

January 24, 2016

To Whomsoever concerned:

Dear Colleagues,

**Re: Tom Morley: 2015-2016 CETL-Faculty Award for Academic Outreach**

It is truly my great pleasure to nominate my colleague, Prof. Thomas (Tom) D. Morley, for this prestigious award. For over a decade, Tom Morley has made a significant impact on the mathematical education of the high school juniors and seniors in the public school system of the state of Georgia. This he did *single-handedly*, while being a full-time professor in the School of Mathematics at Georgia Tech, through a *Distance Calculus Program* (DCP), teaching and inspiring high school students to pursue mathematics. He made sure that many of these over-achieving high schoolers were well-versed with the first-year calculus to the extent that a large percentage of them have been consistently securing admission at Georgia Tech as well as higher-ranked universities.

I have taken the help of George Wright, Director of GT Online, Professional Education, in compiling some of the following facts.

Since its inception in the fall of 2005, Tom Morley has been the essential and driving force behind the continued success and growth of the Georgia Tech (GT) Distance Calculus Program (DCP). Tom was in fact originally involved in GT's original calculus outreach efforts dating back to the mid 1990s when he delivered a version of GT calculus, *live* to several local Georgia high schools over the now-defunct Georgia Statewide Academic and Medical System (GSAMS) video conference network. In other words, Tom is not a latecomer to the world of online education.

The DCP has grown from the original enrollment of about 34 students to the current enrollment of 450 or more students for fall 2015. Up until Fall 2014, Tom single-handedly supported all of the high school students along with his traditional instructional load of GT Atlanta campus students which usually number in the range of 200–225 enrollments. In Fall 2014, Tom shared the burden with my colleague Michael Loss, and in Fall 2015, he did it with our newly hired Academic Professional, Greg Mayer.

In addition to all of the customary responsibilities that all GT instructors have, Tom has been willing to make himself available for all of the outreach responsibilities that come with offering our online programs. This includes his participation in the following activities:

1. Annual live information and Q&A sessions for prospective high school students, parents, and high school faculty.
2. Annual live on-campus orientation session for enrolled students and their families.

3. Special pre-start of fall semester live online class for all enrolled high school students for additional orientation to the course and Q&A. This is also used by the participating high schools as an opportunity to test their equipment and train local high school support staff.

4. Field calls to his personal cell phone or emails from individual high school students who have questions about course content because they are unable to attend extra study sessions on campus.

5. Participation in the annual School District Math Coordinators meetings held on campus every spring in the GT Global Learning Center. He makes presentations about the two MATH courses he teaches and answers questions from the district coordinators for several hours.

Tom also makes sure that every high school student is welcome to attend his class on campus should the student wish to come to campus perhaps when her/his school is closed for a vacation.

When the two-course sequence is completed, Tom is still not done supporting his high school students. Each year a number of the students seek additional advanced mathematics courses from GT because they have not graduated from high school and wish to advance in their study of math. So Tom is willing to work with this small group of students offering them an independent study (or a reading course) of more advanced topics.

Another testament to Tom's sustained efforts at outreach is that several students who had taken Tom's classes in high school decided to help the next batch of students and signed up to be TAs, once they arrived at Georgia Tech!

I provide below (and in the additional material) some impressive statistics and high-praise from various people from our Professional Education as well as from numerous students who have taken Tom's classes.

**Striking Stats.** The latest stats provided by Ashley Brooks (GT Admissions) and George White (GT online) on the 2014 Freshman class which pertains to the GT DCP:

- 185 Distance Calculus Participants in this year's incoming freshman class of 2,843, which is 6.5% - DCP students make up 12.4% of the Georgia students in our freshman class (185/1,489).

Also pertaining to the same incoming class: Of the 355 DCP students who are 2014 high school graduates, 333 applied for Freshman Admission, and 331 were accepted – 99.4% Admit Rate compared to 32% in overall Freshman class!

The numbers from 2014 are that 450 enrolled from distance calculus, while GT had a total of 2800 enrolled freshman. This is 16% of the freshman class! With an average SAT (estimated from public numbers) at the 99% percentile overall, And over 75% Georgia

Tech. (Back of envelope calculation.) This proves that this program is undoubtedly a game changer for Georgia Tech.

