Teaching Dossier

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1 Personal Information

Personal Information:

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  – Ph.D. in Mathematics in 2015 from The University of British Columbia
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2 Teaching Statement

*Do mathematics justice.* This simple statement contains a powerful message. We thrive on curiosity and are driven by questions. Throughout our lives, we search for the truth; and mathematics is truth-seeking.

We want our students to leave the course with knowledge in the subject. However, this is not enough. It is not enough for students to collect answers to calculations; I want them to see the broader context. I want them to realize that mathematics is much more than multiplying large numbers or computing derivatives. Mathematics is vast. It enters into every critical process involving problem solving. I want my students to appreciate the process of starting with a problem, possibly one never encountered before, formalizing it, and then solving it using mathematical tools.

This approach is challenging, but rightfully so. If every mathematical problem we faced were easily solved, there would be no reason to study or do research in mathematics. I do not do mathematics justice by teaching that it is simple. I do want students to struggle. Some students might take longer than others, some might need more help, some might need to be pushed, but I believe that, with enough motivation, they can all succeed!

It is vital for students to remember that they are not alone. As an instructor I am there, not to give answers, but to give guidance. I talk about my thought process and how I would begin to decipher the problem. I encourage students to work together and discuss mathematics. I push them to do what mathematicians do.

In light of this, it is not sufficient merely to read from a textbook. My class time should also give the students an idea of the big picture; of the underlying majesty. A classroom of derivative-computing machines is not the goal of calculus, any more than a classroom of tape recorders is the goal of a music class. We teach calculus for the same reason musicians teach Bach and Beethoven: so that students gain maturity and the ability to understand problems previously thought unsolvable; so that they can go forth and create.

My goal in class is not to show my students all of mathematics. Such an endeavour would be futile. Instead, my goal is to help my students develop their latent mathematical abilities and get them to attempt even some of the hardest problems in mathematics with confidence and vigour.

Teaching students is a rewarding and invigorating privilege. I have tried and will continue to try to give mathematics its due diligence: to show students what mathematics is at its core. I really want my students to think critically about what they have learned. I want them to succeed. I want them to understand what they are truly accomplishing, whether they are analyzing the derivative of a function or simply multiplying two numbers. I want them to realize that mathematics is deep. When they realize this, then I feel that I have done justice to the beauty and elegance of mathematics.
3 Education Publications

- The Math Educational Resources Wiki (Accepted in PRIMUS. Preprint can be found at ⟨http://www.cemc.uwaterloo.ca/~cbruni/pdfs/MERpaper.pdf⟩)

4 Teaching Awards and Accolades

- **May 2013** [Mathematics Department Graduate Teaching Award](http://www.cemc.uwaterloo.ca/~cbruni/pdfs/MERpaper.pdf). Received an award from the University of British Columbia for excellence in teaching.
- **April 2013** [Killam Graduate Teaching Award](http://www.cemc.uwaterloo.ca/~cbruni/pdfs/MERpaper.pdf). Received one of five prestigious Killam Graduate Teaching Assistant Award from the University of British Columbia awarded across all graduate students in the faculty of Science at UBC for my outstanding work as both an undergraduate instructor and teaching assistant.
- **December 2012** [Completed the Teaching Assistant Accreditation Program (TAAP)](http://www.cemc.uwaterloo.ca/~cbruni/pdfs/MERpaper.pdf).
- **September 2006 - April 2009** Received six outstanding teaching assistant evaluations from professors at the University of Waterloo for my role as a grader for various undergraduate courses given for timely return of assignments as well as constructive feedback.

5 Teaching Responsibilities and Practices

Below are some of my teaching related duties over the past several years. As of 2014, I have taught courses at UBC four times which is rare for a graduate student and is a result of special recommendations from faculty and instructors-in-charge. This includes a second year course for which I am the sole instructor of, another rarity for a graduate student. I am also currently teaching a course at Langara College here in Vancouver. I created numerous documents, videos and pencasts which can be accessed directly on my webpage. Lastly, I discuss some of my evolving course philosophies that I am continuing to improve as my students beliefs and interests in mathematics change over time.

5.1 Courses Taught

**MATH 135: Algebra for Honours Mathematics Students: September - April 2016** I am an instructor for four different section (two per term) an algebra course for 60 students at the University of Waterloo. Lectures are four times a week for a total of 4 hours. My responsibilities included lecturing and curating the Piazza forums.

**MATH 1174: Calculus I - Economic and Business Applications: January - April 2015** I was an instructor for a differential calculus course of 38 students at Langara College. I created quizzes, assignments and midterms for the course as well as provide support for struggling students. Lectures were twice a week for a total of 4 hours.

**MATH 210: Introduction to Mathematical Computing: January - April 2015** I was an instructor for a 55 student mathematical computing course at UBC where I taught students how to use Python and Sage software via Sage Math Cloud to solve mathematical problems. I created assignments, midterms and the final examination for this single section course. All content was being delivered on Sage Math Cloud including assignments, learning goals and lecture notes. Lectures were thrice a week for a total of 3 hours. There was also a one hour lab where students used on campus computers and received direct feedback from me on their work.

**MATH 103 - Integral Calculus for Life Sciences: January - April 2013, 2014** I was an instructor for one of six sections of this course on two separate occasions. This course was a three credit course (one four month term) in integral calculus for life science students at UBC. Lectures occurred twice a week for a total of three hours. Classes consisted of 85 students.
MATH 180 and MATH 184 - Differential Calculus with Physical Applications and Differential Calculus with Applications to Commerce and Social Sciences: September - December 2012, 2013 I was a workshop facilitator for these courses. These were four credit courses (one four month term) in integral calculus for engineering or business students at UBC. Here I would oversee the work of students during a 90 minute class as they communicate mathematics in groups in an effort to solve problems. I implemented the Socratic method while guiding students to solutions to first year calculus problems. Sections consisted of 25 students.

MATH 101 - Integral Calculus with Applications to Physical Sciences and Engineering: January - April 2012 I was an instructor for one of eleven sections of this course. This was a three credit course (one four month term) in integral calculus for science and engineering students at UBC. Lectures occurred thrice a week for a total of three hours. The class consisted of eighty students.

MATH 118 - Calculus 2 for Engineering: January - April 2010 I ran a small tutorial section where students could come on a weekly basis to ask questions and solve problems in a friendly atmosphere. This was a half credit course (one four month term) in integral calculus for engineering students at the University of Waterloo. I prepared additional problems to discuss if students requested and these problems and solutions were subsequently posted online. The tutorials ranged from five to ten students.

5.2  Mathematical Seminars Organized

MATH 701 - Graduate Reading Seminar in Algorithms: January - April 2014 I organized and participated in a weekly algorithms seminar with fellow graduate students. We programmed algorithms in Python and completed weekly exercises inspired by the book Introduction to Algorithms by Cormen, Leiserson, Rivest and Stein. Our final project included the creation of a cross platform cell phone game using Python and Kivy.

MATH 620E - Graduate Reading Seminar in Elliptic Curves: January - April 2012 Coordinated a reading seminar in elliptic curves. Topics were chosen by students and a once a week talk was given on select topics.

5.3  Course Material Created for Students

Math 135: September - December 2015 I created various videos, personal lecture notes and helpful summary sheets for this course during the Fall 2015 term. Students led the discussions on which topics they wanted to see videos on and I created a series of 24 videos based on their suggestions. These files can be located at ⟨http://www.cemc.uwaterloo.ca/~cbruni/Math135Resources.php⟩.

MATH 210: January - April 2015 I created learning goals, assignments, midterms and exams for this course. All of the content was delivered online via Sage Math Cloud. I was the sole instructor of this course. I was also responsible for the course content which changes from year to year based on the instructors expertise. Students learnt about key concepts in programming as well as number theory topics ranging from congruences to cryptography and select topics from linear algebra.

MATH 103: January - April 2014 I created a series of pencasts that I used as supplemental material for students. In fact, the pencasts have gone beyond this original purpose and are now included on the Math Educational Resources wiki which is discussed later in this document. The files can be easiest located at ⟨http://www.cemc.uwaterloo.ca/~cbruni/2014Math103.php⟩.

MATH 103: January - April 2013 Created videos on continuous probability for integral calculus and I created a set of personal course notes that I uploaded at the course’s conclusion. Both of these can be found at ⟨http://www.cemc.uwaterloo.ca/~cbruni/2013Math103.php⟩.

MATH 101: January - April 2012 Created numerous videos on a variety of additional topics in integral calculus that were not covered in the typical course material and I published a set of course notes that
I used while teaching the course. These can be found at [http://www.cemc.uwaterloo.ca/~cbruni/2012Math101.php](http://www.cemc.uwaterloo.ca/~cbruni/2012Math101.php).

**MATH 118: January - April 2011** Created problem sheets and solutions to these problem sheets and posted the material online for students.

