Georgia Tech | College of Engineering

STEVEN W. MCLAUGHLIN, Ph.D.
Professor and Steve W. Chaddick School Chair
School of Electrical and Computer Engineering

January 29, 2016

CETL/BP Junior Faculty Teaching Excellence Award Selection Committee

Dear colleagues:

It is my pleasure to recommend Prof. Mark Davenport for the CETL/BP Junior Faculty Teaching Excellence Award. Mark is one of our young rising stars in ECE, and it has quickly become evident that his exemplary research acomplishments are matched by his impact and effectiveness as an educator.

Since joining Georgia Tech in 2012, Mark has taught a number of courses, ranging from introductory undergraduate courses in signal processing and in probability and statistics, to advanced graduate courses he personally developed on subjects like statistical machine learning and harmonic analysis. These courses have ranged from relatively small sections of 15-20 students to courses attracting as many as 100 students. He has received consistently outstanding student evaluation scores in all of these, including scores on overall "Teaching Effectiveness" ranging from 4.7 up to the maximum possible score of 5.0. Not surprisingly, as a result of these efforts Mark has already received multiple honors, including the CETL Class of 1940 Teaching Effectiveness Award in 2013, the LexisNexis Dean's Excellence Award in 2014, and the Lockheed Dean's Excellence in Teaching Award in 2015. Perhaps most significantly, in 2015 he was awarded the Richard M. Bass Outstanding Teacher Award, which is determined by a majority vote of the ECE senior class. As a testament to his dedication and drive for further improvement, he was also selected to participate in the Class of 1969 Teaching Fellows program in 2014.

In addition, Mark also recently received the NSF CAREER Award, which places a strong emphasis on the educational component of the proposed research. Mark's proposal was somewhat unique in that it involves applying the subject of his research (machine learning) directly to applications involving teaching. In particular, part of his research will focus on the development of personalized learning systems to automatically assign practice problems to students that are individually tailored to the student's current level of understanding. Developing such a system involves answering both fundamental mathematical questions about how to perform the personalization automatically, as well as fundamental questions regarding the cognitive science of learning relating to how the personalization can be most effective. While there are many open questions remaining, Mark has already been exploring these ideas in the classroom here at Georgia Tech as part of a small pilot project, and I am confident that this research will lead to significant contributions to both the fields of machine learning and education.

Beyond his activities inside the classroom, Mark has shown considerable dedication to mentoring students at all levels. He is currently advising six PhD students in their research and has worked with nine undergraduate students on independent research projects (including multiple PURA awardees). He is also a faculty associate for the Georgia Tech Grand Challenges Program and is actively involved with outreach initiatives in collaboration with the East Lake Foundation and the Charles R. Drew Charter School.

In summary, Mark is exactly the type of scholar that all junior faculty should aspire to be. This award would be a well-deserved way to recognize his accomplishments and promote teaching effectiveness on campus.

Sincerely,

Steven W. McLaughlin

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Mark A. Davenport
Reflective Statement on Teaching

The fundamental role of a research university in our society is to create knowledge. The job of a professor is to aid in this process by helping guide students to acquire the knowledge and skills they need to in order to become knowledge creators themselves. While there are many conflicting demands on a professor's time, I believe that all of these activities ultimately boil down to the central role of teaching, both inside and outside the classroom.

Classroom Instruction

When people think of teaching they typically immediately think of a professor in the front of a classroom giving a lecture and imparting his or her wisdom to the students. While this may be the most common experience, and it is certainly how most of my classes were structured back when I was a student, there is a growing consensus that this is not the way that true learning occurs. I think most professors eventually learn through experience, but as I learned through my participation in the Class of 1969 Teaching Fellows program, there is now a large (and growing) body of research on the cognitive science of learning that provides guidance as to how one can make the time spent in a classroom far more effective. Two particular principles that have guided my efforts to improve as a teacher boil down to: (1) providing as many opportunities for *active* engagement as possible, and (2) providing opportunities for students to *reflect* on what they have learned. In the courses I have taught at Georgia Tech I have aimed to incorporate both of these principles into my teaching wherever possible. Examples have included exploring a number of different in-class activities as well as reflective writing assignments and portions of class where the students are given the opportunity to explore practical applications of the theoretical subjects discussed in class.

