

TEACHING PORTFOLIO

JAMES GABE

TEACHING EXPERIENCE: LECTURING

Spring 2019	1Y (first year calculus for advanced students) University of Glasgow 20 Credits, Student rating: 4.6/5
Spring 2017	Algebraic Topology University of Southampton 15 Credits, Student rating: 4.8/5
Spring 2016	Linear Algebra for Business Economics students (Danish) University of Southern Denmark 5 ECTS
Spring 2016	Linear Algebra for Business Economics students (English) University of Southern Denmark 5 ECTS
Autumn 2015	Probability theory University of Southern Denmark 10 ECTS, Student rating: 4.4/5
Autumn 2015	Mathematics for Economics students University of Southern Denmark 10 ECTS, Student rating: 3.8/5
Spring 2013	Graph C*-algebras University of Copenhagen 7.5 ECTS

TEACHING EXPERIENCE: CLASS ROOM TEACHING

Summer 2015	Analysis 0 (mini course) University of Copenhagen
Autumn 2013	Linear Algebra University of Copenhagen
Autumn 2012	Linear Algebra University of Copenhagen
Autumn 2012	Introduction to Mathematics University of Copenhagen

TEACHING EXPERIENCE: TUTORIALS

Autumn	2018	3H Analysis: Differentiation and Integration University of Glasgow
Spring	2017	Algebraic Topology University of Southampton
Autumn	2016	Linear algebra University of Southampton
Spring	2013	Graph C*-algebras University of Copenhagen
Spring	2012	Discrete Mathematics 2 University of Copenhagen
Autumn	2011	Measure Theory University of Copenhagen
Autumn	2011	Complex Analysis University of Copenhagen
Spring	2011	Analysis 1 University of Copenhagen
Spring	2011	Information Theory University of Copenhagen
Autumn	2010	Measure Theory University of Copenhagen
Autumn	2010	Introduction to \LaTeX University of Copenhagen
Autumn	2010	Analysis 2 University of Copenhagen
Spring	2010	Analysis 1 University of Copenhagen
Spring	2010	Analysis 0 University of Copenhagen
Autumn	2009	Probability and Statistics University of Copenhagen
Autumn	2009	Discrete Mathematical Structures University of Copenhagen
Spring	2009	Analysis 1 University of Copenhagen
Autumn	2008	Linear Algebra (Maple tutorials) University of Copenhagen
Autumn	2008	Introduction to Mathematics (Maple tutorials) University of Copenhagen

TEACHING EXPERIENCE: SUPERVISION

Autumn 2018	<p>Mikkel Munkholm University of Glasgow Visiting student on the prestigious Andersen's travel scholarship. Supervision conducted with Prof. Stuart White.</p>
Spring 2014	<p>Rasmus Hansen University of Copenhagen 15 ECTS Master's project</p>

TEACHING EXPERIENCE: OTHER

Spring 2017	<p>Self Paced Mathematics for Engineering Students Academic Supervisor University of Southampton This required me to be in charge of a group of 9 PhD students and providing them with help whenever needed. I was also part of the group, which required me to mark students tests, with the students present.</p>
Autumn 2016	<p>Linear Algebra exam marking University of Southampton</p>
Autumn 2016	<p>Student workshop University of Southampton I was partially in charge of a student workshop. This consisted of 3 faculty members, 3 PhD students, and 9 undergraduate helpers providing aid for first year students. This took place five times a week for one hour, all of which I was present for.</p>
Spring 2016	<p>High School Outreach University of Southern Denmark I was in charge of a high school outreach programme, in collaboration with the Biology department.</p>
Spring 2013	<p>Discrete Mathematics 2 Substitute lecturer University of Copenhagen</p>
Spring 2012	<p>Participant in Introduction to University Pedagogy. University of Copenhagen</p>
Summer 2011	<p>Analysis 0 exam preparation University of Copenhagen I did exam preparation for the students who took the oral reexamination in Analysis 0 at University of Copenhagen. This included doing oral test examinations with all participants.</p>

Formal educational training. At University of Glasgow I'm actively participating in a peer observation programme, where we observe others teaching, and have our teaching observed by other faculty members. We provide each other with feedback, and discuss and reflect on how to improve our own and each others teaching.

As a PhD student at University of Copenhagen, I attended the course Introduction to University Pedagogy. This was a four day course, focused on formulating clear and precise learning goals, as well as methods for student activation. The course included presentations by all participants – who were in general not mathematicians – with successive feedback, allowing us to properly reflect on our presentation.

Administrative tasks relating to education. I have lectured a total of 6 courses. While doing this I was also in charge of the administrative tasks related to the courses. These courses have been of varying sizes with between 8 and 100 students.

As a PhD student, I was the administrator of the Linear Algebra course taught in autumn 2012 and autumn 2013. Each course was followed by approximately 400 students, had 2 lectures, 20 class room teachers, 20 teaching assistants for helping the students with exercises, and 10 teaching assistants for helping the students with exercises using maple. The administrative tasks included managing the course webpage, room booking, exam organisation, arranging meetings, and support for all teachers.

At University of Southern Denmark, I was partially in charge of a high school outreach programme in collaboration with the Biology department.

As a PhD student at University of Copenhagen, I supervised a 15 ECTS Master's project. That included all administrative tasks involved, finding an external examiner, as well as all the paper work involved.