### 5.4 Course Development

In this section, contrary to other sections, I have chosen to list the course developments I have made in chronological order to show the development from year to year.

**MATH 101: January - April 2012** During this, my first lecturing position, I decided to use Piazza, an online forum where students could ask questions and get feedback from both myself and other students. Students responded well to the system and many posted numerous questions and solutions to problems. Response times were on average 23 minutes per question. I also encouraged group participation in class by asking questions and getting students to form groups in an attempt to solve the questions. I even allowed a student to come to the chalkboard and present a solution they just discovered. Overall I think this type of engagement and encouragement was good for the students and it fostered a positive learning environment. Lastly, I also uploaded notes from the course at the end of the term to aid with studying. I waited until the end of the course to upload the notes to encourage class attendance throughout the term.

**MATH 103: January - April 2013** I again used Piazza to handle questions on subject material. My reasoning for this was that students responded well to this forum; they liked the quick response time and many students have told me that they feel less anxious when they observe that other students are also confused about course material. I also implemented “review session” office hours in which students could come in and have an environment where they could discuss mathematics. This change I felt was necessary due to relatively low office hour attendance. Doing this tripled attendance. I also uploaded course notes at the end of the term for students to help with final exam preparation. This was also the first term I used a document camera instead of the traditional black board style of lecturing. This last change was made so that I could have more dynamic lectures by bringing in prepared questions to ask students in class and not waste valuable class time by writing the questions on the board. This change also allowed me to lecture while seeing students faces which helps to gauge confusion levels in the audience.

**PreCalculus Review Course (August 2013)** I along with a colleague Vincent Chan worked with Warren Code on the Skylight-funded project “Online Educational Resources for Incoming First Year Calculus Student”. This is an online, WeBWorK-based program to diagnose students’ aptitude on precalculus topics and give them an interactive study guide to improve their skills. Our focus was on evaluating preexisting on-line content on precalculus topics and revise it or produce new content when it was required.

**MATH 103: January - April 2014** One significant problem I noticed in the 2013 offering of this course was the apparent divide with what students felt integral calculus was and what the instructors of the course felt were important concepts in integral calculus. To close this divide, I worked on creating a comprehensive course syllabus found at [https://github.com/cbruni/MATH-103-Syllabus-UBC-](https://github.com/cbruni/MATH-103-Syllabus-UBC-). The syllabus itself is too large to embed into this file (it is currently over 45 pages). It contains learning goals as well as sample exercises in an attempt to make explicit what students should learn from this course. This course needed a vision for students and I think this syllabus was and is a step in the right direction. I once again swapped office hours for group workshop sessions as I felt it was a very positive experience for students. I continued to use Piazza to address student concerns. This year, in contrast to previous years, I limited myself in my posting frequency and really tried to promote student interaction while answering questions as I feel students learn best from each other. I used a variety of different teaching styles this term including handouts, slide shows, group workshop sessions
and document camera type lectures. I wanted to test alternate teaching methods this term to compare their overall effectiveness. Lastly, I created pencasts to help supplement class material with more concrete examples. This worked well with many other videos created in previous years and I have uploaded the content to the Math Educational Resources wiki to increase the sustainability of the files for the students. These videos and pencasts are very useful for students; many have told me that these help with individual study as they can pace the lectures as is suitable for their own learning and get the chance to see examples we otherwise would not have had time for in class.

**MATH 1174 and MATH 210: January - April 2015** In these two courses, I am still using Piazza to help with students questions and answers. MATH 210 is my first course where I have creative license over the content and delivery. I have been using Sage Math Cloud for students to submit their assignments. One concern I have witnessed in mathematics is how many students have avoided the use of computers in their degrees. I think learning how to use a computer to help understanding mathematics and communicating answers is extremely important and as such I have focused a lot on getting students to program properly and learn how to use \LaTeX to type up their solutions.

### 6 Evaluating and Improving My Teaching

#### 6.1 Professional Development

*Threshold Concepts Seminar (October 2015 - Present)* A monthly reading seminar at the University of Waterloo discussing threshold concepts in our courses across disciplines. Participants read selected papers in threshold concepts and discuss them as a group on a monthly basis.

*Reading Seminar in Teaching (September 2015 - Present)* A biweekly reading seminar at the University of Waterloo discussing different topics in teaching education. Participants choose papers and then give a talk on the topic and lead a one hour long discussion group.

*Teaching Seminars (September 2011-April 2015)* A once a month seminar that showed new techniques in mathematical teaching. Speakers spoke about the new techniques they have implemented in class and how they are using modern technology to drive the classroom. Topics in the past included clicker use, Piazza, Livescribe pencasts, the TAAP beta course mentioned below and a live panel of educators discussing the current teaching state at UBC.

*Reading Seminar in Teaching (September 2013-April 2014, September 2014 - April 2015)* A once a week reading seminar at The University of British Columbia that discussed different topics in teaching education. Participants chose papers and then gave a talk on the topic and led a one hour long discussion group.

*Teaching Assistant Accreditation Program (TAAP) Coach (January 2014 to April 2014)* With Vincent Chan, a fellow graduate student, we coached a team of 6 students at a total of twelve hours a week through a series of activities geared towards improving teaching skills amongst graduate students. This course was the same one that I participated in during the months of September-November in 2012. See below for more details.

*TAAP Beta Course (September - November 2012)* This was a three month beta offering of a TAAP course. Here, a group of four participants spent time improving our teaching abilities. There were two parts to this TAAP accreditation. The first was a book club portion where we read “How Learning Works: Seven Researched-Based Principles for Smart Teaching” by Ambrose et al. This was a great opportunity to see different research techniques in a practical setting and discuss some of the recent research results in a mathematical context.

The second half of the course was divided into two components, an online activity and an in class activity. Each week half the participants would make an online activity for the group and the other
half would create an in class activity. Examples of the online activities we had included creating blog posts, developing Mathematica applets (which were used in the winter term of 2013 in courses taught at UBC), discussing video blogging as a learning tool and discussing some possible free alternatives to the clicker devices commonly used in science courses at UBC. The online component additionally involved reading a second book “What the Best College Teachers Do” by Ken Bain. The in class activity involved a participant giving a lecture to the other classmates using the techniques developed from the texts above as well as their own personal experience. We gave lectures using worksheets, having the class participate in board work and by giving traditional lectures to see how effective different styles would be in a classroom setting.

We created a blog and a scrapbook of ideas to implement in future offerings of undergraduate courses. A scrapbook is a collection of ideas for teaching we individually accumulated over the course of a term. These scrapbooks are available for our reference to assist and improve our future teaching. The blogs were intended for us to discuss our ideas of teaching, to reflect upon our previous experiences and to extrapolate on how we can use ideas from this course in future courses. Finally, this dossier was also a component of the course and has evolved into the document you see today.

**TAAP - Teaching Assistant Accreditation Program** *(September 2010 - September 2012)* A series of seminars (now a full course as mentioned above) based around teaching and improving mathematical teaching skills. This accreditation program in its first form consisted of three primary components. First was the completion of MATH 599, a teaching course designed to gauge whether or not students were capable and ready to take control of their own class. This course is described in more detail below. Secondly, participants needed to complete nine hours of seminar participation. Third, a student must complete a math ISW (see below). Lastly, there was a 10 hour component in which a student needed to perform a teaching service. I worked under Professor Greg Martin creating new linear algebra problems for a linear algebra course and evaluating the effectiveness of an automated system such as WeBWork in this environment.

**Math Instructional Skills Workshop (ISW)** *(December 2010)* A four day workshop for improving teaching skills. Each day we focused on skills to implement while teaching and with our small group of four participants, we would give a brief ten minute lecture and have some discussions based on what we saw. With our feedback, we left the workshop, worked on another lecture and the next day gave another ten minute lecture followed by feedback time. The key idea of the workshop was giving and receiving useful feedback on our lecturing style and then using this feedback to further develop our teaching. Many of the participants in the workshop experimented with different ways of teaching which offered a nice change from the usual blackboard lecturing style we see so often in mathematics.

**MATH 599 - Mathematics Teaching Techniques** *(September - December 2010)* This course was and is a prerequisite to teaching UBC mathematics classes. A student must successfully complete this pass or fail course before being recommended to teach. In this course, we discussed how to teach mathematics effectively and using different techniques in the classroom. Students gave two minute, fifteen minute and fifty minute lectures and the latter was delivered to a live undergraduate audience. Throughout, feedback was paramount coming from both our peers and from our instructor, Professor Fok-Shuen Leung.

