Application Summary

Competition Details

Competition Title:	2019 CTL/BP Junior Faculty Teaching Excellence Award
Category:	Institutional Awards - CTL
Award Cycle:	2019
Submission Deadline:	02/01/2019 at 6:00 PM

Application Information

Submitted By:	Flavio Fenton
Appplication ID:	3072
Application Title:	Martin_Mourigal_CTL/BP Junior Faculty Teaching Excellence
Date Submitted:	02/01/2019 at 5:07 PM

Personal Details

Applicant First Name:	Martin
Applicant Last Name:	Mourigal
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Phone Number:	

Primary School or Department

School of Physics

Primary Appointment Title:	Assistant professor

Application Details

Proposal Title

Martin_Mourigal_CTL/BP Junior Faculty Teaching Excellence

Pablo Laguna
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February 1, 2019

Dear Members of the Selection Committee:

This is a letter to nominate Dr. Martin Mourigal, Assistant Professor in the School of Physics, for the CETL/BP Junior Faculty Teaching Excellence Award.

Dr. Martin Mourigal joined the faculty in the School of Physics in January of 2015. Dr. Mourigal is pioneering an entire new research direction on quantum materials. His work integrates materials synthesis and characterization with neutron and x-ray scattering to investigate the static and dynamic properties of "quantum matter." He has put Georgia Tech in the map as one of the top research institutions in the National Quantum Initiative spearheaded by Congress in 2018. His work not only explores the nature of quantum materials but also applications that have a profound impact in meeting the challenges in energy, computing, and health. He has published 13 papers in the most prestigious journals, including two in Nature Physics and two in Nature Communications. He was recently awarded the highly competitive NSF CAREER award and received substantial DoE funding.

Dr. Mourigal not only excels in research but is also a star in the classroom. He is passionate about teaching innovation. At Georgia Tech, he has taught Introductory Physics II, Solid-state Physics, and Electro & Magnetostatics courses. His teaching evaluations are impressive. He has received an average of almost perfect CIOS scores, 4.93/5.0, among the courses he has taught. This is a very impressive performance since the average includes scores from Introductory Physics II, a course considered one of the most difficult courses because of its large enrollment. In addition to the scores, comments and letters from students clearly demonstrate Dr. Mourigal's commitment and dedication to instruction. The students point out how careful is the preparation of his lectures and notes, making him a highly popular teacher. This popularity has translated into tripling the enrollment in the senior level Solid-state physic course. In addition, Dr. Mourigal is strongly committed to the training of undergraduate students. He has mentored 11 students, many of them supported by PURA awards.

As chair of the school, I was delighted to read the comments that students wrote for Dr. Mourigal's nomination package. Dr. Mourigal is helping us to transform our School into a program among the best in the country. He is not only a well renowned scientist but also a stellar teacher. In my opinion, Dr. Mourigal embodies the aspirations of Georgia Tech in its faculty. I enthusiastically recommend Dr. Mourigal for the CETL/BP Junior Faculty Teaching Excellence Award.

Sincerely yours,

Pablo Laguna
Professor and Chair
School of Physics

REFLECTIVE STATEMENT ON TEACHING

Martin Mourigal
Assistant Professor, School of Physics

Personal Motivation and General Teaching Philosophy: As far as I can remember, I never planned to be a quantum researcher, let alone a university professor. At 19, I wanted to be an air traffic controller. Unfortunately (or luckily), a minor and previously undetected color-blindness condition prevented me from pursuing that path. As I excelled at physics in high-school, had developed some vague interest for "matter" (but not as much as for punk-rock), and grew-up in a city famous for ceramics and porcelain (Limoges, France), I pursued a degree in Materials Science and Engineering. I did not plan to become a physicist until I was in my mid-20's, when, frustrated by massive gaps in my understanding of quantum and statistical mechanics, I decided to purse graduate degrees in Physics. After three years of successful postdoctoral research, and when the time came, I hesitated between joining a national laboratory or becoming a faculty at a research university. I am convinced that my (relatively) tortuous career path greatly enriches the spontaneity and accessibility of my teaching: like me in the past, my students doubt about their choices.

I never planned to be teacher and I never planned to be a physicist. Yet, today, I am a faculty, here at Georgia Tech, guiding amazing science and engineering undergraduate students in their discovery of electromagnetism and quantum phenomena in materials, and supporting a group of incredibly talented young researchers in their exploration of exotic forms of magnetism. As I reflect on my trajectory as a scholar and as an educator, two interwoven principles seem to have guided my seemingly random walk. First, the desire to participate in a people-centric professional endeavor. Second, a drive to resolve deep anxieties and insecurities about my own "understanding of physics". This leads me to value well-motivated and distilled, yet rigorous and technical, descriptions of physical phenomena (see Fig. 1 for typical handwritten lecture notes distributed to students in one of my classes). Being relatable and accessible as an individual allows me to lower the barrier of entry that students typically experience with difficult material. Ideally, though, my goal is to help them going beyond the material and down "the rabbit hole" of physics on their own.