As a notable example of these efforts, in teaching the undergraduate introduction to probability and statistics for ECE majors (ECE 3077), I have explored a number of strategies to get students more active during class. In addition to having students work example problems independently as part of a traditional lecture, in the two times I have taught this class I have reserved 30%-50% of the classtime exclusively for the students to work on in-class problem sets. I have found that the reduction in lecture time involved in this "semi-flipped" setup has had little impact on how much I am able to cover as the students develop a much deeper understanding of the material (and more quickly!) by having so many opportunities to truly engage with the material while having access to an instructor to help when they get stuck.

The particular format I have used in this context has some side benefits for me as a teacher, and as a researcher. As a teacher I love that, in addition to providing students with opportunities to engage *immediately* with the material (as opposed to one week later the night before a problem set is due), I also get prompt feedback about concepts that the students are struggling with. As a researcher, I have also taken advantage of the electronic platform used for these problem sets to collect data that help us to understand better how students learn. As one example, in the Summer of 2013 offering of ECE 3077, I helped explore the impact of the *timing* of feedback in collaboration with researchers in cognitive science at Duke. In particular, what our preliminary results have shown (although the experiment will need to be repeated in a larger environment), is that students have better *long-term* retention when feedback (i.e., corrections/solutions to problems) is not provided instantly but instead given after some delay. This seems to highlight the importance of reflection – by allowing the students to momentarily forget how they arrived at their answer, they ultimately engage with the solution at a deeper level as they reflect back on their original approach and how it differs from the "official" solution. This seems particularly important in a subject like probability where it is often possible to arrive at a solution in many equally valid ways.

The data being collected in these problem sessions also plays a central role in my recently funded NSF CAREER Award, which involves the development of personalized learning systems to automatically assign practice problems to students that are individually tailored to the student's current level of understanding. Developing such a system involves answering both fundamental mathematical questions about how to perform the personalization automatically, as well as fundamental questions regarding the cognitive science of learning relating to how the personalization can be most effective. My hope is that we will be able to make the problem sessions even more engaging and provide even more opportunities for students to reflect back on what they have learned.

Mentoring students outside of the classroom

Classroom instruction is only one part of a professor's educational mission. An equally important aspect is the teaching that occurs outside of class. This can occur during office hours (or late at night on piazza) when a student has a technical question on a point that was unclear in class, or when a student needs career or even personal advice. An important part of a professor's job is to be accessible at these times and to provide whatever guidance we can. This is perhaps most clear when serving as a research advisor. As a research advisor, it is of course important to help students identify high-impact lines of research and provide valuable feedback regarding the specific directions the research takes. However, it is equally important to be a good mentor by helping the students develop important non-technical skills and serve as a bridge to the broader research community. In particular, by introducing a student to a wide community of researchers a mentor can foster collaboration as well as increase the student's visibility. I strive to be a helpful mentor for all of my students. While I probably focus the majority of my time on the graduate and undergraduate students who work with me on research, I hope to be an accessible and helpful resource to all of the students who are part of the Georgia Tech community. This is highlighted by my participation as a Faculty Associate for the Georgia Tech Grand Challenges program.

Outreach and dissemination of knowledge

Reaching beyond the institution to educate and disseminate knowledge to the wider academic community and the public at large constitutes a core component of both the research and educational missions of a university. Moreover, exposing the general public to scientific practice and research benefits society by educating the citizens responsible for science and technology policy decisions.

