for admission to a PhD program with focus on theoretical physics – without Master Thesis – requires passing the comprehensive exam

F1	S1
501 (CM)	505 EM
511 (QM I)	512 (QM II)
598 Graduate Seminar	599 Graduate Seminar
Elective	610 (QFT I)
Elective	Elective
F2	S2 (if needed)
540 (SM)	595 Master Thesis
611 (QFT II)	

Prepare for the comps during the Summer. Note that with one or two B grades in graduate courses you will most likely not be admitted in a top 50 PhD.

Approved Program III

Program focused on practical skills with Master Thesis Research, a good option if you are not sure if you want to pursue a Ph.D. or opportunities outside of academia.

F1	S1
503 (MM) 514 (Instruments) 598 (Graduate Seminar) 515 (Graduate Lab) Elective	504 (Computational Methods) 546 (Python) 599 (Graduate Seminar) 595 (Master Thesis) Elective
F2	S2 (if needed)
604 Computational Methods II 595 Master Thesis	595 Master Thesis

This sequence includes an advanced graduate certificate in Data and Computational Science – requires full time 4th semester

Approved Program IV

F1	S1
503 (MM) AMS 561 (Data Science) JRN 501 (Communicating Science I) Electives from 501, 510/585, 514, 515	504 (Comp Methods I) 564 (Python) JRN 503 (Communicating Science II) 580 (Special Research) Elective
F2	S2
604 (Comp Methods II) CS xxx (Elective in Computer Science) 595 (Master Thesis in Computation)	595 (Master Thesis with computation) Elective

Thesis research (595) should be on a computational project, for example in astrophysics, condensed matter, lattice QCD or in data analysis.

Advanced Option

Option for advanced students. These are Master students who already did the core graduate courses and quantum field theory.

F1	S1
501 (CM)	611 (QFT2)
540 (Statistical Mechanics)	623 (String Theory)
622 (String Theory)	620 (General Relativity)
680 (Gravity and Fields)	680 (Quantum Computing)
598 (Graduate Seminar)	599 (Graduate Seminar)
Electives	Electives

Do research during the summer.

Be realistic with yourself about whether this is actually a good idea before you undertake such a program.