Study Advice for Mathematics Resits

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Resources

- Ten Rules of Studying
- Exam Bootcamp (Institute for Academic Development)

Organising and Prioritising

Make sure you have the syllabus/learning outcomes list for each course. This is listed on Path but there will also probably be course information sheets with extra information on the relative importance of each topic. Write out a list of topics, and mark topics with a ✓ if you are very confident, a ? if you think you have a fair understanding but you need to work on it a little more, and a x if you don’t know anything about the topic.

Now plan your revision timetable. Start with the topics that you wrote a ? next to, as those topics will require a lot less work than those topics that you are starting from scratch. This will give you confidence and a better grounding with which to tackle the ‘x’ topics.

Keeping motivated

Split your revision into 1-2 hour blocks. Write the specific topic that you will cover, and be specific about how you will revise it (see below for advice on this). For example, don’t write ‘Revise FPM’ - write ‘work on tutorial questions relating to group actions’. Do not work on the same subject all day. Research shows that more information is retained from several short sessions over a course of several weeks than one long session all at once. Take short (5 minute) breaks every 30-45 minutes, and longer (20 minutes) in between blocks. Try the Pomodoro Technique if you particularly struggle with concentration.

Passive Learning vs Active Learning

Some study techniques are more effective than others. Active study techniques are effective, passive study techniques are not. Examples of passive study techniques involve re-reading, re-watching, re-writing or highlighting. Examples of active study techniques include attempting problems, reconstructing proofs or testing yourself.

- What Works, What Doesn’t (Scientific American Mind Special Report)

Testing yourself

Testing yourself is one of the best ways to improve memory and understanding. When working on a problem, make an effort to try to reconstruct the definitions and concepts required from memory.
rather than referring back to the book straight away. Set yourself short quizzes consisting of questions from the book or workshop problems. Self-explanation also works – when reading a proof, try to explain to yourself why one line follows logically from the previous line or from a statement earlier in the proof. Making flash-cards or mind-maps can also be helpful for some people but make sure you aren’t using it as a form of procrastination.

Deep Learning vs Surface Learning

You may have experienced the feeling of thinking you understand something, but when you attempt to solve a problem on it, you are completely lost. This probably means that you don’t have a deep understanding of it. It’s easy to memorise a definition or a formula, but deep learning is the hard work of understanding where the formula comes from, of connecting new information with your existing understanding, of exploring examples to find the limits of what a new method can do.

Past Papers

Practicing past papers should not be your main revision activity. Past papers are useful but they are best attempted close to the exam where you can try them as a whole (without checking solutions!) to test how well you are doing and what you need to work on. You should be testing yourself frequently during the revision too, not using past papers.

“Exam-style” questions

Many students ask for extra ‘exam-style’ questions to practice. Sadly there is no big bank of exam-appropriate questions but there are hundreds of textbooks and online notes on similar topics, so more questions are out there if you want to find them!