### 6.2 Evaluation of Other’s Teaching Practices

**Killam Award Committee Member** *(September 2013 - April 2014)* I was an award committee member to help choose Killam award winners at UBC. The award is given to outstanding teachers at the university level. Duties included visiting each nominee’s lecture and evaluating their teaching performance. This information was used as a group to determine a winner for the Killam award. For more information, visit [http://science.ubc.ca/faculty/awards/killam](http://science.ubc.ca/faculty/awards/killam).
6.3 Selected Talks in Education

- *The Math Exam/Education Resource (December 2014)* Talk held at the CMS Winter Session in Hamilton Ontario.
- *The Math Exam/Education Resource (February 2014)*. Teaching lunch series talk held at UBC.
- *Reading Seminar in Teaching, “Academic Motivation in Calculus” (February 2014)*. Teaching Seminar at UBC.
- *TAAP Beta Course (March 2012)*. Teaching lunch series talk held at UBC.

6.4 Books and Articles

I have read many books and articles on teaching. The following lists gives a sample of those I have found to be influential. They are organized by how they have influenced my teaching practices.

**Influences on Lecturing**

- “The Teaching and Learning of Mathematics at the University Level” by Michèle Artigue
- “What the Best College Teachers Do” by Ken Bain
- “Twenty Terrible Reasons for Lecturing” by Graham Gibbs
- “How to Teach Mathematics” by Steven Krantz
- March 2011 AMS Notices - Many assorted articles on teaching are in this issue of the AMS Notices.
- “Where learning starts? A framework for thinking about lectures in university mathematics” by David Pritchard
- “Lesson Plays: Planning Teaching Versus Teaching Planning” by Rina Zazkis, Peter Liljedahl and Nathalie Sinclair

**Influences on Curriculum**

- “The Calculus Concept Inventory - Measurement of the Effect of Teaching Methodology in Mathematics” by Jerome Epstein
- “An Evaluative Calculus Project: Applying Bloom’s Taxonomy to the Calculus Classroom” by Gizem Karaali
- “The Aims of Education” by Alfred North Whitehead

**Influences on Research on Student Learning**

- “How Learning Works: Seven Researched-Based Principles for Smart Teaching” by Ambrose et al.
- “Academic Motivation in Calculus” by Asia Matthews, Carolyn Hoessler, Leo Jonker, Denise Stockley
- “Purposes and Methods of Research in Mathematics Education” by Alan H. Schoenfeld

7 Contributions Outside the Classroom

7.1 The Math Educational Resources Wiki 2012-2015

project that began in 2012 designed to help upload past UBC math exam solutions for free online. Since its inception, the resource has evolved from a project that started as an exam bank to a project that can now be used throughout the term to help students learn mathematics. With over 1500 solutions to undergraduate mathematics problems, this resource is the culmination of many hours of effort by its volunteers consisting primarily of graduate students. I have contributed to the wiki as a solution writer, as a wiki gardener, by giving presentations on the wiki and proof reading solutions. In 2013, we decided to create an official wiki committee. From September 2013 to December 2013, I was the wiki’s senior advisory member. From January 2014 until present, I have been the wiki committee head with Bernhard Konrad. In 2014 we were given a “Flexible Learning TLEF” grant from the University of British Columbia to help with the sustainability of the wiki project and to start to measure its effectiveness of student learning.

The project has helped students study mathematics with over 1.3 million page clicks to date. The site includes videos to mathematical content with permission from author PatrickJMT and includes some of my own personal pencasts created for topics in integral calculus. Students can vote on the difficulty of problems so that future generations of students can assess how easy or hard a given exam was. This also helps instructors evaluate how difficult exams were from student’s perspective. Current course syllabi are also online and exam questions are organized by topic as well so that students can use these to study throughout the term and not just at exam time.

The focus was for courses taught at UBC, but the exam resource is available to the world and can be accessed online for free. Past students have told me how useful the exam resource has been while studying for exams. This resource has a lot of global potential and as it continues to evolve will no doubt help students everywhere learn mathematics.

7.2 Other Volunteering Experiences

*Math Mania, November 2014* Volunteered at a mathematics exhibition where grade 6 and 7 students in the Vancouver region came to explore mathematical ideas through the context of games.

*Lord Byng Opportunity Fair, November 2013* Volunteered at an occupation fair helping to advertise careers in mathematics at a local secondary school. Students interacted with the volunteers via games and other mathematical puzzles to help promote interest in mathematics.

*Mathematics Contest Marking 2012, 2013* In April of 2012, I helped with the marking of the annual University of Waterloo Euclid contest intended for grade 12 students. Thousands of student’s across the country write these contests and volunteers from across the country gather and mark the contests. In December 2012 and 2013, I helped mark the Canadian Open Mathematics Contest, a contest intended for students in grades 8 to 12.

*Euclid Day 2012* On May 17th in 2012, I was a participant in the Euclid Day festivities as a tour guide. Top students were invited to UBC for a day of activities based on their Euclid mathematics contest performance.

8 Appendix

In this section, I present some supporting evidence for this dossier. The first subsection involves comments I have kept from Piazza posts and e-mails I have received from students. These unedited e-mails were unsolicited and were given at the conclusion of courses I taught. Since the e-mails were not intended to be used for the purposes of this document, I have intentionally kept them anonymous.

Next, I have included a series of supporting documents. First is a handout given to my MATH 103 students in 2014 on integration by substitution. After this are my unedited teaching evaluations from UBC in chronological order. Following this is a series of letters also in chronological order. The first
and fifth are letters I received from the Dean of Science in regard to my teaching term from January to April 2012 and 2014. The second is a letter from the vice provost stating that I was a recipient of the Killam award. Third is a letter from the associate dean of curriculum and learning acknowledging my Killam award. Fourth is a letter of appreciation for my role as a committee member of the Killam prize for faculty of the University of British Columbia.

8.1 Information From Students

8.1.1 Math 135

A quote that was “liked” 40 times on Piazza:

Thank You to Carmen Bruni!

I wanted to thank Carmen Bruni who has, in my opinion, gone beyond what was expected of him as a professor. He is constantly providing extra resources and help to all M135 students and has simplified my learning experience. Thank you!

8.1.2 MATH 103

I just wanted to thank you for all the work you put into helping us with the coursework and making it as interesting and engaging as possible. Over the winter break, I was thinking that 103 was going to be my last math class ever but now, I’m considering trying out a 2nd year course. During the term, I came to really like integral calculus despite occasional WeBWork frustration and some not-so-great midterms. Your extra support during the review sessions showed how much you cared about us as students and helped me to survive the term.

Thank you for a great semester and enjoy the summer break!

Once again, thanks for all your help this semester. I’m sorry I couldn’t get by this week, but I just wanted to drop off a small token of my appreciation for your excellent teaching, and the one on one help. As a TA, I understand that while it may be your job, there are still other things to be done.

Just wanted to thank you for helping me with math this term and for being an engaging and passionate professor. Thank you for a great semester, it was a pleasure to be one of your students.

Hi Carmen,

We wanted take the time to thank you for an amazing term! You have been an amazing professor to us and thank you for your patience as we know we take up a lot of your time!

Anyways thanks again! Wish you the very best!

8.1.3 MATH 184 Workshops

Having had the privilege of working with some truly inspirational instructors, it is no small thing that I hold Carmen among the best of them. His teaching prowess goes beyond knowledge of, or even a passion for Math. What sets Carmen apart from other instructors is his sincere desire to be of aide to his students. Never before have I come across someone so genuinely interested in the welfare of others. Always generous and ever patient, he has been instrumental in nurturing both success and an interest in a subject matter which, for the majority of my life, I have done my best to avoid. I can say it has been a pleasure and a privilege to have had the opportunity to work with him, and I continue to do so to this day.
8.1.4 MATH 101

Hi Carmen,

Thank you for being such a great Math 101 professor this term. Your class was BY FAR the most enjoyable one I’ve taken in my short university career and I hope you continue to teach with such great enthusiasm and effort!

So once again, thank you, and I really hope I’m in one of your classes again!

Hello Carmen,

I was in your math class this semester, and I may or may not have stayed up until midnight to check my math grade. And I passed! I’m actually in my third year of UBC and I can say without a doubt this course took more work than any of my other courses. This includes upper level genetics and chemistry.

I don’t really have an agenda in emailing you, other than to thank you for helping me pass this and making math as enjoyable as possible. I LOVED piazza. It helped me feel a little less pathetic when I can see other people up at 3am trying to do WeBWork. In class when I/others asked questions, you were very thorough and made sure we understood (without making us feel bad), which helped a lot. What helped me most was doing hard problems in class, where you would give us 30 seconds to try and answer it. Not because I would know the answer, but that it gave me time to realize I had no clue how to answer the question and that I needed to learn what you were teaching.

Anyway, I have no general message besides being giddy that I passed.

Thank you for a wonderful semester.