Experience of study programmes, supervision and examinations. I am currently supervising a student Mikkel Munkholm, who is visiting Glasgow on a prestigious Andersen's travel scholarship, together with Prof. Stuart White. We meet with the student once a week for an hour to discuss his progress, and the directions to focus his work. The student will usually present for us what he has discovered in the past week. The student also regularly comes by my office for help, advise, or general inputs. I will usually spend 2-3 hours a week on the supervision.

As a PhD student at University of Copenhagen, I supervised a 15 ECTS Master's project. The student and I would usually meet once a week for an hour to discuss the project, and near the deadline we would meet two or three times a week. The student would explain to me what he had done, and I would help him understand the finer details. When the project was done, I met with an external examiner to discuss the grade for the project.

I created the written exams for four of the courses I have lectured: Algebraic Topology (Southampton), Linear Algebra for Business Economics students (Danish and English, Southern Denmark), Mathematics for Economics students (Southern Denmark).

I have marked the written exams for six different exams: Algebraic Topology (Southampton), Linear algebra (Southampton), Linear Algebra for Business Economics students (Danish and English, Southern Denmark), Mathematics for Economics students (Southern Denmark), Linear Algebra (Copenhagen).

The exam for Linear Algebra in Copenhagen also included meeting with an external examiner to discuss the grades.

I have held an oral exam in Probability Theory (Southern Denmark). This also included an additional oral reexamination.

In 15 out of the 19 courses I did tutorials for, I would also be marking written assignments.

Methods, materials and tools. I will most often do my lectures and tutorials on a black board or white board, sometimes with the aid of a projector for illustrations, animations, or to demonstrate computations. I always begin my lectures by recalling the main points from the previous lecture. Mathematics is understood through examples, so I always include as many examples in my lectures as possible.

As a lecturer in Algebraic Topology at University of Southampton, I did my office hours in a common area for the students. As a result, I would almost constantly be engaged with the students during office hours. I consider this a massive success, and I believe that many of the students who would approach me in the common area would had not been comfortable going to my office for help. I intend on implementing this in the future, whenever the size of the class allows for it.

Educational development and applied research into teaching at university, including educational awards. I am currently participating in a peer observation programme, in which we observe each others teaching, and provide feedback in order to improve our teaching.

Reflections on your own teaching practice and future development including student evaluations. I often reflect upon my teaching, and always try to improve it. When lecturing, I will hand out an unofficial evaluation sheet after a few lectures, giving the students the opportunity to provide early feedback. I take this student feedback very seriously, and will do what I can to accommodate whatever suggestions they may have. Whenever an official course evaluation is conducted, I will also do what I can to live up to the students suggestions. For instance, after being told that I would sometimes write too fast, I always try to pace myself at the black board.

I regularly engage in discussions and conversations with other teachers about teaching, and often try to modify my teaching to best tailor the students. I am currently taking

part of a peer observation programme for further reflection and improvement. I plan on continuing to participate in programmes for teaching learning as to further develop my teaching skills.

TEACHING STATEMENT

Teaching mathematics is something I find both challenging and rewarding. One of my greatest strengths is to convey mathematics to an audience in a lively and engaging way. As a first year student I had excellent teachers who sparked my interest in mathematics, and I hope to do that for my students.

I put a lot of time and effort into preparing my teaching, and try to make my genuine enthusiasm transparent. If the material is particularly dry, I will try to spice it up with some fun historical facts, some interesting examples, or by a comedic input. This is often recognised by the students in their course evaluations, which are usually very positive. A common feedback I will get from students – which I am always very proud of – is that my passion towards the subject is not only obvious, but also highly contagious.

Mathematics is understood through examples. I always motivate the theory I am teaching with several examples, often tailored to the background of the students. For instance, when I was teaching linear algebra to Economics students, I would spend a significant amount of time discussing Leontief input–output systems. The fact that Leontief won the Nobel prize in Economics for this work highly motivated the students, and gave them the sense that the theory was more than manipulation of rows and columns.

Student interaction is crucial, whether it is interaction between teacher and students, or if it is amongst the students themselves. I always encourage students to ask questions and provide me with feedback. When teaching a class of Economics students, followed by almost a hundred students, I would get a multitude of questions during every lecture. I am very pleased to be able to foster a teaching environment where this is possible.

I gladly teach any mathematics course regardless of level or topic, and I already have significant experience in doing so. I have lectured calculus and linear algebra for first year Economics students, algebraic topology for third year students, as well as a course on graph C^* -algebras for advanced master's students, and was very comfortable with all of these. I also happily take on any teaching challenge, even if the material is new to me. I did this when lecturing advanced probability theory, a challenge which I very much enjoyed.

I believe that it is important for the students to receive sufficient feedback and help through personal interaction, for instance through office hours. When teaching algebraic topology I would have my office hours in a common area for the mathematics students. I found this remarkably successful. Every week for my office hour I would have multiple students – and not always the same ones – asking for help or general feedback. I strongly believe that several of these students would had found it intimidating to go to my actual office. I plan on incorporate this model for office hours in the future, at least when I am teaching classes of a relative small magnitude.

An alternative teaching experience for me has come through mentoring. I supervised a Master's project when I was still a PhD student, and I am currently mentoring an early career research student, who is visiting Glasgow on a prestigious Andersen's travel scholarship. I meet with the student once a week to discuss his progress, and I often answer questions whenever these come up. This aspect of supervision is a true joy, and I hope to supervise more students in the near future.

In conclusion, I believe mathematics is taught through examples and student interaction. I possess a genuine passion for teaching, and find it joyful to supervise students.