- 418/438 (93%) of former and current DCP students who are 2015 high school graduates applied for freshmen admission at Georgia Tech; - 375/418 (89.7%) of DCP students in the freshman applicant pool for 2015 were admitted, compared to 32% admit rate in overall freshman class.

- 237/375 (73.3%) of admitted DCP students will enroll at Georgia Tech as undergraduates, compared to 35.7% yield rate in overall freshman class.

Additionally, we have the following statistics.

- Started Fall 2005: 35 Fulton County Students

- Fall 2006 : Cobb county added 79 students

Now we have over 500 (and would be larger if we had the resources to handle). There is similar data available for the years 2005 – 2015.

In summary, there is absolutely no doubt in my mind, (and that of several people involved in educational efforts at GT), that Tom is most deserving of this award for his sustained contributions to offering exciting advanced mathematics to high school students and in improving the mathematics education of students in the first two years of college. It is truly my pleasure and an honor for me to be able to nominate Tom!

Sincerely,

Prasad Tetali

Interim Chair, School of  
Mathematics  
Georgia Institute of Technology

## Table of Contents

This nomination packet consists of :

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- Support material from DLPE, Admissions and former students Pages 7-12

- Description, written by the candidate, of the excellence and impact of the outreach activities.

### **The Distance Calculus Program**

The distance calculus program has been a transformative program for the undergraduate experience at Georgia Tech. Starting off with about 30 students a year in Fall 2005, it now serves over 500 of Georgia's best and brightest high school students. These are Georgia high school students that have completed AP calculus before they have graduated. The distance calculus program provides them with real Georgia Tech college credit for Calculus II and III. The course is offered over audio and video, synchronous with an on campus course. The students take exactly the same quizzes and tests as the on-campus students. Almost 100% of these students apply to and are admitted into Georgia Tech, and about 50% attend, constituting more than 5% of the following year's Freshman class, a very high acceptance rate for students of this quality. Thus the distance calculus program has been an incredibly successful recruiting program for the top Georgia high school students in the counties that are a part of this program (Fulton, Cobb, Gwinnett, Henry and Forsyth currently). The long term consequences of this are inevitable – a better GT undergraduate class!

In 2014, Of the 355 Distance Calculus students were 2014 high school graduates, 333 applied for Freshman Admission, 331 were accepted (99.4% Admit Rate compared to 32% in overall Freshman class). The program is a win-win proposition for Georgia Tech, the school systems and the students. Georgia Tech gets some of the best students around, the school systems get a college-level course for their students, and the students get an education and an introduction to Tech, before setting foot on campus.

This program would not be possible without the cooperation of many people, offices and organizations. In addition to my efforts (sole instructor until 2014-5), and recently the help of other professors (Michael Loss, Academic Professional Greg Mayer, and this semester, Doron Lubinsky), this would not be possible without the cooperation of Professional Education, CEISMC, and Admissions, and, of course, the School of Mathematics.

In addition, the County School Systems including Fulton County Schools, Cobb County Schools, Gwinnett County Schools, Forsyth County Schools

and others. Also, individual Mathematics teachers at all the schools have done a great job at preparing their students for the rigorous work of these college level courses, and often participate as local facilitators, providing logistics in getting student work back and forth, and helping their own students with the material.

The distance calculus program has made a clear impact in admitting students of strong caliber and mathematical background at Tech. Several units on campus along with the School administration as well as upper administration are all in unison in endorsing this fact. I am deeply grateful of Georgia Tech giving me this opportunity to inspired and energize the talented high school students of the State of Georgia. This has given me the utmost personal as well as professional satisfaction in the last decade or so of my career!

#### SERVICE TO THE COMMUNITY (partial list):

Committee for the Framework for Math I (9th grade), Georgia Department of Education 2006-7; Committee Math II (10th grade), GA DOE 2007-08

Workshops (one to four weeks, followed by 3-4 days followup during school year) for Fulton County 6th grade teachers and GPS (Georgia Performance Standards)

Summer 05, for Fulton County 7th grade teachers and GPS

Summer 06, for Fulton County 8th and 9th grade teachers

Summer 07, Fulton County High school teachers summer 2008, 2009, 2010, 2011. Fulton County first through third grade teachers summer 2000.