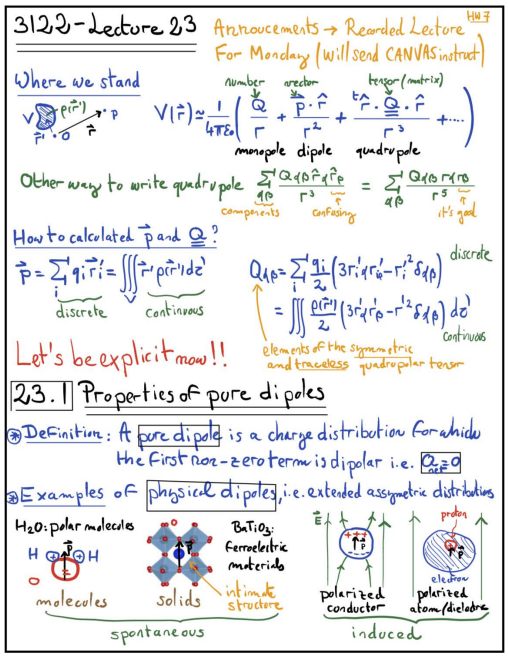

Figure 1. Example of lecture notes I distributed after class. Designed on a tablet purchased with Class of 1969 Teaching Fellowship funds.

For me, starting teaching was akin to discovering a new continent: it provides me with new sources of motivation and intellectual fulfillment. In turn, this allows me to deepen and broaden my understanding of physics with great benefits to my research. I find extreme joy and pride in transmitting lasting knowledge and providing nurturing guidance to a broad range of students. I love teaching and I love research; these are inseparable facets of the same pursuit: deepening and broadening human understanding of physical phenomena. My teaching style thus takes great inspiration in the ideal of a "research university" – teaching knowledge in the making – while

adapting it to the mission and realities of a selective state university like Georgia Tech. I like to take students to my laboratory to stimulate their interest for research and to showcase "real-world" (at the very least "research-world") applications of concepts discussed in a more abstract fashion in the classroom (see Fig. 2).

Figure 2. Undergraduate students visiting my laboratory and learning about crystal growth of quantum materials. Photo Credits: Society of Physics Students.

To this day, I remain surprised at the extremely positive feedback I get from students about my teaching. I certainly work very hard to prepare my lectures and continuously improve their content to reach (I hope) extreme clarity and depth. Yet, I am taking a relatively traditional route to classroom time. Surprisingly, this seems to resonate very well with Georgia Tech students. Although I embrace classroom response systems in introductory courses, I keep technology to the minimum in upper-level classes: white board, markers of four different colors, lively discussion with the audience, and a joke or anecdote every 15 minutes to maintain high attention levels. I strongly believe teaching is most effective as a human-to-human interaction, be it in the classroom or during office hours (see Fig. 3). On the latter front, I allow ample time for students to meet with me outside class (typically 3 to 4 hours each week). This open environment is highly conducive to learning: increasing personal interactions while being as down-to-earth as possible allows students to flourish and to ask genuine questions. Class-time is designed to simultaneously appeal to multiple groups and I am extremely sensitive to inclusiveness: I try spending more time with students that need it most, yet I treat the material with sufficient depth to appeal to more advanced/comfortable students.

Examples of Achievements:

Figure 3. Typical close packing during office hours for Introductory Physics II (Phys-2212) and Electrostatics (Phys-3122) students in 2017. I since had to move my office hours to a larger space to accommodate more students.

Since my arrival at GT, I have been teaching undergraduate electromagnetism at the introductory-level to a blend of engineering and science students (PHYS-2212: Introductory Physics II, 3 times), and at the junior-level primarily to physics students (PHYS-3122: Electro- and Magnetostatics, twice). In the Spring of 2018, I taught senior-level solid-state physics (PHYS 4262) for the first time, a course that I completely transformed (through of Class of 1969 Teaching Fellowship) and that overlaps most with my research activities. I am teaching this course again this semester. As explained above, I had no teaching experience before coming to Georgia Tech and my approach, influenced by the French system of "Classes Preparatoires" is traditional and rigorous, yet with the ambition to interactively immerse the students in the material. My style is to systematically introduce concepts in intuitive ways before to present rigorous demonstrations on the white-board while nurturing strong interactions

with the students in class or during office hours. Particular noteworthy achievements are as follows:

Phys-2212 (Introductory Physics II): This is a dreaded and "most-complained-about" class that virtually all engineering and science students at Georgia Tech have to take. My approach to this class was to bring as much of a liberal-arts flavor to my teaching as possible, what is a challenge given the (relatively) large class sizes (50 to 90 students). Being relatable, posting notes after class, an offering ample office hours was key to increase my CIOS scores from 4.75 to 4.92 over the span of 2 years. These scores which are amongst the highest in my School. A key achievement in that class was to make physics fun and entertaining while rigorous and deep, such that most students, who may never take a Physics class again, leave with a positive impression of that discipline and of my School. Aided by a dream-team of academic professionals handling homework, labs and beyond , my efforts participated in a complete transformation of the Intro Physics experience in the last 4 years.