8.2 Other Documents
Indefinite Integrals

From before, recall that
\[ \int_a^b f(x) \, dx = \text{signed area} = \text{number} \]
these were called definite integrals. Now, we will also use the similar notation given by
\[ \int f(x) \, dx = \text{antiderivative of } f(x) = \text{family of functions} \]
and we will call these types of integrals indefinite integrals. For example

(i) \[ \int x^2 \, dx \]

(ii) \[ \int \frac{dx}{1 + x^2} \]

NB: The linearity property of the definite integral still holds for indefinite integrals. For example
\[ \int (2x + 1) \, dx \]

Integration by Substitution for Indefinite Integrals

Goal: Compute \( \int (x + 1)^{10} \, dx \)

As of right now, we have a very limited toolbox to solve this problem. We either have to guess the integral or expand it out and integrate term by term. Notice here that if \( f(x) = x^{10} \) and \( g(x) = x + 1 \), then \( f(g(x)) = (x + 1)^{10} \). In some sense, we can view this as a problem of undoing the chain rule from differential calculus.

Abstraction

Let \( F(x) \) and \( g(x) \) be differentiable functions. Let \( u = g(x) \). The chain rule states that
\[ \frac{d}{dx} F(g(x)) = F'(g(x)) g'(x). \]

Antidifferentiating (integrating) both sides gives
\[ \int F'(g(x)) g'(x) \, dx = \int \frac{d}{dx} F(g(x)) \, dx = F(g(x)) + C = F(u) + C = \int \frac{d}{du} F(u) \, du \]
\[ = \int F'(u) \, du. \]

This gives

Theorem (Integration by Substitution for Indefinite Integrals). If \( u = g(x) \) is differentiable with continuous derivative, range \( I \) an interval and \( f(x) \) a continuous function on \( I \), then
\[ \int f(g(x))g'(x) \, dx = \int f(u) \, du \]

NB Once you have substituted and solved the integral, you must back substitute (that is, your answer should be in terms of the original variable).
Let’s see some examples.

(i) \( \int (x + 1)^{10} \, dx \)

(ii) \( \int \frac{x}{1 + x^2} \, dx \)

(iii) \( \int \cot(x) \, dx \)

What about definite integrals?

**Integration by Substitution for Definite Integrals**

Theorem (Integration by Substitution for Definite Integrals). If \( u = g(x) \) is differentiable with continuous derivative, range \( I \) an interval and \( f(x) \) a continuous function on \( I \), then for \( a, b \in \mathbb{R} \), we have

\[
\int_a^b f(g(x))g'(x) \, dx = \int_{g(a)}^{g(b)} f(u) \, du
\]

Notice that here our endpoints change. Let’s see an example.

\[
\int_0^\pi \sin(x)e^{\cos(x)} \, dx
\]
WARNING

(i) With the substitution rule for indefinite integrals, after plugging in your value for $u$, you **MUST** plug in the original variable back in.

(ii) With the substitution rule for definite integrals, after plugging in your value for $u$, you **MUST** also change your **endpoints** to match the variable $u$. You **DO NOT** plug back in your original variable.

Here are some examples of breaking this rule as well as the correct way to write this problem.

**Incorrect Examples**

For the following, let $u = 1 + x^3$ so that $du = 3x^2 dx$ and that

$$u(0) = 1 + (0)^3 = 1 \quad u(1) = 1 + (1)^3 = 2$$

**Bad example 1:**

$$\int_0^1 \frac{3x^2}{1 + x^3} \, dx = \int_0^1 \frac{du}{u} = \ln |u|_0^1 = \ln |1 + x^3|_0^1$$

Bad - Must change endpoints!

$$= \ln(2) - \ln(1) = \ln(2)$$

**Bad example 2:**

$$\int_0^1 \frac{3x^2}{1 + x^3} \, dx = \int_1^2 \frac{du}{u} = \ln |u|_1^2 = \ln |1 + x^3|_1^2$$

Bad - Should have changed endpoints and **NOT** back substituted

$$= \ln(9) - \ln(2)$$

**Good example 1:**

$$\int_0^1 \frac{3x^2}{1 + x^3} \, dx = \int_1^2 \frac{du}{u} = \ln |u|_1^2 = \ln(2) - \ln(1) = \ln(2)$$

**Good example 2:**

$$\int \frac{3x^2}{1 + x^3} \, dx = \int \frac{du}{u} = \ln |u| + C = \ln |1 + x^3| + C$$
Using the substitution rule seems easy however there are many cases when applying a substitution is quite unclear. Here are some examples.

**Trick 1:** Multiplying by 1 (Quite tricky - you will often need a hint to proceed with this type of problem)

\[ \int \sec(x) \, dx \]

**Trick 2:** Perfect square in denominator

\[ \int \frac{dx}{x^2 - 6x + 9} \]

**Trick 3:** Completing the square

\[ \int \frac{dx}{x^2 - 6x + 18} \]
More Examples

(i) $\int 2xe^{x^2} \, dx$

(ii) $\int x^5 \sqrt{1 + x^2} \, dx$

(iii) $\int_{5}^{6} x\sqrt{x - 5} \, dx$
(iv) \[ \int \frac{dx}{x \ln x} \]

(vi) \[ \int \frac{\ln x}{x} \, dx \]

(v) \[ \int \frac{\sin(\sqrt{x})}{\sqrt{x}} \, dx \]
Category Instructions: Based on a 5-point scale, where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree, please rate your instructor on the following:

<table>
<thead>
<tr>
<th>University Module</th>
<th>Bruni, Carmen</th>
<th>Individual</th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
<th>N</th>
<th>Mean</th>
<th>N/A</th>
<th>Med.</th>
<th>Mode</th>
<th>Std Dev</th>
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</thead>
<tbody>
<tr>
<td>Q1 The instructor made it clear what students were expected to learn.</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>19</td>
<td>33</td>
<td>54</td>
<td>4.6</td>
<td>0</td>
<td>5</td>
<td>5</td>
<td>.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q2 The instructor communicated the subject matter effectively.</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td>15</td>
<td>32</td>
<td>53</td>
<td>4.5</td>
<td>0</td>
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<td>5</td>
<td>.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q3 The instructor helped inspire interest in learning the subject matter.</td>
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<td>3</td>
<td>3</td>
<td>20</td>
<td>27</td>
<td>53</td>
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<td>5</td>
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<td>Q4 Overall, evaluation of student learning (through exams, essays, presentations, etc.) was fair.</td>
<td>2</td>
<td>1</td>
<td>10</td>
<td>21</td>
<td>20</td>
<td>54</td>
<td>4.0</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>.98</td>
<td></td>
<td></td>
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<tr>
<td>Q5 The instructor showed concern for student learning.</td>
<td>0</td>
<td>0</td>
<td>14</td>
<td>40</td>
<td>54</td>
<td>4.7</td>
<td>0</td>
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<td>.44</td>
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<tr>
<td>Q6 Overall, the instructor was an effective teacher.</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>15</td>
<td>38</td>
<td>4.7</td>
<td>0</td>
<td>5</td>
<td>5</td>
<td>.50</td>
<td></td>
<td></td>
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</table>


Q7 - Enter comments below

Faculty: Bruni, Carmen

Response Rate: 81.48% (44 of 54)

- The instructor was very engaging and easy to approach which made for a great learning experience

- Carmen was an excellent and passionate teacher, and showed genuine care for his students. I believe he could improve on how he teaches each unit. We occasionally would spend an entire class asking "Why" we were doing what we were doing, but never actually did questions on some units.

- I’ve never had a more articulate math professor, and having a professor who is so approachable and friendly was helpful this term. I believe he is an asset to UBC’s math professors and I would love to have him again as a professor.

- Carmen is an instructor that I find easy to approach with questions and concerns about the course material. He keeps lecture interesting and engaging which makes me want to attend.

  - best prof ever :D

  - I love the fact that you use piazza to communicate with your students

  - its like an office hour 24/7

- Carmen really knows how to connect with students on their level, he always knows how to effectively communicate the course subject in a way that we can all understand. I think the one thing he needs to improve the course, is to slow down when he teaches the various sections, I understand his reason for speeding up, (to do more examples), but for the more difficult sections it would benefit more if he could be slower so students could understand more efficiently. But overall Carmen Brunti is a fantastic teacher, the best teacher I've had so far, in terms of office hours, student relations and communicating the subjects in a moderate manner.

- conducted extra review session before the midterm to help students. One of the best teacher i ever had. He really tries hard to make student understand a topic and is really passionate about teaching.

- Carmen's lectures are entertaining, informative and engaging. His energy and enthusiasm is consistently shown and he is very effective at communicating with students. Outside of class, Carmen makes himself frequently available and answers all questions willingly and to the best of his ability. There is very little I would suggest to improve this course as Carmen has done a fantastic job.
Carmen was very enthusiastic every time and he was also very ready to teach each day. His voice was loud and clear and he engaged the students a lot. Had plenty of examples to go along with his teachings. This course however, felt very rushed and that the amount of material taught each class was very overwhelming. Overall, great instructor.

The best prof ever! He is hilarious and really young at heart so he really connects with his students well and becomes one of us. He is there for study sessions and office hours and he is the only prof I have ever visited during office hours and I actually look forward to them because I actually understand things better. He is also a very good person, always giving to his students (gave pie to us on pi day) and is not hesitant with spending time with us.

