

# Application Summary

## Competition Details

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<b>Competition Title:</b>	2020 CTL/BP Junior Faculty Teaching Excellence Award
<b>Category:</b>	Institutional Awards - CTL
<b>Award Cycle:</b>	2020
<b>Submission Deadline:</b>	03/02/2020 at 11:59 PM

## Application Information

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<b>Submitted By:</b>	Marta Hatzell
<b>Application ID:</b>	4377
<b>Application Title:</b>	Marta Hatzell
<b>Date Submitted:</b>	03/02/2020 at 3:17 PM

## Personal Details

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<b>Applicant First Name:</b>	Marta
<b>Applicant Last Name:</b>	Hatzell
<b>Email Address:</b>	marta.hatzell@me.gatech.edu
<b>Phone Number:</b>	

### Primary School or Department

George W. Woodruff School of Mechanical Engineering

<b>Primary Appointment Title:</b>	Assistant Professor
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## Application Details

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### Proposal Title

Marta Hatzell

## **Nomination Packet**

- 1. Cover page (1 page)**
- 2. Letter of Nomination from School Chair (Dr. S. Graham) (2 pages)**
- 3. Reflective Statement on Teaching (2 pages)**
- 4. Representative CIOS survey Comments (2 pages)**
- 5. Impact on Students (1 pages)**
- 6. Letters of Support (3 from students, 1 from faculty)**

Evidence of impact on engineering undergraduate students is included in multiple elements of this packet.

February 27, 2020

CETL/BP Junior Faculty Teaching Excellence Award

Dear Selection Committee:

As Chair of the George W. Woodruff School of Mechanical Engineering, it gives me great pleasure to support Dr. Hatzell for the CETL/BP Junior Faculty Teaching Excellence Award. Since Dr. Hatzell's arrival at Georgia Tech, Dr. Hatzell has consistently demonstrated outstanding performance as an educator as well as a deep commitment to improving the learning experience for all of her students. One course that Dr. Hatzell has taken as her own since joining the Woodruff School of Mechanical Engineering is undergraduate Thermodynamics (ME 3322). Undergraduate thermodynamics is one of the first core courses that Mechanical Engineers are required to take, and is also a course that is required for Civil, Environmental and Nuclear engineering students. This diversity of disciplines coupled with the challenging subject matter makes teaching the topic difficult for most early faculty members. Despite this challenge, Dr. Hatzell excelled at teaching this subject from Day 1. This is demonstrated not only by her high CIOS scores which consistently range from 4.6-4.8, but can be seen by the comments she receives from all students in the class (not just Mechanical Engineers). For instance the last time she taught this class, this was a comment she received from one of your Civil Engineering students:

*"The professor was able to convey her knowledge to students in a professional and concise manner. If a student had trouble understanding a concept or problem, she was able to change the approach in order to facilitate learning. This was very much appreciated. It almost made me want to switch from civil."*

Dr. Hatzell has also engaged in several opportunities to grow as an educator. She participated in CETL's Class of 1969 Teaching Fellow Program and in the George W. Woodruff School of Mechanical Engineering Teaching fellow Program (run by Wayne Whiteman). Through both of these programs she developed new approaches to better communicate and educate in the classroom. During the CETL class of 1969 teaching fellows program, her project focused on developing ways to connect her class with the Serve-Learn-Sustain program. This she accomplished through affiliating her course with the SLS program, and through altering some of the homework's and in class activities to better connect core topics in thermodynamics (1<sup>st</sup>, 2<sup>nd</sup> law) to sustainability and social justice.

In addition to championing Thermodynamics, Dr. Hatzell with a core group of electrochemistry focused faculty have redeveloped a chemical engineering course focused on electrochemistry, to an electrochemical engineering course which is now offered to ME, ChBE, MSE, and ENVR students. This course has aided in expanding our pallet of sustainability focused engineering electives for students. Furthermore, it aligns with growing interest areas, as the course reaches enrollment capacity nearly every semester. In

this courses, Dr. Hatzell is able to break down emerging electrochemical technologies such as fuel cells and batteries which may enable more sustainable energy generation devices for transportation and stationary power needs.

Lastly, Dr. Hatzell's teaching extends out of the classroom, and can be demonstrated through her extensive mentorship of undergraduate researchers and through her outreach and education efforts. Dr. Hatzell consistently mentors between 4-5 undergraduate researchers each semester, and has advised ~25 undergraduates since joining Georgia Tech. Many of the students she has advised have gone on to receive research awards (PURA, NSF Fellowship etc.), and have landed in top PhD Mechanical, Environmental and Chemical Engineering programs (Georgia Tech, Princeton, USC). She also collaborates with CEISMC through the GIFT (Georgia Intern For Teaching) Program, and has worked with extensively with Dr. Fred Okoh's chemistry class at Arabia Mountain High School. Through this collaboration she has been able to aid Dr. Okoh in developing new experiments to demonstrate technologies for water treatment. Therefore, I without hesitation, provide my strongest support to Dr. Hatzell for this outstanding award. If you have any questions concerning this recommendation, please do not hesitate to contact me at [sgraham@gatech.edu](mailto:sgraham@gatech.edu) or 404-894-3201.