In fact, outreach is a natural part of both research and education; it is not enough to simply advance the state of knowledge without communicating these ideas to the academic community at large. Indeed, in my experience I have found that a policy of broadly disseminating research results and freely sharing data and software (in keeping with the principles of *"reproducible research"*) can increase both the integrity and the impact of a research program. I have a similar philosophy with regard to education. I have written several "survey papers" and introductory book chapters which provide overviews of developing research fields that can serve as valuable introductions for beginning graduate students. I have also delivered a number of tutorial lectures in a variety of settings (conferences/workshops, government research labs/committees, and at universities around the world), as well as preparing an online tutorial on compressive sensing that is the #1 watched video in the IEEE Signal Processing Society's Online Video Library. All of these activities, together with organizing workshops and symposia, serve to help spread knowledge beyond Georgia Tech to the broader community.

I am also a frequent contributor to Connexions (cnx.org), an online education platform for sharing information with researchers and students around the world free-of-charge in the form of small "modules." These modules can be re-used and modified by anyone, or can be chained together to create coherent courses of study. The Connexions community currently comprises over 2 million users per month from nearly 200 countries. I am the author of dozens of modules, a course on digital signal processing (developed for a course I taught at Rice University prior to joining the faculty here), and an introductory course on compressive sensing that is currently being used in a graduate-level course at several other universities. Collectively, this content has generated over 145,000 views to date.

Mark A. Davenport
Summary of Instruction Opinion Surveys

The data below summarizes student opinion surveys in response to the statement:

"Considering everything, the instructor was an effective teacher"

Students respond on a scale of 1 (strongly disagree) to 5 (strongly agree). Interpolated median scores are reported in the tables below.

Undergraduate courses

Term	Course	Enrolled Students	Student Reponses	Teaching Effectiveness
Fall 2015	ECE 3077 – Probability and Statistics for ECEs	46	30	4.9
Fall 2014	ECE 2026 – Introduction to Signal Processing (Recitation)	19	16	5.0
Fall 2014	ECE 2026 – Introduction to Signal Processing (Recitation)	17	12	5.0
Summer 2013	ECE 3077 – Probability and Statistics for ECEs	24	13	4.9
Fall 2012	ECE 2026 – Introduction to Signal Processing (Recitation)	19	18	4.8
Fall 2012	ECE 2026 – Introduction to Signal Processing (Recitation)	17	16	4.9

Graduate courses

Term	Course	Enrolled Students	Student Reponses	Teaching Effectiveness
Spring 2015	ECE 6254 – Statistical Signal Processing and Modeling	99	88	4.7
Spring 2014	ECE 6254 – Statistical Signal Processing and Modeling	34	32	4.9
Spring 2013	ECE 8823a – Harmonic Analysis for Signal Processing	16	16	4.9

Highlights from student comments:

- ECE 2026: "This was the most effective professor I have ever had."

- ECE 2026: "It's professors like him that inspire students to pursue a field."

- ECE 2026: "Davenport was very enthusiastic and concerned about his students. He went out of his way to help any student in need."

- ECE 2026: "I just think Professor Davenport was a great teacher. He actually listened to our feedback halfway through the semester and changed his teaching style to help us out. He also made a lot of time to help us with things that mattered in the class."

- ECE 2026: "Professor Davenport is very talented and made great efforts to adapt to what worked best for the students... He was fun and made a difficult subject enjoyable... He demystified the complexity of the material by giving us easy to understand explanations. For instance, 'Fourier Analysis' sounded treacherous at first, but after his explanation, I was like Oh... that's it? He was also extremely helpful during office hours. Everybody that I know taking this course says that Davenport is the best recitation professor."

- ECE 3077: "Clear enthusiasm for the material. I actually found this course much more interesting than I had expected because of it."

- ECE 3077: "Willingness to get the point across as well as the ability to do it too. Being able to break it down into its simplest components while still respecting the integrity of what it is. It wasn't just his ability to simplify but using different approaches and methods to appeal to various learning types."

- ECE 3077: "This guy is definitely in the top 5 professors I have had at Tech, and I'm a 4th year."

- ECE 3077: "Really enjoyed this class. I felt more comfortable learning the material in this class than I ever did in any other math-related class."

- ECE 3077: "I really enjoyed Dr. Davenport's teaching and would say he was easily one of my favorite teachers so far."