*Most of the above patially supported by a NSF – PRISM / Math Science Partnership grant to Fulton County Schools.*

Dekalb county high school mathematics teachers summer 2008.

Hall County high school math teachers, summer 2009, 2011.

DeKalb county teachers Summer 2009.

Workshops for Atlanta Public School and Dekalb County School Advanced Placement Teachers 2004-2007.

Workshop for Dekalb middle school teachers on the Georgia Performance Standards, summer 2007

Fall 2001- 2015, Judge Southeastern semifinals, Westinghouse-Simmons Science Prize.

-- **Prof. Tom Morley**

**SOM, Georgia Institute of Technology**

## **Additional material: Quotes from Professional Education, Admissions and Former Students**

“Congratulations to Tom! Certainly, the DCP has been an incredible program for not just the School of Mathematics, but all of Georgia Tech. Starting out with just 34 students, to see where it is today has been an wonderful journey and many thanks for his vision, passion and dedication to the many students who are now sharing their experience with new enrollments in the class. Each year has brought new challenges and new students to Georgia Tech. As we look forward, certainly still new challenges ahead but ones worth finding solutions.”

– Nelson Baker, Dean of Professional Education, Georgia Tech.

“Tom has remained flexible in his instructional methodology and approach to teaching online. As we all know very well, the state of online instruction at the higher education level is a rapidly evolving space. In every case that I am aware of, Tom has readily adapted to our newest innovations in online instruction technology without complaint or reservation. He welcomes the opportunity to learn how to use the technology and in many cases adopts it for his other non-online courses as well.

As I have stated often, without Tom Morleys willingness to adapt and innovate I have no doubt what-so-ever that the current Distance Calculus Program would not be as large and successful as it is. In fact, I have serious doubts that it would even exist without the contributions of Dr. Morley.”

– George Wright, Director, GT Online, Professional Education, Georgia Tech

“Dr. Tom Morley has been critical in Georgia Tech’s efforts to inspire and recruit Georgia’s most talented math students for over a decade now. When the concept of Distance Calculus was emerging, very few schools locally were engaged with colleges in their high schools, and particularly not online. Through Dr. Morley’s engaging style and availability to students, parents and administrators, he helped build the program from 32 in year one to over 450 annually in recent years. The format, teaching style, and personalized exchange has drawn many students into the program in high school and led them to Tech for their undergraduate career. In particular I have talked to a sizable number of young women who have taken this course who say that participating in DCP has given them the confidence and exposure they needed to continue to pursue advanced math and STEM fields more broadly. Perhaps this statistic is the most compelling– One of every five Tech freshman from Georgia this year took Distance Calculus with Dr. Morley in high school. There is simply no question that his impact on students, his enhancement of our brand, and his service to the State are unrivaled. ”

– Rick Clark, Director, Undergraduate Admission  
Chair, GT Staff Council;@gtadmission

“I had Dr. Morley as a spring Distance Calculus student, so I feel obligated to comment on his class. I was always in awe of Dr. Morley as he was knowledgeable, yet he related every concept to real-world applications. Whether on how curl functions could be used in fluid dynamic predictions or how gradients could be visualized in the topography of Peachtree St., Dr. Morley was always there to provide a nice example of how the mathematics could be used. In addition, his friendly demeanor meant we could always depend on him to answer a question, no matter how trivial or repetitious. Our entire high school class loved Dr. Morley, despite the fact we had never met him. The whole of Georgia Tech is indebted to Morley’s service.”

– Most Sincerely,  
Mohammed Saqib.