Phys-3122 (Electrostatics): This is the first “field theoretic” and mathematically heavy course that Physics students may encountered in their curriculum. In the legendary crammed L5 auditorium of the Howey building, the challenge is to keep lectures engaging and to convey that Physics is a problem-solving discipline (in an auditorium where there is barely enough space to write on a notebook!). For this class, I spend extreme care in developing interesting homework problems with gradual difficulty (from accessible to extremely challenging) and designed lectures (and lecture notes) distilling a vast amount of material in smaller more digestible units. A key priority was for me to keep all students afloat: this appears successful given the very low drop-rates and fail-rates ($< 5\%$). Highlights of this course include an extremely dynamic participation of the students fueled by theor incredible motivation to learn and to understand. Although this course evolved from being offered every other semester in 2017 to every semester in 2018, I managed to maintain a very large enrollment (55 students in 2018 versus 61 in 2017) probably due to word-of-mouth about the class.

Phys-4262 (Solid State Physics): Revamping this exciting senior course was part of my funded NSF CAREER award and my Class of 1969 Teaching Fellow project. At the time of a second quantum revolution, in which genuinely quantum phenomena will play a central role in materials, computers, and the careers of our students, solid-state physics will become an extremely important foundational undergraduate course. Teaching it, however, primarily relies on a 1956 textbook by Charles Kittel! By changing the textbook to a modern (and much cheaper) treaty, completing it with my own notes, and introducing a poster session for students to present about modern topics, the course gained in appeal and modernity. By all possible standards this has met students needs and interests. Enrollment in this course, historically stable at 8 to 10 students per year has jumped to 13 in 2018 and 34 in 2019! Diversity, both in terms of underrepresented groups and of School of origin, has also dramatically increased: this semester, half of my students are from engineering! One highlight of the course is a poster session, organized in the Marcus Nanotechnology building (See Fig. 4), and mimicking a professional research meeting. With 34 students enrolled this semester, I cannot wait for this high moment of my teaching year!

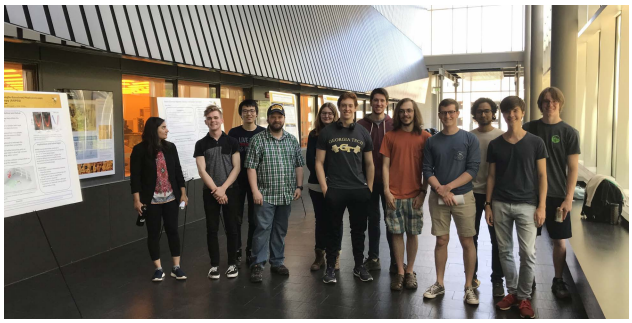

Figure 4. Poster session for my Solid State Physics course in the Marcus Nanonotechnology Building Atrium.

ILLUSTRATIONS OF TEACHING EXCELLENCE AND THE IMPACT ON STUDENT LEARNING

Martin Mourigal
Assistant Professor, School of Physics

Courses taught since joining Georgia Tech:

Phys-2212 (Introductory Physics II): an undergraduate introductory course in electricity and magnetism for engineering and science students. Usually dreaded by Georgia Tech students, especially the "classical" version which I was assigned to teach. This course is primarily taken by engineering students.

Phys-3122 (Electro- and magnetostatics): an undergraduate junior level course providing a rigourous foundation to the concept of "field theory" and its application in electromagnetic phenomena in vaccum and matter. This course is taken at 85% by Physics undergraduates and 15% by Electrical/Mechanical/Aerospace Engineering undergraduates.

Phys-4262 Solid State Physics): an undergraduate senior level course providing a first exposure to the convergence of quantum and statistical mechanics to explain condensed matter phenomena, including metal, semiconductors, and other more exotic forms of electronic matter. I completely revamped this course.

CIOS Scores:

Semester Course	Sp-2015 *Phys-2212*	Sp-2016 *Phys-2212*	Sp-2017 *Phys-2212*	Fa-2017 *Phys-3122*	Sp-2018 *Phys-4262*	Fa-2018 *Phys-3122*
# of Students	92	79	45	61	16	55
# of Responses	54	48	30	27	13	31
% of Responses	59%	61%	67%	44%	81%	56%
CIOS Question	Grade below is interpolated median with a maximum score of 5.0					
^{Q18}Enthusiasm	4.9	5.0	5.0	5.0	5.0	5.0
^{Q17}Respect	4.8	4.9	4.9	4.9	5.0	4.9
^{Q10}Course effectiv.	3.7	4.5	4.4	4.8	4.8	4.9
^{Q22}Instructor effectiv.	4.8	4.9	4.9	5.0	5.0	5.0

Representative CIOS Comments:

Phys-2212 (Introductory Physics II)

1. [*Spring 2015*] Professor Mourigal is an exceptional teacher. He condenses a huge amount of material into a few short lines and explains it in a way that makes sense. He is extremely passionate about his work and this makes class enjoyable because it was not just a man reading notes on a screen. He also has a great deal of respect for his students and was always open to questions and constructive criticism. In short give this man a raise.