He does everything extraordinarily. Everything. Possibly the most ideal instructor I’ve ever had. He shows deep interest in what is being taught without making the class feel alienated. Every detail, every concept, every example is precise and clear, making it a pleasure for the students to learn. Even if a mishap arises such as a miscalculation, he solves the problem almost instantaneously. Definitely an effective teacher.

Professor Bruni was great; he took a personal interest in the class’ progress, and constantly asked for student feedback during class to make sure we were following along. His dedication was evident beyond the classroom setting; he gave up his weekends for extra office hours and was constantly in contact with us through piazza and email. Definitely the most effective and efficient professor I’ve had this year.

Carmen is the best mathematics professor I’ve ever had. I never had much interest in math, but Carmen made the course interesting and entertaining while still challenging us with the difficult curriculum. He also put in more hours outside of class time than any other professor that I’ve had.

Carmen was an excellent teacher. He was extremely organized, and would go to great lengths to help any student. He came in on weekends to help us. Undeniably, Bruni was liked by the entire class for his energetic lessons and clear, effective teaching methods. I enjoyed the course very much, the only complaint I have is some of the questions on the webwork were very hard to enter due to syntax errors.

The examples given in lectures were very thorough and helpful.

It was extremely apparent that Bruni has put an immense amount of preparation into the course. The time and effort that he puts into preparing the students and for the class shows in his work. His use of the internet and the Piazza application was effective and really helped much of the class with understanding concepts. He showed his dedication by coming to UBC on a Sunday to hold office hours till midnight before a midterm. One of the best "teachers" to have taught me throughout, not only the last year in university but in my whole learning career through high school and elementary school. Truly a great instructor.

Pretty good instructor, who obviously cared about his students. Class was sometimes too noisy though (and I generally didn't care for the curriculum, but that's not the professor's fault).

Wonderful enthusiasm! Your teaching makes integral calculus a digestable course. I don't have too many improvements other than spending more time on examples. Good work on saying bless you to people who sneeze :)

Excellent instructor, effective in teaching methods.

Sometimes a little scattered, but very good. Should always start with a section number from textbook, "We are learning section 11.4 today" and then start lesson, allows students to know where to reference things while doing homework. Ended up doing it for last month which helped.

-be more assertive when you are trying to get the class’ attention/ keeping them quiet

-did a good job in projecting voice and tried to keep class entertaining

-friendly and approachable

Organized, passionate about his work, funny, and very intelligent. Kept the class entertaining every day even in the short time he had. Sometimes maybe a bit disrespectful towards his students when they asked a question but besides that he was a great new prof.

Math profs are always the profs who teach with passion and interest (an observation from learning from you and my previous Math 100 prof). Your enthusiasm for math and the content of the course seeped into my learning, and it goes without fail that learning with interest is the quickest, easiest way to learn. SO thank you for that. One thing that might make you more effective, and to add into the way you teach with interest is to teach with certainty. Sometimes during the course you ran into problems with exercises or examples or theorems you wrote on the board. Being sure of what you're writing and making minimal mistakes shows to us, the students, you're ready to teach and most importantly that we can go to you for questions because you know the material, wouldn't make mistakes (less than us at least =p), and that you're the master of the material.

Carmen Bruni was the best prof I have had all year. He explained and taught the material very well, focused on explaining the theory and gave good examples. He also dedicated his time outside of the course to make sure students learned the material and offered a lot of office hours. He made the course interesting and I enjoyed being in his class.

He has great passion for teaching. I would strongly encourage continuation of teaching.

Prof. Bruni was an excellent teacher. His explanations were clear and he took the time to go over things that were unclear. Bruni was always enthusiastic every class. Was very patient and kind. Took different/interesting approaches to math. He takes the time to make sure that everybody is understanding and on the same page. Makes extra effort to help students (ie: coming in on the WEEKEND before a midterm for office hours). He also brought pies on Pi Day. Overall, a very wonderful instructor.
I believe Carmen Bruni was an excellent teacher in that not only did he teach the required material with a passion making math look almost interesting, but he was also “one-of-us”. In the sense that he wasn't the unapproachable prof. but simply there to help us learn math.

Carmen Bruni is indeed one of the best math prof that I ever had. He is passionate about teaching and this can really be seen in the class. In fact, he's really helpful when it comes to meeting him outside the class for schoolwork... There were numerous times where he made extra office hours to help us out and he never turns down any students who needs extra help. To sum up, Carmen Bruni ROCKS! ;)

He was the best instructor imaginable I have nothing but good things to say.

Professor Bruni is really committed to teaching. He tried his hardest to make every topic clear and understandable for us, his students. At the same time his classes are not boring, his classes are full of good mood, jokes, positive energy. It really did help us that he is not that much older than us, because he understands how hard it is to learn new material, his memory is fresh with the feelings he had learning that material, or may be it is just because he is really cool prof.

Best math prof ever, showed alot of concern for students, never judges people for stupid/simple questions, and makes himself very available to questions.

I really enjoyed the way the instructor presented students with the new material! He exploited a technique of mixing fun and learning which I think is the most effective. In addition, I liked that the instructor lectured us on extra material which has to do with math at times when we were ahead in lecture material.

Sent an e-mail showing concern for loss of marks during a small assignment. This showed me that the professor wanted the students to learn the material well and for them to do well in the course.

Kept class alert and interested; he passionate about teaching. He made an effort by doing a million examples on the board.

I believe that he is a very hard working individual who went out of his way to help students to the best of his abilities. UBC needs such profs. He is pretty young and still has a lot of room for improvement. The only thing that I would want him work on is his confidence when he gets stuck at a problem. But without a doubt he knows his subject perfectly well and enjoyed his lectures the most out of all this term. He is one gem of a person.

His classes were fun and helpful, though it occasionally seemed like he had no idea what he was doing.

Carmen was great in that he was super approachable and eager to help, which seemed to be partly due to his personality and partly due to his apparent eagerness at being a new teacher. He was one of the most accessible and patient prof's I've had, with office hours 4 times a week as well as pretty amazing commitment to the "online office hours" forum sorta thing he'd set up. He was personable and obviously generally well liked by the class.

My one criticism is that sometimes he'd get caught up being Carmen and excited about math and stuff that he'd forget to be professional and just start being himself. Granted, I think this is partly why he was so popular, and it is nice to be able to get to know an instructor a bit as a person. But I still don't think stuff like "lolz omg" and loads of smileys have a place in class emails and on the online help forums.

Overall though, pretty impressive considering that it was his first time teaching and everything. Good instructor, I wouldn't hesitate to take a course with him again.

With respect to course format, part of me missed the workshops we had in math 180. But part of me knows I probably would have skipped a few anyways. In any case, the online forum and ample office hours helped compensate for this.

He was very personable and friendly. It was obvious that he cared about how the students did. He made himself very available for students to get help and to ask questions outside of class time.

Carmen was a really effective teacher and was extremely helpful during office hours. One of things he needs to improve on is professionalism. I do not think wearing a tuque along with cargo pants to class is professional. I did enjoy having a professor young enough to relate to, however, swearing in front of students is extremely unprofessional. So is sharing too much about your personal life. Once again, I'd like to stress how awesome a teacher Carmen is and say that I would be happy to have him as a math teacher again, especially if he works on his level of professionalism.
Prof. Bruni made my spring term at UBC.

I keep trying to start writing this but I seriously don't even know how to begin. I feel like a lot of times professors get so caught up in their research and their higher year classes that they forget about the first years they are teaching. These teachers don't realize that sparking interest in a subject in first year is essential to creating outstanding, employable graduates down the road. Professor Bruni shattered that view by going the extra mile every day for his students.

I want to list a few of the ways that he went above and beyond for my class:

- He came in for office hours (twice) on weekends
- He set up an online discussion board centered around the use of mathematical notation so that students could discuss complex problems over the internet
- He checked this discussion board consistently (I never posted something that I didn't get a response to within an hour from him...and I once posted a question at 2am).
- He posted an online lecture once when he didn't have time to get through all the material he needed to in class. Other than this one time the class stayed perfectly on pace with the curriculum
- Even on weeks where no extra office hours are requested, he hosts office hours 4 out of 5 week days
- He has stayed well after hours to help students study for midterms
- On pi day (March 14th) he brought the class pie

Most importantly, though, I would like to say that being in his class was a particularly important experience for me. This year has been very difficult for me as I've had some things going on in my personal life, and, while it may sound incredibly cheesy, having a class that I truly and consistently enjoyed going to three times a week made a big difference in helping me through some difficult times.

UBC deserves teachers like Bruni.

Thank you Carmen for an outstanding year.

- I really enjoyed lectures. Interesting and fun.
- The instructor made a hard course easy to understand.

