Examination Regulations

Some Special Courses You Should Know About

Dr. Michael Ritter

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While the other learning stations give an overview of general rules and regulations, there are a few situations and courses where things work differently. This station is to help you get to know these courses.

1 Internship

Doing an internship is an integral part of your program. You will have to find an internship for yourself. A lot of companies in and around Munich have offered positions for our students in the past, but you are free to do your internship at some other city or even abroad. In addition, you will have to give a short talk on your internship and attend at least two other talks in the “internship seminar”. Listening to these talks is a good opportunity to gain some insight into possible career options and also to find companies for your own internship. Please remember to register for your talk in the internship seminar at least six weeks before lectures end, otherwise you might have to wait until the following semester to give your talk.

The content of the internship has to be relevant for your master’s program and it needs to have a duration of at least 4 weeks full-time work (at least 6 weeks for the “Mathematics in Data Science” program). There are a few formal requirements, for details please see https://www.ma.tum.de/de/studium/studienorganisation/Berufspraktikum.html. Students in the “Mathematics in Data Science” master's program can attend the module “MA8113 TUM Data Innovation Lab” instead of doing an internship.

? Your Internship

- Have you already done an internship that you could use for your master’s program?
- When are you planning on doing your internship?

2 Interdisciplinary Modules

In addition to your mathematical courses, we require you to acquire some interdisciplinary skills. The possibilities include language courses, presentation courses, self organization or modules from other faculties that are not related to your program. You need to collect at least 4 credit points (3 credit points for “Data Science”) from these modules, where language courses at an elementary level count at most 3 credits points. Grades for these modules do not count, but there has to be some form of assessment to certify you completed the module successfully. Here are a few possible choices:

- Pro Lehre: http://www.prolehre.tum.de/
- Language Center: http://www.sprachenzentrum.tum.de

★ Interdisciplinary Modules

- 4 CP of interdisciplinary modules
- “Data Science”: 3 CP interdisciplinary plus 3 CP social and political aspects of data science
- grades not relevant

★ https://www.ma.tum.de/de/studium/studienorganisation/pruefungen/ueberfachliche-grundlagen.html
In addition, students in the “Mathematics in Data Science” program have to complete 3 credit points worth of courses on “Social and Political Aspects of Data Science”, a catalog of possible courses is available on TUM-Online.

**Interdisciplinary Modules**
- Have you taken an interdisciplinary module that you could use for your master’s program already?
- Browse the course lists of CvL-Akademie and ProLehre. Which courses do you find interesting?

### 3 Seminars

The objective of seminars is twofold: First, you gain advanced knowledge on a mathematical topic working through current scientific journal papers. Second, you learn how to present that topic to an audience. In a seminar, you are usually assigned a topic and given some pointers to the literature. You are of course expected to do your own research on top of that and find other journal papers dealing with similar topics or applications thereof. You then select suitable parts that you want to present, devise a good structure to present these and prepare supporting materials like presentation slides, handouts or worksheets. As expectations for seminar talks may vary, it is of great importance to regularly consult with your advisor for the seminar.

A seminar does not give you any grade other than “pass” (or “fail”), but it is often the foundation for your thesis topic. If you plan on doing your thesis based on your seminar, be sure to talk to your advisor about that as early as possible so that she/he can take that into account when assigning topics.

Prior registration is required for participating in a seminar. During the last few weeks of each semester, a list of seminars for the coming semester is posted on www.ma.tum.de. Registration then takes place online, the details will be posted on our website.

**Seminars**
- In which semester do you plan to do your seminar? In which field?

### 4 Case Studies

The “Case Studies Discrete Optimization” and “Case Studies Nonlinear Optimization” provide hands-on experience for applying your mathematical skills to real-world challenges. In teams of 3-5 students, you work on a project for one semester and present your achievements at a workshop at the end of the semester. Units on soft skills such as presentation, poster design or project management are included in the courses. Both courses are offered during the summer term. A pre-meeting takes place at the end of the previous winter term. The number of participants is strictly limited, therefore registration is required for both “Case Studies” courses. The registration deadline is announced at the pre-meeting and is usually March 1st.

**Case Studies**
- hands-on problem solving
- teamwork, soft skills, mathematics
- registration mandatory
5 Your Master’s Thesis

The last major challenge during your program will probably be your master’s thesis. The topic is often based on a seminar you took, but you are free to ask any advisor that you would prefer. A thesis with an external partner (academia or industry) or with a different faculty is possible, provided you have an official advisor at the math department. Plan ahead and plan early if you consider something like this.

The thesis must be submitted 6 months after it has been officially registered and you remain enrolled at TUM from registration until submission of the thesis. In particular, you cannot take a leave of absence during that time (with the exception of a parental leave).

Please note that your thesis will have to submitted and graded while you are registered as a student at TUM — the examination will only be completed once the thesis is graded. So be sure to allow for enough time for your supervisor to study and properly assess your work.

6 Going Abroad

Do you want to go abroad and experience a different culture? Now is the time! TUM offers a number of exchange programs (ERASMUS, TUMexchange) with partner universities all across Europe and the world. For students of “Mathematics in Operations Research” we even offer double degree programs in cooperation with École Polytechnique in Paris and KTH Stockholm.

If you are interested, please be sure to plan early, most programs have strict application deadlines. If possible, you should go abroad during a winter term, as this makes it easier to coordinate different semester times for most universities. In any case, do contact our international office (Carola Jumpertz, Julia Cyllok) to get more information about your options and to get help with your applications. More information and contact data is available on https://www.ma.tum.de/de/internationales/internationales-uebersicht.html.