2. [*Spring 2015*] He was relatable and approachable. He really wanted to answer everyone's questions and gave us little tidbits about interesting things in physics outside the course. Also, the in class experiments were great!

3. [*Spring 2015*] How rare and magnificent, a physics professor who actually lectures and explains the material and uses the clicker questions as a supplement instead of as the main teaching method!!! I'm so glad I had Mourigal [...]. I feel like I was actually taught things in class and it was great.

4. [*Spring 2015*] He's a legend. THE best teacher I've had at Tech.

5. [*Spring 2015*] Dr. Mourigal's ability to make complex material relateable was amazing. And he is great at explaining concepts at a level that students can understand.

6. [*Spring 2016*] Dr. Mourigal was an exceptional instructor, always well prepared with thorough notes, willing to answer questions, and extremely accessible through email and during office hours. I most enjoyed his lectures, which were clearly articulated and enhanced by really neat, color-coded notes!

7. [*Spring 2016*] I was extremely impressed with the time and effort the Professor put into teaching this course. His notes were always prepared in advance and made note-taking easier. I was also impressed by the time and attention he put into helping the students that came to his office hours. I enjoyed the French jokes :)

8. [*Spring 2016*] Overall, Prof. Mourigal is a fantastic teacher. He was always quick to help with any problems and willing to help his students. He is clearly very interested in what he is teaching which is nice to see in a professor. He legitimately cares, not only about the success of his students in his course but also our success in tech as a whole. He is a very genuine person. All around, he is the best professor I've had at GT so far.

9. [*Spring 2017*] Martin Mourigal was the funniest and best teacher I have had at Tech so far. He made the lectures entertaining and enjoyable and was very generous and cooperative. Also, he's French so he's naturally better at physics than Germans and the English ;).

10. [*Spring 2017*] Dr. Mourigal makes learning physics really interesting and has completely shifted my attitude on the subject. His enthusiasm about the subject makes me more excited to learn as well. His office hours were incredibly helpful and he's made me more excited about not only the course but the subject in general!

Phys-3122 (Electro and Magnetostatics)

11. [*Fall 2017*] So many things. Being a human; makes him approachable inside and outside of class. Caring for students; few things motivate me more than knowing my teacher cares about my success. Being funny; I enjoyed lecture because they were both very informational but also not boring.

12. [*Fall 2017*] Without a doubt, the best lectures I have ever been too. The effective combination of jokes and material was unparalleled. And I felt like a human in his eyes. As somebody who wants to be a professor someday, this class is among the few which I look to for how I want to run my own classes. You did a phenomenal job.

13. [*Fall 2017*] Mourigal's teaching has been by far the best experience I've had in college.

14. [*Fall 2017*] Office hours were doubly helpful when we were in the Interaction Zone and there were lots of other students working on problems together and helping each other. -I feel very lucky, and grateful, to have had Dr. Mourigal as an instructor this semester.

15. [*Fall 2017*] Dr. Mourigal is one of the best professors I've ever had. He was warm, funny, personable, unique, personalized his lectures (The French Quarter), open to criticism, extremely patient and helpful, and excited to teach us and to work with students at all different knowledge levels. Even though this was his first time teaching this course, he did a great job pacing the material over the course of the semester and was flexible with our homework and exam schedule. But overall, I think the best thing Dr. Mourigal did was have multiple office hours a week, and always be open and available for students outside of those office hours as needed. It was really easy to tell how much he cared about his students, because he was always working with his class students or his research students and would go out of his way to always make time.

16. [*Fall 2018*] Mourigal is a fanstastic, hilarious professor. I wish I had gone to more of his lectures. Give this man tenure!

17. [*Fall 2018*] Martin Mourigal is the best physics professor I've ever had. He has great clarity, and I like how he always explains why we're studying a certain topic, how it fits in with what has been covered and where it lies in the larger realm of Physics. He's also extremely funny, which is a bonus.

18. [*Fall 2018*] Mourigal is the best professor at tech (especially in physics) and it's honestly not even close.

19. [*Fall 2018*] If the whole science gig doesn't work out, he may as well become a stand-up comedian.

20. [*Fall 2018*] Strong lectures in both clarity and engagement level, countless stories of amazing respect for students (beyond any reasonable expectation), good connections to a variety of applications from lab research to everyday devices.

21. [*Fall 2018*] His enthusiasm helped me to become excited about a subject that I previously hated.

Phys-4262 (Solid-State Physics)

22. [*Spring 2018*] Dr. Mourigal seems to genuinely care for the students in his class, and actively does his best to help them succeed and learn the concepts we need to. Caring is a trait I cannot give most of my professors, and I think it is part of what makes him such a gem to have in a classroom setting.

23. [*Spring 2018*] Teach more high-level courses!! I would love to take a course by Martin on a mathematical topic of his choosing - he has a great intuition about how to effectively teach otherwise burdensome mathematical tools to physics students.