- ECE 3077: "He really loved the subject matter and would gladly work through problems with you whenever needed. He was absolutely the most accessible teacher I have had."

- ECE 6254: "The enthusiasm presenting the course material was infectious and made me want to learn what was being taught even though I saw most of the lectures on video."

- ECE 6254: "The way the professor interacts with students is truly unique. Very approachable and friendly. Exceptional ability to impart the enthusiasm about the topic to students (like me who had no prior background in the area), and promote further learning."

- ECE 6254: "Would be among the top teachers that I have ever had. (for someone who has been a professional student for 8 years now, that is saying something)."

- ECE 6254: "Professor Davenport's quality and clarity of teaching was among the best I've seen-- he has the patience, the knowledge, the concern for his students and the willingness to teach that I would consider exemplary of a model teacher."

- ECE 8823a: "I would take another course with Mark anytime. He's extremely helpful and a genuinely nice guy. He can be funny sometimes too. - some of the assignments were tough! at least for me. But I really learned a lot from them."

January 29, 2016

Dear Members of the Selection Committee:

It is truly a pleasure for me to recommend Prof. Mark Davenport for the CETL/BP Junior Faculty Teaching Award. I have known Mark for 15 years, both as graduate students and now as colleagues together on the ECE faculty. I have observed him communicating technical material countless times to educate a variety of different types of audiences. As we teach many of the same courses, I have also observed something most students never will: his thoughtful and intentional approach to *preparing* to teach and mentor, whether it be in the classroom, in mentoring student researchers, engaging students outside the classroom, or even integrating his research program with his educational pursuits.

I could tell you about his extreme effectiveness in the traditional classroom setting. From our discussions about course planning and preparation, he is abnormally conscientious about choosing what material to present and the most effective way to present it. He prepares extremely detailed course notes that are designed to engage students and not just record information. In some classes he has experimented with active learning strategies (e.g., a semi-flipped classroom) that are unusual for actually being effective *and* appreciated by students. The copious materials he creates for these classes is gladly shared, sometimes in open source databases for anyone to use. Despite his clear aptitude for teaching, Mark is also clearly driven to constantly improve in this area. He has sought out training opportunities with CETL, and several students have remarked at his willingness to make adjustments (even mid-semester) based on student feedback. His care, commitment and effectiveness are reflected in his teaching evaluations, which are among the highest I've seen (a minimum of 4.8/5 for undergraduate courses for courses most students dread taking).

I could tell you about the ways he engages with students outside the classroom. We were faculty associates together in the Grand Challenges Living Learning Program, where Mark's primary responsibility was to spend informal time interacting with the students. This participation was entirely voluntary and he chose to do it because of his commitment to positively impacting the students at Georgia Tech. He has also worked with a surprising number of undergraduate researchers in his time at Georgia Tech, many of which are students who were so impressed by him in the classroom that they sought out opportunties to work with him in more depth.

I could also tell you about the uncommon ways that Mark has merged his technical pursuits with his educational interests. He recently received an NSF CAREER award, which (supposedly) emphasizes the integration of research and education. In most cases, the educational component is a half-hearted statement about developing courses in the research area and maybe doing some outreach. Mark's application was the most substantive and interesting proposal for research and education integration I've seen. His technical work centers around finding structure in particular types of large datasets (especially with missing data), and his CAREER project proposes to develop and apply these new data science techniques to student performance data from undergraduate

classes he is teaching to develop assessment and intervention strategies for personalized learning.

I could tell you about all of the topics above, laying out my observations in excruciating detail. But I won't. I won't because I've never been a student in Mark's class and my opinion of him isn't really the reason he should get this award. Instead, I will tell you this: I sent out a few emails to former students asking for letters, and they were so happy to do it they told their friends who also wrote letters of their own and sent them to me **unsolicited**. I have to discard just as many letters as I am allowed to submit as part of this nomination. I will relay some student comments from letters I wasn't able to include in their entirety. More than anything I can say, these are the reason he should win this award.