### Faculty of Science Module - MATH 101 - 211

<table>
<thead>
<tr>
<th>Q8</th>
<th>My academic background provided sufficient preparation for this course.</th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
<th>N</th>
<th>Mean</th>
<th>Med</th>
<th>Mode</th>
<th>Std Dev</th>
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<td></td>
<td></td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>31</td>
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<td>3.8</td>
<td>4</td>
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<td>Q9</td>
<td>This course promoted conceptual understanding.</td>
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<td>2</td>
<td>7</td>
<td>29</td>
<td>16</td>
<td>54</td>
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<td>The learning activities helped me to succeed in this course.</td>
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<td>9</td>
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<td>Q11</td>
<td>The workload for this course was appropriate.</td>
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<td>3</td>
<td>6</td>
<td>31</td>
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<td>Q12</td>
<td>I received sufficient feedback on my progress during this course.</td>
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<td>0</td>
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<td>54</td>
<td>4.1</td>
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### Science 2012W T2 - Teaching Evaluation Survey

2012W2 (2013)

<table>
<thead>
<tr>
<th>Course:</th>
<th>MATH 103 206 - Integral Calculus with Applications to Life Sciences</th>
<th>Department:</th>
<th>MATH</th>
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<tbody>
<tr>
<td>Unknown Role:</td>
<td>Carmen Bruni</td>
<td>Responses / Expected:</td>
<td>51 / 79</td>
</tr>
<tr>
<td>University Module</td>
<td>Bruni, Carmen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
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<tr>
<td></td>
<td>Responses</td>
<td>Individual</td>
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<td></td>
<td>SD D N A SA N</td>
<td>Mean N/A Med. Mode Std Dev</td>
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<td>Q1 The instructor made it clear what students were expected to learn.</td>
<td>0 0 6 24 21 51</td>
<td>4.3 0 4 4 .67</td>
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<tr>
<td>Q2 The instructor communicated the subject matter effectively.</td>
<td>0 1 5 20 25 51</td>
<td>4.4 0 4 5 .74</td>
<td></td>
</tr>
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<td>Q3 The instructor helped inspire interest in learning the subject matter.</td>
<td>0 0 15 16 20 51</td>
<td>4.1 0 4 5 .82</td>
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<td>Q4 Overall, evaluation of student learning (through exams, essays, presentations, etc.) was fair.</td>
<td>1 3 12 20 14 50</td>
<td>3.9 1 4 4 .96</td>
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<td>Q5 The instructor showed concern for student learning.</td>
<td>0 1 3 14 33 51</td>
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<td>Q6 Overall, the instructor was an effective teacher.</td>
<td>0 0 7 16 27 50</td>
<td>4.4 0 5 5 .72</td>
<td></td>
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</table>


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Q7 - Enter comments below

**Faculty:** Bruni, Carmen

**Response Rate:** 70.59% (36 of 51)

The instructor is funny and makes the class better and people pay more attention because he's a fun teacher to have. Sometimes he can be unclear when explaining material and he goes too fast in lecture. My suggestions for improving the course would be to improve the online course notes because they are TERRIBLE and unclear. If anyone doesn't attend lecture and relies on the online notes, they have no chance of doing well in this course. Students overall marks should be constantly updated on Connect or somewhere else. The workload for this course was fair at times, but when integrals came, the workload was EXTREMELY unfair.

- He made understanding the course material easier.
- Goes out of his way to help you understand. Easy to approach and overall great guy.
- I love professor Bruni, he truly showed he cared about me learning the material.
- Carmen is a very responsible instructor. He answered every question posted on piazza and inspired his students in class and always told us not to be upset when we get lower grades. I didn't quit studying math after first midterm because of him. I tried much harder to succeed and got better grade on second midterm. He posted videos which explained some of the hard problems and topics. He really cared about his students.
- Went through material quite quickly in class. Would have preferred time to copy notes after an explanation, rather than instructor writing and explaining at the same time through the entire class, having to keep up with writing and trying to catch the explanation at the same time.
- Carmen was an AWESOME prof!! he really knows the material and explains it in a way that is very easy to follow and catches the student's attention. I specially liked that he makes himself very approachable. He feels more like a fellow student than a prof. Another thing that I liked is that he explains a theory and then shows many examples relating to it rather than just showing a vague method to solving a very complicated problem.
Great teacher, funny, and made class and the topics interesting even though it was late in the afternoon. Very thorough in covering everything. The examples after each new topic were useful in understanding things. Teacher seemed to care about how students performed. It was good how there was a review session after Thursday classes.

- Write bigger and neater. Use the board more often rather than just the doc cam. Maybe have some practice questions prewritten on the board to do during class if possible.

The OSH part of labs weren't relevant to class material sometimes and took too long to do for the benefit they had. Apparently one lecture section went over two labs’ OSH in class, which doesn't seem fair if this actually happened. Fairness between the sections would be appreciated.

- A great teacher, but he needs to talk slowly and have better writing.

Carmen Bruni was by far the best math instructor I have had to date, including my high school teachers. He made a point of stopping regularly to answer any questions anyone had, yet he still covered the course content thoroughly and clearly. His review sessions were extremely helpful, and very much appreciated. He genuinely wants his students to do well and is more than willing to help them get a there.

- BANANA - was said both not enough and yet too many times

The instructor was very approachable, and I was not afraid to contact him outside of the classroom for extra help. However in order to complete webwork assignments and prepare for exams, I required a large amount of extra work, as what I was given in the lectures was not sufficient for my understanding of the topics. I found we moved very quickly in class, and took more notes than any of my other classes. As a result of so much note taking, I found that I wasn't able to absorb anything I was writing down, and had to go over my notes in detail later to figure out what exactly I had written down.

- Overall though, Carmen was a good instructor.

Something to improve is making sure everyone understands in class: one way to do this would be through the use of clicker questions to check everyone's understanding, as often just asking if anyone is help is not very reliable as not many people are probably going to admit to being confused by everything.

- Write slower and explain better!

- VERY GOOD WAY OF TEACHING

- Professor Bruni is without a doubt the most caring and considerate professor I have encountered in my undergraduate degree.

- Not only was he a good instructor but he was an extremely helpful and welcoming person. He was very approachable and personable.

- Awesome Teacher, easy to stay engaged and understand.

- Carmen excelled in presenting course content in an understandable way, and provided ample availability for us to approach him for help. The classes are open and succinct

- Your enthusiasm for the subject and the addition of humorous jokes allowed the material to become more engaging and interesting than a regular math class.

- I think Carmen was the best math teacher I have had in a long time. He wrote out notes as nice as possible, held great office hours and review sessions, and showed the theory of each rule that came up.

- I would like to take this opportunity to sincerely thank Carmen for being such a great Math professor. He is not only effective in teaching in class (clear notes, interesting lecture, always open to questions), but also super helpful at any time outside of class. For example, he answers questions on piazza within 5min. All of my friends from other math sessions know about Carmen. Carmen really inspires my interest in math, probably because Carmen's passion about math can influence student's attitude. He is caring, humorous, friendly and good at making math seem less difficult. Carmen's effort and input to this course really make me want to try my best. I am truely grateful that I have Carmen for this term.

- :) 

Carmen is the best professor I've had at UBC so far. The notes he gives to the class makes the homework assignments a lot easier to complete. I also like that he thoroughly goes through how the each formula, theory, etc. is derived instead of simply giving them to his students for them to blindly follow without knowing any reasoning behind it. He seems like a pretty busy guy, but he's still able to treat his students with respect and maintain a great attitude towards teaching. The only thing I had trouble with in his course was keeping up with the note-taking in class while being able to follow the concepts along. I found that most of the things I learned from the class were learned through his help on Piazza as well as referring back to the in class notes, rather than being mentally engaged during the lectures.

- Great instructor! Very effective teacher and made things easy to understand

Fully understands course concepts and is very passionate about his work. Is a fun teacher to listen to, however a lot of time is spent simply trying to decipher his writing of the class notes and consequently trying to catch up because the notes are written very quickly. Because of this, it is hard to actually just sit to listen and understand what is being taught because most of the time is spent writing as fast as possible.
Carmen Bruni was one of the best instructors I have ever had. His way of teaching was direct and straight to the point, rather than touching up on small details that were not important or relevant. He was fun and showed he really cared about his students. The only thing about the course that seemed a bit unfair was the length of the midterms and some lab assignments, but that was in no way his fault.

Carmen Bruni has unwavering dedication to students’ learning, literally losing sleep to assist students in any way he can outside of class as well. In class he would always mention practical uses of mathematics that allowed us to appreciate the course material more and he would always look for alternative resources that enhance his explanation of the material better. He was able to maintain my interest and understanding of the course material and I am fairly confident I can excel in something I would not normally excel in if not for his assistance and discouragement from taking shortcuts when doing math. Thank you very much.