24. [*Spring 2018*] The volume of stuff I learned was incredible. It really cemented my interest in condensed matter physics.

25. [*Spring 2018*] Dr. Mourigal's lectures were the best part of the course. He is an extremely engaging lecturer. I also very much enjoyed working on a project for which I got to choose a topic that I found interesting.

26. [*Spring 2018*] Hands down the best part is the lecture. Dr Mourigal has to be the best lecturer at the school. Always high energy and super interesting.

Dear Members of the Selection Committee:

It is with great pleasure that I write this letter of recommendation supporting Prof. Martin Mourigal 's nomination for the CETL/BP Junior Faculty Teaching Excellence Award. For the past few years I have enjoyed sharing my office next to Martin's and have been able to interact with him and see him interacting with hundreds of students during the office hours he conduct with his students.

I have heard many interesting and now legendary stories from students that have taken his courses such as when gives out onions to high-scoring students or students who answer questions some time in classes or the weirdly one in which there wasn't a eraser in class one time, so he erased the whiteboard with a piece of toast. Then he ate it. It is his rather unconventional approach that attracts the attention of the students but then it is his clarity, patients and care that allows students to successfully learn the subject he is teaching. Having the office next door I often hear him teach during his office hours, they are always full of students as they all feel very comfortable asking for help. His office hours often go for several hours and regularly are highlighted by a big laugh from all the students as Martin is very cleaver on how and when to inject humor to break the tension and be able to explain in an easier way complex problems. In my personal experience and from seeing other faculty throughout the years, I have never seen so many students eagerly attend office hours and enjoying learning as I have seen for Martin's students.

Furthermore, while helping preparing this package I sent an email to Martin's students asking for letters of support for his nomination with comments on Martin's teaching and their experiences in the classroom, and I was so impressed as the large number of emails started to come immediately within less than an hour and continued for about two days. I believe this shows how much they do care about Martin and appreciate his dedication as a Georgia Tech teacher.

Below we present many of the letters students send in support of Martin's nomination, and we are sorry we could not submit all we received due to space limitation.
Sincerely,

Flavio H. Fenton
Professor, School of Physics.

Dr Mourigal's Electro & Magnetostatics class was definitely one of the best classes I've had at Tech. A bit unorthodox, he would routinely crack wise and make jokes everyday. Sometimes it woke me up, I won't lie He was definitely prepared to deliver a lecture and had pretty great answers to the classes questions. The problem sets were pretty brutal, but after having finished them and made an A in the class, I have the confidence to pursue a career in science. I would say that a good teacher can show you cool things and novel ways of seeing the world.

However, a great teacher can show you how to find your own way. Dr. Mourigal is a great teacher! Seriously, give him the award…..and new super magnet. The approximately 14 Tesla magnet,

impressive as it is, needs to be higher. How else is he supposed to find the room temp superconductor, Mourigalium?

Wilson Andrew

I had Dr. Mourigal for PHYS 3122 and it was fantastic. His lecturing methods are very engaging; he uses multiple colors of ink to denote different information and clearly defines sections of information so students understand what is being talked about. He is not just funny in class but incredibly informative. A number of times friends of mine in the class would be incredibly stressed and busy, so they would skip lectures for other classes to catch up, but they never skipped his lectures because of their high quality. The assigned homework problems were very challenging, but designed to teach students to think and not just regurgitate a process. I often found the homework very enjoyable! He was always quick to help students out of class and worked with me multiple times to help me understand the concepts.

Overall Martin Mourigal is an amazing professor and is highly deserving of the award he is nominated for.

Robin H. Glefke
Georgia Institute of Technology | 2020
BS Physics, Astrophysics Certificate, Geophysics Minor

Hello,
I am currently a senior AE student and I had Professor Mourigal for Physics II my freshman year. It was a morning class and he was always fun and full of energy, which made it much easier to not only stay awake, but actually pay attention and learn. Physics II deals with some bizarre and abstract concepts, but he always managed to explain them in a way that was engaging and helpful. I really enjoyed his class. He is easily one of the best professors I have had here at GT.

~Daniel Mulligan
dmulligan3@gatech.edu

My experience in Dr. Martin Mourigal's class.
I had Dr. Mourigal for my Electro & Magnetostatics course (PHYS3122), and as the name suggests, I thought it would be one of the most difficult courses I would have to take. Martin, from day one, took his time to ensure that each and every single student in the class understood the concepts behind what he was teaching. This often made us go a little bit behind schedule, but everyone knew and understood the topics taught completely. He made class fun with his jokes, his enthusiasm, as well as his willingness to be there for every single person. He would have an optional review session once a week that a majority of the class would come to since we all wanted to learn more from him, and also one-on-one office hours if you needed personalized help. I went into the class knowing almost nothing about the subject and came out happy because I knew that I had actually learned the topics and was confident about the subject, I do not think I would have felt this way had any other professor taught the class. Overall, I think Martin was a great professor

who showed his passion in teaching, his passion for the subject, was there for us if we needed help, and most of all, made class fun, which is everything I could have asked for in a professor.
-Tanay Tak