"He would not rest until the class fully understood all the details. His personal investment and genuine concern for students success are absolutely remarkable. He would go out of his way to make sure I got all the help I needed..." -Nico van Duijn (undergraduate)

"Dr. Davenport is an invaluable asset to the Electrical and Computer Engineering Department, and he is a critical component of the future success of Georgia Tech and the students that he has the opportunity to influence!" -Bridget Devlin (undergraduate)

"He seems to have a gift in taking the complex information taught in class and relaying it in a matter thats more intuitive and easier to digest." -Jonathan Osei-Owusu (undergraduate)

"I truly believe that he is very deserving of this award, and I hope that he understands the positive effect that he instills upon his students in these very difficult subjects." -Manuel Ocanas (undergraduate)

"[As a GTA] I was very impressed by his dedicated effort to individually listen to and thoroughly answer any questions that students had....[As a GRA] Throughout our regular meetings, he spent significant time explaining numerous concepts with great clarity despite his many obligations as a new professor." -Andy Massimino (graduate student, teaching assistant, and research assistant)

I obviously support Mark's nomination with my strongest recommendation. He is an exemplary educator who cares deeply about his craft. Recognition through the CETL/BP Junior Faculty Teaching Award is an appropriate way to honor his efforts and I encourage you to select him for this award.

Sincerely,

Christopher J. Rozell
Associate Professor
Electrical and Computer Engineering

January 29, 2016

To the members of the award committee:

I am writing to lend my strongest support to Mark Davenport's nomination for the CETL Teaching Award. Along with being an excellent instructor, Prof. Davenport has embraced modern methods of connecting with students (e.g. the "flipped classroom"), and has found innovative ways to combine his research and his teaching. He has also taken a leadership role in course development, which is especially notable given the relatively short time he has been at Georgia Tech.

I am sure that Prof. Davenport's teaching evaluations have been included with his nomination package, and I am equally sure that analysis has been done that demonstrates these numbers are significantly above average for those courses. But some qualitative statements are in order here. First, consistently getting 4.9 and 5.0 in the undergraduate courses that he teaches is very rare. These courses are very mathematical, and are taken by a very wide swath of ECE undergrads; they are definitely faced with a sense of dread from a significant portion of the undergraduate population. His uniformly high evaluations in these courses speak directly to his ability to connect with students at every ability level. Second, introductory classes on probability and statistics (ECE 3077 in this case) are notorious for generating low teaching evaluations --- this is a widely help belief across universities. This makes Prof. Davenport's extremely high marks here even more notable in my mind.

Prof. Davenport has also played a crucial role in developing this introductory course in probability. Along with myself and Christopher Rozell, he has been actively developing an extensive set of "open" lecture notes (these are fully written, and could be chapters in a book) and a freely accessible database of exercise problems. Along with being useful for many instructors at Georgia Tech (almost every offering of this course has used these materials), these have been adopted for similar courses at other universities, including Claremont-McKenna and the Colorado School of Mines. He was also instrumental in developing lectures that connected the general material to important problems in electrical engineering.

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Prof. Davenport has been active in connecting in-classroom instruction to research. I will mention here two separate efforts of his. First, a critical part of ECE 3077 (the probability course from the last paragraph) is the large number of computer exercises completed by the students in a controlled environment (usually at the end of class). Prof. Davenport has collaborated with cognitive scientists at Duke University that analyze data from these exercises and try to understand how people learn and retain mathematical concepts.

His second effort is centered around his own analysis of student exercise data. Prof. Davenport's research is in the general area of machine learning, and he has been actively developing personalized learning systems. He works on the fundamental mathematics of how to adapt an exercise set to a particular students perceived needs, and has started to use data from his class as test sets for this research.

Finally, Prof. Davenport has been instrumental in creating a graduate course on statistical machine learning. This course is a central component to the PhD program in Machine Learning that has recently been proposed to the Institute. The course is extremely popular (with enrollments upwards of 100 every time it is taught), and its importance will only increase.