- the class is fun and efficient
- Carmen Bruni is a great instructor. He teaches really well and he spends LOTS of time with his students helping them at least 5 hours each and every day. Helped us so much, and he's just great. :)
- My instructor was always providing extra help for his students on Piazza. This tool was very helpful and he always provided answers quickly and effectively. He could improve on more student involvement in class time.
- Carmen Bruni was a very good instructor, and I have nothing but good comments about him. It seems like he really wants his students to succeed, and he is very approachable.
- His teaching style was effective with good notes, and stopping to ask if any of us have any questions.
- Incredibly helpful and available. Hosted weekly homework help sessions AND is hosting three separate exam review sessions on his own personal time. Answers Piazza questions more than any other instructor by far, and faster than the rest ever answer. Clearly cares about students and how we feel about math.
- I really enjoyed Carmen’s teaching style of writing notes on the doc cam for us to copy. He was also very friendly and approachable and communicated well with the students.
- Positive - Extremely helpful on Piazza and outside of class time during office hours. Offered extra material to clarify things that were not clear or were omitted in the lectures.
- Negative - Would we need so much help on math if he was clear the first time he presented the material to us? Or is it that math itself is difficult? It might be a combination of the two...
- Carmen is a very nice instructor, he is friendly to students. However, sometimes the pace of his class is too fast to follow; I love the way he teaches, but i don't have much time to think more about the things i just wrote down, because I need to write down more following notes. I think that is the only thing that needs to improve.
- Good lecture notes and easily contacted/reachable outside of class time for help.
- He could have been a bit slower in explaining some concepts and do a little bit more examples in class.

<table>
<thead>
<tr>
<th>Faculty of Science Module</th>
<th>MATH 103 - 206</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responses</td>
<td>Course</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td>Q8 My academic background provided sufficient preparation for this course.</td>
<td>0</td>
</tr>
<tr>
<td>Q9 This course promoted conceptual understanding.</td>
<td>0</td>
</tr>
<tr>
<td>Q10 The learning activities helped me to succeed in this course.</td>
<td>1</td>
</tr>
<tr>
<td>Q11 The workload for this course was appropriate.</td>
<td>2</td>
</tr>
<tr>
<td>Q12 I received sufficient feedback on my progress during this course.</td>
<td>1</td>
</tr>
</tbody>
</table>

Category Instructions: Based on a 5-point scale, where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree, please rate your instructor on the following:

<table>
<thead>
<tr>
<th>University Module</th>
<th>Bruni, Carmen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 The instructor made it clear what students were expected to learn.</td>
<td>Responses: [SD] Strongly Disagree=1 [D] Disagree=2 [N] Neutral=3 [A] Agree=4 [SA] Strongly Agree=5</td>
</tr>
<tr>
<td>Q2 The instructor communicated the subject matter effectively.</td>
<td></td>
</tr>
<tr>
<td>Q3 The instructor helped inspire interest in learning the subject matter.</td>
<td></td>
</tr>
<tr>
<td>Q4 Overall, evaluation of student learning (through exams, essays, presentations, etc.) was fair.</td>
<td></td>
</tr>
<tr>
<td>Q5 The instructor showed concern for student learning.</td>
<td></td>
</tr>
<tr>
<td>Q6 Overall, the instructor was an effective teacher.</td>
<td></td>
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</tbody>
</table>

- I think you taught a difficult subject very well. "I think that there is a lot of new material crammed into a short time. "I think you could have done harder examples in class and I find the ones you did do in some cases didn't really mirror the webwork or exams."

- Carmen was/is an awesome instructor who really cares if we learn the material especially concepts! He should present more slowly in class because I have trouble in class. Aside from the lecture March 20, Carmen has been magnificent, everything a student can ask for. Lots of office hours and answers many piazza posts and e-mails. Continue with the printout papers because those help a lot!

- Very well prepared and easy to follow professor. I really enjoy attending your classes because your instructions are very clear and direct.

- He supplied us with enough explanation, notes and examples to know how to tackle questions. Those are the things I think he did really well on. I can't really think of anything to pick him on. I also really liked the powerpoint lecture. Maybe he can play with it a little bit more.

- I really liked how he took the time to answer questions on Piazza and held extra workshops outside of class. He really made me enjoy math this term and was always willing to help, he goes beyond the expectations to help students not just from his own class but also from others to succeed. My grade in this class does not reflect my passion for calculus but because of Carmen, I would consider trying a 200-level math course next year.

- Carmen is a great professor that really cares about the learning! He is very passionate about the subject matter and is available should anyone need help! Any student is lucky to have him as a professor!

- He cared about his students, providing many opportunities for help if needed and always answered questions (basically 24/7 on Piazza). He was always looking for suggestions to improve his teaching and the course. Everything was good, nothing was bad.

- Carmen is a great instructor. He makes math fun and makes me want to go to math class. I have learned a lot in his class, especially because I knew nearly nothing about integral calculus before. He is very good at using relevant examples and making sure everything he says is understood. He is very effective and I have only been to a few of his lectures where he seems tired and doesn't lecture as effectively. He rarely ever gets off topic.

- Carmen is an amazing instructor. He has a great sense of humour, and this makes the class fun and interesting. He also demonstrates an apparent concern for student learning by inviting us to ask questions at regular intervals in the lectures. I could not have asked for a better instructor. Even when we had to rush through some of the material, I liked how Carmen emailed everyone to clarify the concepts explained in class; he takes responsibility for our learning, and he is always helping us to the best of his abilities."
By far the best math prof I've ever had. Extremely clear in explaining the course material, and extremely helpful outside of class on Piazza. He sometimes skips some algebraic steps during lectures, which can be a tiny bit confusing. He counters this by being very approachable, basically, if you don't understand something in class, all you have to do is ask. The math labs didn't seem very effective though.

I liked that this instructor wrote out the notes with us, had some slideshows, and some handouts. I liked the diversity of how he would present his lectures. His workshop sessions were very helpful and he was always willing to help students.

Carmen was an extremely effective instructor. He also spend very large amounts of time outside of the classroom in order to assist student learning. If he felt he did not explain something well enough, he would post additional material in order to ensure thorough understanding from the students.

-Somewhat enthusiastic in class
-Helpful on Piazza.
-Had Hand-outs for some important equations and concepts.
-Fluent English (very important)

Carmen is the greatest teacher I have thus had so far while at UBC. He is passionate, interesting, and eager to help students succeed. He spends countless hours on Piazza guiding and helping us do our homework. He keeps the course interesting with his jokes and he very thorough with his examples. He goes beyond of what is expected from a teacher.

- NA
- Please slow down the pace if possible.
- new photo time carmin.

Thank you for taking the time to teach and help some of us individually!

- Definitely cared about students and made things easy to learn
- Did not explain things entirely clearly but made up for it by providing lots of examples. Could be improved by explaining things more clearly.
- He an amazing, patient, and effective instructor, highly recommend him.

Carmen was a great professor. There were times when he started off topics extremely slow in the basic portions, which was helpful, but at the same time he went very quickly through the difficult concepts or examples which made it difficult to understand how to apply the basic concepts. However, he was still an overall excellent instructor who made class an enjoyable experience despite my dislike for the course in general.

Thanks Carmen, you have been an awesome prof! I use to hate going to math classes, but you made it a lot more bearable. Keep making those quirky jokes, they make my day!

Carmen was an effective professor who really took the time and went the extra way to make sure students understood. He is friendly and easy to approach. He explains well and it is never boring in his class. I would definitely recommend Carmen to others. In fact, I would be happy to get him again if I ever had math in the future.

Carmen is a great instructor. He knows his stuff, is super friendly, cares about his students on an individual basis and is obviously passionate about math. I think he could improve his style of teaching with more student engagement such as Clicker questions as opposed to just asking how everyone's doing during class. I know that most students are probably shy to speak up so Clicker questions to check in on student understanding is great for that.

I have no comments for improvement, I found him to be an extremely committed and effective instructor.

Carmen is an amazing professor. I've never met a professor that puts so much effort in helping students. Carmen dedicates so much time into this course, I feel so lucky to be in his class. Also, he doesn't just explain topics but explains why they happen, which is important to application to real life. Furthermore, he's very patient with his students during office hours and is always EXTREMELY helpful!! :) Props!

Carmen, you are the best!!!!!!!! I really learned a lot more than I intended to learn in this course and I found that you, Carmen, are a fantastic professor that effectively taught the needed information without making the material boring and spicing it up occasionally. I really liked the notes you did on the overhead (ELMO) and I found that going over the notes I took in class really helped me on exams. I really found this course interesting and it was my favourite course in second term. I also pondered whether I wanted to minor in math after being in your class because it was that insightful and it really got me interested in the more important things like summations. I started watching complex math youtube videos just because I was so intrigued in the material when I should have been studying for my exams!!

He's amazing! Explains concepts clearly and gives us lots of examples in class to make sure we know what we're doing. Could not have asked for a better prof!