“My name is Sahithi Puligundla. I was part of the distance calculus program last year. I am now studying computer science at Georgia Tech. I think that the distance calculus program was a great experience for me as it helped me prepare for college. It also exposed me to the way that college classes worked and helped me develop my own expectations about college classes. I believe that this program also helped me get accepted to Georgia Tech. The distance calculus program helped me prove that I could excel in college courses and specifically classes at Georgia Tech. Overall this class was an unique experience as I got to experience how a college class works and I got to experience distance learning. I also thought that Dr. Morley was a great professor. He explained things in a way that everyone could understand. Dr. Morley also made the class more interesting by making it apply to the real world in some way. He would use some real life examples to explain some concepts. He would also use models as a way for us to grasp some abstract concepts such as planes. Overall I really liked the experience of the Distance Calculus Program. Thank you,”

–Sahithi Puligundla

“Dr. Morley was one of the most interesting professors I’ve had. He played a different piece of classical music every morning and would give us background information on the piece we heard. One time I asked him for classical music recommendations and he responded promptly with an array of music that was enjoyable to listen to. His knowledge of calculus is extensive, and it really showed in his lectures. I’ve never had a teacher like Morley, and I doubt I ever will again. I was lucky to have him as a teacher.”

–Kyle Varnedoe; kyle@varnedoe.com.

“I took Distance Calculus in my senior year of high school, and I can honestly say it was an absolute lifesaver. Every senior inevitably gets senioritis at some point in their final year, which leads to an interesting transition to being a hard working college freshman. Distance Calculus not only gave me a good idea of what an actual college class was like, but it also gave me a class that, in my senior eyes, actually mattered. Dr. Morely is incredibly passionate about the subject and never failed to keep us engaged, even when we were just watching the class online. On top of all that I would like to thank him from the bottom of my heart for getting me through calculus and for giving me the ability to, at least for one semester, put a 4.0 GPA at Georgia Tech on my resume.”

– Cassie Mullins

“To Whom it May Concern,

I was a student in the distance calculus program at Lassiter High School during the 2014



–Emily Dunford  
Georgia Institute of Technology — 2019  
Bachelor of Science in Biomedical Engineering.

“Hello,

I was a distance calculus student of Tom Morley’s last year. He managed to make a difficult, rather dull, class into an interesting and manageable subject. Dr. Morley not only has a great sense of humor, which is nice for breaking up the monotony of a lecture, but also has unique ways of explaining things. If there were any questions, he would take the time to work multiple examples in multiple ways to make sure that we understood not only the math but the concept as well. Before we started any new kind of computation, he made sure to emphasize both the concept and the real world application of that concept - this made it much easier to understand why I was spending money to watch his lectures. All in all, I would say that distance calculus was an invaluable experience that I would do again given the opportunity. Tom Morley is most qualified and deserving of this award. Thank you,”

– Hailee Scelsi  
School of Chemistry and Biochemistry; Biochemistry Major GT ’19

“Hello, I am writing in support of Dr. Morley in the running for an award that he is up for. I was a student in the Distance Calculus program from Gainesville High School, and my experiences with Dr. Morley were wonderful. Although learning through distance is difficult, I felt as though I had grasped the material exceptionally well due to Dr. Morley’s wonderful teaching. He was able to explain clearly all of the topics to be covered in MATH 1052 and MATH 2401, and his explanation of homework problems was easy to understand. Dr. Morley was also easy to contact regarding questions about the course or homework problems, and along with my TA Greg Mayer, I felt as though all of my needs were adequately met in these courses. I definitely support Dr. Morley’s receiving of the award. Thanks so much,”

– Pramoda Karnati.

“Hello! I’ve heard Tom Morley is up for an award, and you are receiving comments from his students. I am an individual from that population, and I’d like to say some things!

Tom Morley has surpassed the duties of a professor, to merely test the understanding of his respective students. He has put the concepts first, the mathematics first, as opposed to the mere logistics of a traditional classroom setting. Aside from instructing stimulating material, aside from displaying and inspiring a passion for his study, he has made me see mathematics as it truly and universally is, and in a much more rigorous way. That cannot be done by many, especially so early in my college experience.”

– Chris Waites; cwaites10@gmail.com

From: Nicoara, Justin F; jnicoara1@gatech.edu

“The opportunity to take Distance Calculus is fantastic, especially since it’s the only hard class for those intelligent seniors taking it. They can truly focus on Calculus if they take it as a senior. If you take it here at Georgia Tech, you have to worry about all your other hard classes as well.”

– Justin Nicoara, Math 2401, Spring 2014.