Despite his young age, Prof. Davenport is one of the most accomplished instructors in the entire School of Electrical and Computer Engineering. He is highly deserving of this award.

Sincerely,

Justin Romberg
Associate Professor

To the CETL Selections Committee,

I am a 3rd year Computer Engineering student who has had the pleasure of taking a class, ECE3077 Intro to Probability and Statistics for ECE, with Professor Davenport this past semester, and I feel that he was one of the best professors I have ever had during my time at Georgia Tech.

One notable aspect of Professor Davenport that made his teaching effective was his embrace of innovative teaching tools. I came into his course with no background beyond basic high school probability and with not much motivation for learning the material. This was also generally the case for the rest of the class, given that this is a core class for an ECE degree on a topic that seems unrelated to the field of ECE. Knowing that, Professor Davenport's class had one section a week devoted to group problem sets, which was an interactive and low-stakes method of getting students like me engaged and practicing the material. One key component for the success of this unorthodox style of teaching was how Professor Davenport would always be flitting around each group to answer questions and help students work out difficult problems, and make sure that each and every person got the help they needed.

It is in moments like that where Professor Davenport's passion and drive for teaching made a difference in my understanding of the material. During the other two sections of the week, where Professor Davenport would be giving traditional lectures, he would always put in every effort possible in promoting interaction and engagement. In his lectures he would always be sure to include problems that he would work through with the class that were interesting and relevant to our interests, which helped us see the link between the material he was teaching and our future work in ECE. Some of the examples he would go through would also show how the material related to our day-to-day lives, such as using the statistics behind polling to demonstrate sample mean and variance, or by having a problem modeling the time it takes his newborn baby to cry after setting her down to show an application for maximum likelihood estimation.

Indeed, despite the birth of his daughter during the semester, he would make sure to give me and the rest of the class the care and attention that we needed. He would frequently stay back to help students past the end of the class on the days we had the in-class problem sets, and he would always answer any questions with an infectious enthusiasm. At one point, I once went to his office hours with a problem that I had remembered from high school as something beyond the scope of the class, and Professor Davenport gladly explained everything needed to solve it with the patience that allowed me to understand it, despite it being on a topic not yet covered in class. At times, it felt like he devoted to us the same care and consideration that he would to his own child.

From his dynamic and passionate teaching style, to his friendliness and care for every individual student, I feel that Professor Davenport is the embodiment of the qualities of an excellent teacher and an example of the exceptional standards that define Georgia Tech, and it my honor to recommend Professor Davenport to receive this award.

Sincerely,

Michael Reymond

To Whom It May Concern:

I am writing this letter to support Dr.Mark Davenport's candidacy for the teaching award. I have had the pleasure of being in two of Dr. Davenport's Classes, ECE 3077 (Probability & Statistics) and my recitation/lab section in ECE 2026 (Digital Signal Processing) and I am pleased to write about the positive impact that he has had on my education at Georgia Tech. I met Dr. Davenport through the Georgia Tech Grand Challenges Program, where he was a mentor for the program. Dr. Davenport's passion for academia and his research shone through in his interactions with us, and it was for this very reason I decided to choose him as an instructor for the aforementioned two courses.

Dr. Davenport's commitment to teaching his students is unwavering and sincere. His teaching style in the classroom has always been very application based, explaining complex theoretical concepts that might seem esoterical at the time through simple relatable examples. Specifically, in the case of ECE 3077, Dr. Davenport made the special effort to introduce the concept of Information Theory and relate our probability statistics examples back to our Electrical and Computer Engineering courses and concepts. This not only ensured that the material kept the interest of the class, but also ensured that we had a tight grasp on concepts that would be vital to our major.

Further, he always ensured that we had plenty of opportunities to re-learn and practice concepts taught in class, including but not limited to providing class notes and practices problems for every lecture, and holding in-class problem solving sessions on a weekly basis. His teaching methodology proved invaluable, in a class such as ECE 2026, which for most students is considered a very challenging course. However, his teaching methods and passion for the topic carried through to the students, so much as to convince me to further study topics that I learnt in classes with him.