In the two courses I have taken under Professor Mourigal, he has always shown the highest level of dedication to enriching the educational experiences of his students in every way possible. His style of teaching is engaging, informative, and challenging, and his interactions with students are patient and understanding without ever being condescending. Professor Mourigal shows a genuine interest in helping his students and in inspiring them to learn even more outside of the classroom. Still, his greatest strength is his ability to make students feel comfortable in the classroom through his humor and energy. The classes I have taken with Professor Mourigal have been the most informative and the most enjoyable I have experienced at Tech. Sincerely,

Joshua Trebuchon

Professor Mourigal is an excellent professor who is always dedicated to helping his students. Many people don't understand that the way to succeed at Tech is to simply go get help and have experts personally explain the concepts and and grey areas that you may have. Mourigal is always open to helping those students who ask for assistance and ensures they understand the material. For what was one of the hardest classes of freshman year, I did surprisingly well due to Mourigal's readiness to help.

Jacob Blevnis

I had Professor Mourigal for Physics 2 several years ago. I struggled a lot through the course, of course due to no lapse in Professor Mourigal's teaching. All of this said, Professor Mourigal has been one of the most caring and involved professors I have taken a class from here at Georgia Tech. He went out of his way to ensure my success in the course, formulating a plan that worked with my own learning styles and needs, and kept track of my progress throughout the semester, no small feat in a class of 150+ students. His passion for teaching, along with his dedication to all of his students, makes him stand out as one of the most memorable professors I have taken in my five years at Tech. And to this day, two years later, he still waves every time I see him on campus.

Emily Farmer

So glad to hear Prof. Mourigal has been nominated for this award!

Professor Mourigal was the best professor I have had a tech. I had him for Physics 2212 (physics 2) which I'm pretty sure he rarely teaches, and wow was I lucky! He made lectures fun and never boring. He put so much time into the material with color coded lecture slides that included example problems with detailed steps. He cared about students, that was clear. I went to his office hours often, and most of the time there were several other students in our relatively small lecture section there. He's hilarious and fun, but knows what he's doing and how to teach it. After the class ended, I kept in touch with him for a while. He wrote my recommendation to be a PLUS leader for the

class, and I have been doing that a couple years now, still using the material provided in his class. He was very helpful when I was having trouble deciding whether or not to major in Physics. He always waves and says hello when we pass on campus. He is an all-around great person and an amazing lecturer. His class was great and barely felt like class at all, yet I learned more than I have in any other class.

I hope this helps! When will the award be decided, and where can I find the outcome?
Thanks!
Mary Didier

I had Professor Mourigal for classical physics II the spring of my freshman year. For those who don't know, classical physics II has a reputation for being the most difficult core class that Tech has to offer. Two years later, I can safely say that it was one of my favorite classes and Professor Mourigal has easily been one of my best professors. He made every class interesting through his knowledge on the subject along with his undeniable humor, making me excited to learn about physics. Physics II still remains the only class I've taken at Tech where I actually read the entire text book (don't tell my other professors), in large part due to how Professor Mourigal was able to peak my interest in the subject.
On top of interesting, he was also a very fair and caring professor. He clearly stated what it would take to succeed in class and offered ample resources for those who were struggling. He gave us the tools for success and strayed away from "surprise" questions on test, which many professors here are very fond of. He truly believed in his students, and that energy was what convinced me to wake up at 9 am every morning and attend one of the hardest classes Tech has to offer.

Taylor Wentzel

Professor Mourigal was one of the best professors I have had at Georgia Tech. He seemed to care about the students' education above and beyond most by engaging them in intuitive discussions and class demonstrations. Since I sat in the front of the lecture hall, I benefitted greatly from these. For example, I remember him teaching the concept of capacitance, and suddenly, a charged capacitor was released right in front of me! Although I was surprised, it was a great addition to the class. Additionally, on the first day of classes, he put on an old-style wig and played classical French music, all so he could teach us about Faraday. Instances such as these demonstrate his passion for teaching so that students may learn, and not simply know how to take an exam. I cannot speak for every student, but I easily obtained an "A" in the course and learned a great amount.

I think that Professor Mourigal is an excellent candidate for this award, and he should be greatly considered.

Sarah Bitner

Going into Physics 2 during my second semester studying Biomedical Engineering at Georgia Tech, I believed that I just did not have whatever it took to understand Physics, and I had anticipated struggling through the class in an attempt to just pass. After receiving a D on the first exam, I began attending Dr. Mourigal's office hours in an attempt to better understand the subject. When I went to office hours for the first time, Dr. Mourigal had prepared coffee and cookies for everyone, and as students walked in, he asked their name and ensured they were comfortable

asking questions or expressing confusion. During his office hours, Dr. Mourigal got to know every student, and he explained concepts in multiple creative ways so everyone in the room was comfortable with the material. Dr. Mourigal's passion for physics is infectious, and we would frequently stay past the scheduled times of office hours discussing how the topics we were learning related to complex real-world phenomena. After attending Dr. Mourigal's office hours every week, I scored 100% on the second exam of the semester. Not only did Dr. Mourigal help me understand the material better, but he also made me more excited and confident in my abilities to learn Physics.