Overall he is a pretty awesome instructor. He is helpful and answers questions that students need help on. My one area for improvement would be to go a little slower as he went fast on some of the lectures, but other than that I would recommend him to future math 103 students.

The pencasts really helped! Please do more in the future and the worksheets and power points were also helpful.
One of the best math instructors I've ever had in my life! Always concerned about students, teaches math in an understandable way. Whenever a student asks a question on piazza, he never fails to answer it! Such a great, inspirational instructor, he tries to make class worthwhile with puns and jokes! He also provides amazing math worksheets/notes for students to have. Super lucky to have had him! Thanks a bunch Carmen!

An enthusiastic and effective instructor. Material covered throughout the last half of the course was gone over a little too fast and it made it a bit harder to understand, but his weekly workshops were a good way to help others who needed more clarification. However, many people, including myself, were not fans of the course's labs.

Carmen was a good professor and showed a lot of interest in his students' learning. He genuinely wanted to help all of his students to succeed in the course. "He was very helpful and put a lot of effort into teaching this course."

Carmen genuinely cares about his students learning and is an overall great professor. I found sometimes that he moved too quickly for me to fully understand a concept or an example but otherwise very helpful.

Carmen genuinely cares whether or not the students are actually understanding what he is teaching. He puts a lot of effort to help you reach where you need to be in that matter.

Carmen is an excellent instructor. He's always there for his students and he makes his lectures interesting by including random fun facts and he has a good sense of humour!

A perfect instructor; would highly recommend to any student taking mathematics courses. Always willing to offer help to students, extremely clear in lectures, and really made math fun!

Beauty: Best math prof at UBC and he's not done his PhD yet. Cares deeply about his students, remembers our names, makes a serious effort.

Most older profs could learn something about teaching from attending his lectures. Webworks suck though, nobody likes webwork. Also this is the first time I've seen him without a toque, and I think it might be photoshop. #IsThisRealLife?

Carmen was a fantastic instructor. He is friendly, positive, and always willing to further explain. He was always easily accessible if you had further questions and was clearly very passionate about both math and the success of his students. My degree doesn't require me to take another math course but I would if Carmen was teaching it.

Carmen worked well with the students in class as well as his office hours after class always helped.

Carmen is one of my favourite professors I've had all year. He's enthusiastic, entertaining and knows how to teach this topic to a wide variety of students.

I believe his lectures were very clear and taught the material overall very well. However, he sometimes went too fast and didn't give students the chance to digest all the information. I really liked when we worked on problems by ourselves and then went over them together as a class- would suggest to do that more often. I liked the handouts to some extent, they were useful to have all the rules in one place but I didn't like it when they replaced the projected handwritten notes because it only becomes more confusing as we don't have all our notes in the same place. Also I would suggest to time homework differently because sometimes we had OSH, WW and lab all at the same time which didn't make it as good for understanding material.

Hard course but Carmen tried very hard in explaining the concepts and giving us examples. Definitely one of the best profs I ever had in UBC.

Explanation of concepts and problems was clear and helpful. Kept the atmosphere of the lecture humorous to prevent the lecture from becoming boring. Sometimes the pacing of the lecture was a little too fast. The writing is legible, but the words could be spaced out more to make it clearer.

Super helpful instructor. Give more examples where students work together for a few minutes in class! They were really helpful in helping me try to understand the notes. Also, please, PLEASE write neater.

The instructor showed concern for student learning; however, to improve he should let students solve problems in the class and work together in groups to come together with solutions.

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Q8</td>
<td>My academic background provided sufficient preparation for this course.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Q9</td>
<td>This course promoted conceptual understanding.</td>
</tr>
<tr>
<td>Q10</td>
<td>The learning activities helped me to succeed in this course.</td>
</tr>
<tr>
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<td>The workload for this course was appropriate.</td>
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<tr>
<td>Q12</td>
<td>I received sufficient feedback on my progress during this course.</td>
</tr>
</tbody>
</table>

July 13, 2012

Carmen Bruni
Department of Mathematics
University of British Columbia
Mathematics Building, Zone 2

Dear Carmen:

During my review of the student evaluations of Faculty of Science teaching for Winter 2011 (Term 2 and Full Year), I was delighted to see the very positive evaluations of your teaching in MATH 101.211. In this course, you earned superior numerical ratings and received positive written comments that clearly indicate that our students value your teaching skills and while I recognize that student evaluations are only one measure of teaching quality, they are an important measure. On behalf of UBC, the Faculty of Science, and our students, I thank you for your dedication to teaching and student learning. Our students and I appreciate your efforts and commitment to making UBC a great university.

Best Regards,

Simon Peacock
Dean, Faculty of Science

CC: Dr. Michael Bennett, Head, Department of Mathematics
April 12, 2013

Mr. Carmen Anthony Bruni
BSMT, 1616 – 64th Ave., West
Vancouver, BC V6P 2P1

Dear Mr. Bruni,

Re: 2012/2013 Killam Graduate Teaching Assistant Awards

It is my great pleasure to advise you that you have been selected as a recipient of the 2012/2013 UBC Killam Graduate Teaching Assistant Award. This recognition is given each year to a small number of graduate students who have made an outstanding contribution to teaching and learning at UBC. With over 2000 Teaching Assistants working at the university, winning this award is a remarkable achievement.

I would like to take this opportunity to thank you for your dedication and effort invested in supporting our undergraduate students. Your energy, enthusiasm and diligence in fulfilling your teaching responsibilities have made a positive impact on the quality of the learning environment at UBC.

The Killam GTA Award carries with it a $1,000 prize and a formal certificate. The monetary award will be deposited directly into your account. Should you not have a direct deposit, a cheque issued in your name will be mailed to the address provided by your Faculty. The award of the certificate will take place at a reception on May 6th, 2013, 3:30 – 5:00 p.m., and will be hosted by the Provost’s Office.

If you have any questions about this process, please contact my Executive Assistant, Jola Holt at jola.holt@ubc.ca, or at 604-822-5611.

Please accept my sincere congratulations on receiving this prestigious award, and best wishes for the future.

Sincerely,

[Signature]

Anna M. Kindler
Vice-Provost and Associate Vice-President Academic

Cc: Dr. David Farrar, Provost and Vice-President Academic
    Dr. Simon Peacock, Dean, Faculty of Science
    Dr. Michael Bennett, Department Head
April 29, 2013

Carmen Bruni
Mathematics Department
121 Mathematics Building
Zone 2

Dear Carmen,

Congratulations on winning a 2012/2013 Killam Graduate Teaching Assistant Award! The Committee members had a difficult time choosing the award winners from amongst a dedicated and talented group of candidates, but your abilities as a teacher clearly stood out.

Teaching Assistants play a valuable role in the Faculty of Science undergraduate programs and I encourage you to continue your excellent work as a teacher beyond your current role as a TA. Best wishes for your studies and future endeavors.

A letter has been sent to you from the Vice President and Provost’s Office to confirm receipt of your prize.

Yours sincerely,

[Signature]

Dr. Ian Cavers,
Associate Dean, Curriculum and Learning

cc: Mike Bennett, Head, Mathematics Department
    Simon Peacock, Dean, Faculty of Science
April 8, 2014

Carmen Anthony Bruni
Department of Mathematics
1984 Mathematics Road
Zone 2

Dear Carmen,

I would like to convey my sincere thanks for your service on the Faculty of Science Killam Teaching Awards Committee 2013-2014. You have played an important role for the Faculty in our efforts to acknowledge exceptional teaching by our faculty, and I very much appreciate the time and energy you spent evaluating the nominees for the Killam teaching prize. I hope you enjoyed the chance to visit the classrooms of the nominees and to discuss the relative merits of different teaching approaches with colleagues on the Committee.

The Committee did an outstanding job in selecting the winners and I look forward to acknowledging them at convocation. A lunch in honour of the winners will be held early in the fall term to which you will be invited. We will contact you regarding the time and place of the luncheon.

Thank you again for giving us so generously of your time to serve on this committee.

Sincerely,

[Signature]

Simon Peacock, Dean
Faculty of Science

CC: Martin Barlow, Acting Head – Department of Mathematics
July 15, 2014

Carmen Bruni
Department of Mathematics
University of British Columbia
Mathematics Building, Zone 2

Dear Carmen:

Congratulations on earning excellent student evaluations for your teaching of MATH 103 in term 2 of the 2013-2014 academic year! Your strong numerical ratings and positive student comments clearly show that our students appreciate your commitment to teaching and their learning. I recognize that student evaluations are only one measure of teaching quality, but they are an important measure. On behalf of UBC, the Faculty of Science, and our students, I thank you for your dedication to quality teaching and student learning. Your commitment to quality teaching is one of the reasons that UBC ranks among the world’s very best universities. Thanks!

Best Regards,

Simon Peacock
Dean, Faculty of Science

CC: Dr. Michael Bennett, Head, Department of Mathematics