Apart from his outstanding teaching skills, Dr. Davenport has also been a very accommodating and understanding instructor. In my personal case, while taking ECE 3077 with him in Fall 2015, I had been called away from school multiple times to fulfil my commitment to the Unites States Army and Dr. Davenport had been very understanding of my situation and made every possible accommodation to ensure that I was caught up with the class, and understood the material to the best of my ability.

It would be my pleasure to see Dr. Davenport receive this award, because of the great impact he has had on my education at Georgia Tech. I hope this award will encourage Dr. Davenport's passion for teaching and help future generations of Georgia Tech students receive the stellar education, this institute is known for, that Dr. Davenport had come to embody through his teaching.

Best Regards,

Kunal Mehan

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Vice President of Information Technology | Student Government Association

Samuel Greene
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Dear CETL/BP Reviewers,

I am pleased to recommend Prof. Mark Davenport for the CETL/BP Junior Faculty Teaching Excellence Award. As a student in his past Introductory Signal Processing and Probability and Statistics courses, I am very familiar with his teaching. I have also taken part in an undergraduate research project in which I have gotten to know him more personally.

My first experience with Prof. Davenport was in ECE 2026, a Signal Processing course, in which he served as a "TA". The course involves a lot of material that is unfamiliar to most younger students and is thus considered a fairly difficult class. The lecture, which was headed by another professor, was typical of an introductory course in that it involved plowing through a lot of lecture slides which left many of the key concepts confusing at best for a typical student. In the recitation, headed by Prof. Davenport, he handed out a set of incomplete notes every recitation. As he went through the material and worked examples, students filled in the blanks. This helped to keep students very engaged in the class and provided them with a set of comprehensive, yet concise set of notes that clearly explained the material and was easy to navigate. The notes were so popular that my friends in other sections, who complained that their recitations were as hard to dissect as the lecture, would request that I send them copies.

About a year later, I took ECE 3077 Probability and Statistics with Prof. Davenport. Despite the fact that the size of this course was about three to four times as large as the previous recitation I had with him, he managed to keep me engaged by working through problems in a similar style to the previous. He still printed off sets of incomplete notes for every lecture. In this class, instead of giving a lecture on Friday, he assigned students a set of online problems. He, along with the teaching assistants, would help students as they worked through problems to help solidify the material. This provided for a level of feedback and help that is simply not possible on the same scale with normal homework. On top of spending this time in class to help students work and understand problems, he also made himself available with a generous amount of office hours. Despite him having his first child towards the end of the course, he still went above and beyond to make himself available to students, answering questions periodically online when he took a brief time off for this.

Lastly, I would like to add that he is constantly trying to improve his teaching. There are not many professors who take student feedback as seriously, and respond as quickly to it as he has. He is always tweaking his lectures and other details about the course in order to improve the effectiveness of his courses.

Sincerely,

Samuel Greene

Dear Selection Committee:

I am very pleased to have the opportunity to write in strong support of Professor Davenport's nomination for the CETL/BP Junior Faculty Teaching Excellence Award. As an undergraduate electrical engineering student, I've been privileged to have Professor Davenport as both an undergraduate research adviser and a teacher. In both his advising and teaching, Professor Davenport is extremely capable and energetic, and I am highly indebted to him for his support, mentoring, and excellent teaching.

I was a student in Professor Davenport's Spring 2015 ECE 6254 class, which covers machine learning theory and serves as an introduction to common themes in signal processing research. Professor Davenport is uniquely adept at integrating common themes and tips useful in signal processing research into class content. For example, he included a two-lecture "detour" in convex optimization (a particularly important topic in signal processing research) in the class, and would strategically select proofs to cover in order to point out proof strategies that are often useful in research. As a result, after taking ECE 6254 with Professor Davenport, I felt much more comfortable reading signal processing literature—even on material not covered in his class.