From: Mackenzie Rideout ; mackenzieerideout@gmail.com

“Distance calculus was the best learning experience I have ever had the opportunity to participate in. It was a taste of how college classes were run and how the grading and rigor differed from high school. It also allowed me to get a good bit ahead in my classes. At the time I didn’t realize how useful it would be to not have to take calculus in college, but I soon realized that what was manageable in high school became extremely overwhelming in college. This little bit extra head start helped me succeed my first semester here at Georgia tech. I enjoyed distance calculus very much and I appreciate the opportunity, thanks so much for putting in the effort for allowing students like me to succeed!”

– Mackenzie Rideout

From: Elizabeth Swiger; e.swiger1@gmail.com

“Distance Calculus was the best orientation to Georgia Tech I could have asked for: it prepared me for the rigor but also gave me confidence in a college class setting. More than that, it got me excited about Tech and was a significant factor in my deciding to come here for college. I would recommend the program to anyone interested in challenging themselves and taking their high school math curriculum to the next level!

Feel free to attach my name if you choose to use this quote, and thanks for being the professor that got me so excited about becoming a Yellow Jacket!”

– Elizabeth (Ellie) Swiger Industrial and Systems Engineering Zeta Tau Alpha Homecoming and Greek Week Chairman Georgia Institute of Technology e.swiger1@gmail.com

From: Dorothy Cannella ; dorothycannella@gmail.com

“This program was very beneficial, since it let me get ahead in my degree program by having 8 math credits finished. It also let me go on a GT study abroad program the summer after my freshman year, because I already had a GT GPA going into the application period.”

– Dorothy Cannella.

From: Arnold Adel ; arnold.adel@gatech.edu

“Being exposed to distance calculus when I was in HS not only formed a strong basis for subsequent math classes, it also helped to tie in the ideas and concepts learned to applications pertinent to my major and other major related classes.”

– Arnold Adel.

From: McCallum, Julianne ; julianne.mccallum@gatech.edu

Professor Morley,

I was a student in your 2401 class last Spring, and I'd like to say a few words about the effect that the Distance Calculus program has had on my academic experience.

The Distance Calculus program was a great opportunity to adjust to the impending college life, especially since statistically many Distance Calculus students go on to study at Georgia Tech. It challenged us by building extensions of the material that we learned in our own high school classrooms – all in the same classrooms, but more independently. As a former student of the program, not only was the experience of a college education – viable even via video calls – helpful, but also its academic credits. I have started my mathematics track here at Georgia Tech farther than a great percentage of my peers, giving myself room for a minor and other opportunities such as the International Plan, of which I am a participant.

– Julianne McCallum

From: niharullal@comcast.net

“This was easily the best class I've ever taken at Tech even though it was in high school. The thing that made it the best was Professor Tom Morley; he was just really fair and answered all your questions.”

– student in MATH-2401 SPR14

From: Cory Bhowmik ; corybhowmik@gmail.com

”I love how the Distance Calculus program fully encourages high school students to succeed in mathematics at the college level–by offering lectures, review sessions, and office hours that are accessible yet challenging.”

– Cory Bhowmik

From: Tiffany Dang ; tiff123d@gmail.com

“The high school distance calculus program allowed me to truly get ahead on my math track at GaTech as the highest math available at my school was BC Calculus. We were able to get quality Georgia Tech education in high school without having to commute. In addition, we were able to easily ask questions as if we were in an actual GaTech lecture hall.”

– Tiffany Dang

From: Jacob Eskew ; j.eskew22@gmail.com

The distance learning calculus program at Tech is an amazing way for high school students to not only learn upper level mathematics taught by an awesome professor, but also receive a sense of what college is like. In doing so, the program prepares high school students for success in any class at the next level of education.

From: Spencer Roby jspenr002@gmail.com;

“It was an absolutely great experience, and I recommend it to anyone who has an opportunity to take it. It prepared me well for taking college level classes as well as taught me what I should expect from a college level class.

– Spencer Roby Guggenheim College of Aerospace Engineering Georgia Institute of Technology

From: Chris Ganter ; chris.e.ganter@gmail.com

“Doing the distance calculus program really put Tech on my college radar. I was not really even considering going here until going through this program. I think that it was, by far, the best school for me and I believe that the distance program really helped familiarize me with Tech and ended up playing a big part in my decision to attend the school.”

– Chris Ganter, MATH-2401 SPR14.