Later in the semester, I began asking Dr. Mourigal about his research, and he took extra time to show me around his lab and explain the investigations he was conducting. Dr. Mourigal encouraged me to continue my Physics education after his class, and he recommended I join a lab of Physics faculty members whose research aligned with my interests in biophysics. After his recommendations, I declared a Physics minor and joined the Cell Physics Lab of Dr. Jennifer Curtis. Since taking Dr. Mourigal's class, I have gained significant confidence in my abilities, not only as a Physicist, but also as a scientific problem-solver. I no longer feel like I am taking classes just to pass, because I know I can tackle challenging problems with the skills he shared during his class and office hours. Dr. Mourigal's passion for ensuring his students are excited about Physics significantly shaped my undergraduate career, and I am very grateful for the extra time and effort that he put into teaching both in and out of the classroom.

Rebecca Keate.

I am not a physics major. I took Dr. Mourigal's course entirely to learn atomic interactions to help in my nuclear engineering major, and he helped with that immensely. The knowledge that he imparted seems to be used in nearly every lecture of my radiation physics course, giving me a large advantage. He always knew exactly how he was going to teach the material, and usually had a joke to pair with it. He kept me motivated to keep going to my first class of the day and truly try to learn, even when I felt I knew nothing. My first lecture at Georgia Tech was in his electrostatics course, and it showed me exactly how superior Tech is to any institute I attended previously.
Sincerely,
Luke Black

I took Dr. Mourigal's Electrostatics class in fall of 2017 and then his Solid State Physics course in spring of '18. Though I was only his student for two semesters, it is difficult to fit into a short letter the impact that he had on me during this time. At the very least, Dr. Mourigal is an entertaining lecturer who enjoys what he teaches. To me, he is a funny, personable, kind, and helpful instructor who really helped me find motivation in my studies during a difficult time in my life. I made no indication that I was having any sort of hard time outside school, so I am positive this was merely a side effect of his wonderful personality and devotion to education. He always made me feel that he cared about my education as an individual and there is a good chance I would not be graduating had I not had him as a professor. I feel blessed to have met him, let alone gotten to take two of his classes.
-Parker Goldman

Dr. Mourigal was my instructor for both Electrostatics and Solid State Physics. In both classes Dr. Mourigal made understanding in depth concepts intuitive. He also showed a genuine interest and enthusiasm in his students learning. He taught us mathematical techniques that I still frequently use in my physics classes and physics research. After taking his Electrostatics, class I felt incredibly well-prepared for Electrodynamics, and after his Solid State course, I felt I gained a good conceptual understanding of how statistical mechanics and quantum mechanics combine, which is vital to my research.

Hannah Price

As a professor and friend, Dr. Mourigal has always been an amazing role model. His attitude, dedication, modesty and passion are truly contagious.

Martin was my teacher in electrostatic course. The lectures were smooth and insightful, even the plainest topics were made engaging with his explanations. His hand-writings were not the best, but it made me sad when the neat work on whiteboards had to be erased after class. I wouldn't be surprised if the lecture notes were turned into textbooks. Everyone gets something from his class, particularly the ones who did well in midterms: they are rewarded with onions.

I felt more grateful to Dr. Mourigal outside of classroom, for the time he spent listening to my thoughts and the advice I was given. At several points when I needed to make crucial decisions, Martin was always the first person I would consult apart from my parents. It is undoubtedly hard to fully understand someone ten years younger, but he does a great job. His office door is always open. There were several times when I wanted to talk but had to wait outside for the previous conversation to end. I could tell he was mainly listening, with patience. His other friends apparently enjoy his friendship as much as I do.
Martin doesn't seek to be appreciated: his positivity is so sincere despite the work and stress. There has also been plenty of memes about him. We all love him as an excellent teacher and as a lovely person to be around. This award would be an excellent chance to appreciate the impact Martin is bringing to the classroom and the school. He deserves the honor.

Kaiming Guan

The Mourigal Experience: Professor Mourigal is the finest lecturer I've ever seen. Every single one of his lectures is meticulously planned to make sure the class understands it. He puts so much effort into every single class that I don't even know how he does research – how does he find the time? He drafts the class notes beforehand in completion, but stands at the board and writes it all from memory while explaining it perfectly, as if from a script. He uploads the notes for all the students to view, complete with comments and explanations. This really helps the students who miss class or don't take perfect notes.
I've taken two of Prof. Mourigal's classes – 3122 and 4262. In both classes, every lecture made me want to consider a career in that field. It's rare to see an educator who can inspire every student with a respect and love for physics. During lectures, he often points out the beauty of nature and even suggests unsolved problems in the field for the students to talk about in class. I always felt involved in the lectures. He makes sure that no one is afraid to answer his questions by being respectful, and he considers the thought process behind every student's answer, to target and address their misconceptions.