Despite the technical complexity of the material Professor Davenport covered in ECE 6254, his ability to incorporate his personality into lectures kept them from being intimidating or inaccessible. Many of my instructors at Georgia Tech have used humor and analogies in their lectures at the expense of a rigorous treatment of course material, but Professor Davenport stood far above my other professors in his ability to keep me engaged without distracting from the extremely mathematically rigorous nature of the course material. His ability to energetically and conversationally present complex material is a testament to both his teaching ability and deep knowledge of his field.

The time and energy Professor Davenport invests into teaching was evident in his carefully prepared and typeset class notes, which are among the best I've had in my time at Georgia Tech. The thoroughness and quality of Professor Davenport's notes have made them an invaluable reference for me in my other coursework and undergraduate research, and the care with which Professor Davenport prepared them (and his aptitude for clever idioms in slide titles) make them a pleasure to read and consult.

Since Fall 2014, I have been privileged to have Professor Davenport as my undergraduate research advisor. Even after frustrating weeks where I made little progress, because of Professor Davenport's energy, I always left our weekly meetings feeling enthusiastic. My work with Professor Davenport has inspired me to pursue my own Ph.D., and I have been extremely fortunate to have Professor Davenport's advice and guidance on graduate schools, applications, and decisions. Despite his busy schedule and the recent birth of his first child, Professor Davenport has always made time for me through weekly research meetings, responding to emails on problems in my research, and giving me advice on internships or graduate school.

Professor Davenport has had an enormous impact on my time at Georgia Tech, and the Georgia Tech ECE community is extremely fortunate to have him as a teacher and mentor. I am grateful for the opportunity to nominate him for the CETL/BP Junior Faculty Teaching Excellence Award as a way to thank him for everything he's done for me.

Sincerely,
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January 26, 2016

Dear Selection Committee,

In April 2014 my second semester of graduate studies came to a close as I delivered my final project presentation in Dr. Mark Davenport's ECE 6254 Statistical Signal Processing course. When I got home that evening, I told my wife, "That class was the most important class I will take in grad school." Now, almost two years deeper into my PhD studies, I stand by that declaration—not because the material was relevant to my research (though it was), but because Dr. Davenport inspired me in ways that transcend typical classroom learning.

Early in the semester I knew that Dr. Davenport was going to be an excellent teacher. He obviously cared about improving his teaching and purposefully incorporated teaching concepts, such as active learning, into the classroom. His lectures included an innovative and effective mixture of Power Point presentations and traditional whiteboard lecturing that allowed him to focus on the most important aspects of—and the intuition behind—each topic without sacrificing the mathematical rigor of the material. He tailored his teaching to his students and even let us suggest topics we wanted him to cover during the last few lectures of the semester. In addition, his homework assignments were a well-designed blend of theoretical exercises and practical applications. The culmination of the course was the final project I mentioned earlier.

I want to share the details of that project because they provide a concrete example of the effectiveness of Dr. Davenport's teaching. Each student had two options for the final project. The first was to participate in a class competition to use methods we had learned to solve a specific problem. The second was very open-ended: an "independent investigation" where students could apply anything related to the course to any research problem. In both cases, we were to give a presentation and write a report on our work.

These details illustrate how Dr. Davenport challenged us to work extensively with the material we were learning and encouraged us to apply classroom topics to our research. He willingly accepted the inevitable consequence of having to grade presentations and reports rather than just homework. On presentation day in April, it was interesting (from my perspective as a student) to see the different approaches that were used by each group who tackled the competition problem. It was also enlightening to see many of my peers present original research in a wide variety of areas that incorporated topics from statistical signal processing. Because of this project, I have made it a personal quest to look for ways to apply what I learn in my classes to my research.

Several times since taking ECE 6254, I have visited Dr. Davenport's office to discuss my own research with him. Even though he is not my faculty advisor, he has taken the time to answer my questions, give me advice, and point me to journal articles that might help me in my research. He genuinely cares about the entire Georgia Tech community, and I cannot think of a more fitting individual to receive the Junior Faculty Teaching Excellence Award.

Sincerely,

Bradley M. Whitaker