I really cannot emphasize enough how good the lectures are. I've had lectures at GT that cause me to stop attending classes at all (even in the School of Physics!). Many professors here are researchers who are obligated to teach against their desires. Professor Mourigal is a natural born educator and a natural born scientist, and it's a breath of fresh air. I hope he receives this award, because he's creating a small army of skilled physics GT graduates.

Collin Beck
cbeck33@gatech.edu
Senior Physics Major

I took Dr. Martin Mourigal's electrostatics class last semester. It was truly one of the most enjoyable, well thought-out, and interesting classes I have ever taken. Every class, Dr. Mourigal would come to class with pre-written jokes and very-well prepared lectures. After what we learned last semester, I already find that I am very much prepared for higher-level physics classes. Dr. Mourigal's class is the only one where we would get onions for having high grades! Thank you Dr. Mourigal for making class so fun!

Srisurya Yadavalli.

Professor Mourigal's quick wit, dedication to students, and passion about physics made his class an absolute joy for students.

Each day, his lesson was planned meticulously with the usual derivations, examples, and information, but he went a step - or several steps - farther than that. Jokes sprinkled throughout the lesson made a sometimes intimidating subject more approachable, and his teaching techniques helped students grasp even the most abstract ideas.

One class during a long derivation, someone's phone went of in class accidentally. Instead of letting that be a distraction, Professor Mourigal jokes that music sometimes helps us get through painful derivations. So we finished off deriving the equation as 80s hair metal played from a Student's phone. Everyone was enjoyed that derivation.

At the end of the semester, he brought in a bag of onions to hand out to the top in class: a white onion for first in class, red for second, and a ting shallot for third place, which was a tie. So, Mourigal took out a plastic butter knife to roaring laughter, sliced the shallot in half, and handed the pieces to two students. And finally, to the student who had asked two complex physics questions outside of class, he gave two chocolate croissants.

But beyond making the material fun and approachable, Professor Mourigal was serious about giving students everything they needed to succeed. He went above and beyond in every way for students. Twice a week, he held optional office hours for students, where we would go over homework and practice problems. On top of the two hours of instruction during class, he spent 4 or more additional hours every week for students who wanted to learn more or get extra help.

He always had a positive attitude, and met students where they were to help improve their understanding of the subject.

Learning from Professor Mourigal was an absolute joy. He's a treasure in the physics department, and I hope to learn from him more in the future.

Sincerely,
Michelle Babcock

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February 1st 2019.

Dear Members of the Selection Committee:

I am writing in my capacity as the Director of Teaching Effectiveness (DOTE), to nominate Assistant Professor Martin Mourigal for the CETL/BP Junior Faculty Teaching Award. In preparing this nomination, I have reviewed Martin's CIOS student evaluations, teaching statement and a teaching assessment that I carried out. Martin has taught at the undergraduate sophomore, junior and senior levels. He was instructor for the courses PHYS 2212, Introduction to Physics II, on three occasions and PHYS 3122, Electro- and Magnetostatics, in two occasions. This semester he his teaching PHYS 4262, Solid State Physics for the second time. I am particularly impressed with Martin's performance in core courses.

PHYS 2212, a foundational course on electromagnetism, is the second in a sequence of sophomore courses that are required by a large fraction of Georgia Tech students majoring in science and engineering disciplines. The School now offers three different versions of the course: Martin has been involved in teaching the traditional stream. One of the challenges facing the instructor is to combat the less than ideal large lecture hall environment. Martin's CIOS scores are unusually high for such a course and, remarkably, have improved over the three semesters he has taught the course: 4.75, 4.91 and 4.92 were the scores for the question "Considering everything, the instructor was an effective teacher?" Martin uses mainly traditional classroom methods, and points to the importance of office hours for one on one interaction with students. He also provides copies of his lecture notes promptly after presentations.

PHYS 3122 is a core course at the junior level, required by all Physics and Applied Physics majors. I attended one of Martin's PHYS 3122 lectures dealing with magnetostatics and the magnetic vector potential. Martin has a lively and authoritative presence in the classroom. He relates very well to the students who appear attentive and focused on the discussion at hand. The examples are well motivated and the discussion is interspersed with questions and comments from the class. The material is well organized, and the examples serve to demonstrate the key principles of the topic. The lecture finishes with a discussion of the Aharanov-Bohm Effect: the classic example illustrating the importance of the magnetic vector potential in quantum physics. This advanced example provides an appropriate bookend to the overall presentation and further motivation for students to master the rather abstract idea of vector potential.

It is clear from all of Martin's teaching activities that he is fully engaged in providing an excellent environment to foster learning and promote student success in the classroom and beyond. The exceptional CIOS scores indicate that his approach and methods are very popular with Georgia Tech students, and that he is already at the top echelon of instructors in the School and the Institute.

In summary, Dr. Mourigal has demonstrated extremely effective teaching and interactions with students in all undergraduate classes. I cannot think of a better case for the CETL/BP Junior Faculty Teaching Award.

Sincerely,
Brian Kennedy

T. A. B. Kennedy

Professor, Associate Chair and Director of Teaching Effectiveness,
School of Physics