ELIGIBILITY:

Dr. Hatzell received a doctoral degree in August 2014, is currently untenured, has held an active full-time tenure-track faculty position for four years.

Sincerely,



Samuel Graham, Jr., Ph.D.  
Eugene C. Gwaltney, Jr. School Chair and Professor

/mf

### Marta C. Hatzells reflective statement

My primary goal as a teacher and mentor is to develop a supportive environment for my students, whereby they can grow a strong interest in both the fundamentals and broader impact of the given subject matter. I believe courses that focus on both impact and core principals will better motivate students with varied backgrounds, interest, and career objectives. At Georgia Tech, I have taught undergraduate thermodynamics (7x), graduate thermodynamics (2x), and aided in the development of an elective undergraduate course focused on electrochemical engineering (taught twice-including current SP20 semester). Through these courses, I have had the great opportunity to teach over 600 students (including this semester), with backgrounds which range from Mechanical, Chemical, Environmental and Nuclear Engineering.

Teaching undergraduate thermodynamics has been one of the most fruitful experiences that I have had as an untenured faculty member. There are many preconceived notions about the potential importance and difficulty of thermodynamics, and I enjoy addressing these concerns head on in my 8am sections. Since thermodynamics is a cornerstone class to energy science and engineering, my goal is to engage students in a way to elucidate the amazing career opportunities that already exist in energy science, or that are bound to emerge in the near future. With this in mind, my classes have a large focus on the importance that thermodynamics plays in achieving a more sustainable future.

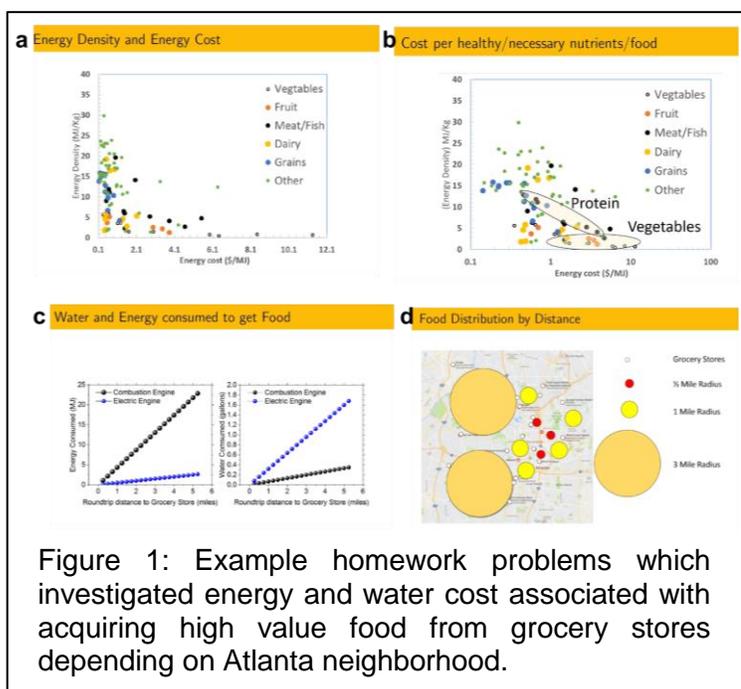


Figure 1: Example homework problems which investigated energy and water cost associated with acquiring high value food from grocery stores depending on Atlanta neighborhood.

For this reason, as part of the Class of 1969 CETL teaching fellows course, I begin to develop more structured ways to introduce ideas related to sustainability into my class through developing active collaborations with the Serve-Learn-Sustain center on campus. Examples include, developing new homework problems that had students begin to use the theories from thermodynamics (1<sup>st</sup> and 2<sup>nd</sup> law) to examine everyday tasks. For instance, in one homework, students were tasked to evaluate the energy density (MJ/Kg) and energy cost (\$/MJ) of everyday food (Figure 1a-b). Through this exercise, students were able to see how energy extends beyond combustion engines and into topics such as the availability and cost of nutritious food. Students also evaluated the cost (\$ and energy) to acquire this food depending on the distance to a grocery store (Figure 1c-d), which elucidated the idea of food deserts in cities.

In addition to introducing new homework's, we also began implementing SLS teaching tool-kits into the classroom. Two toolkits that worked seamlessly with our syllabus include "Thinking more about food, climate change, and sustainability", and "Calculating your carbon footprint". My students also regularly participate in on-campus tours of the Holland Plant the 10<sup>th</sup> street chiller

plant (Figure 2). In these tours, they are able to interact with many plant engineers and get to see the interworking's of the campus HVAC systems. Students typically leave these tours excited, and enjoy the ability to connect textbook thermal engineering with engineering in practice. My aim is for students to leave thermodynamics understanding that while the thermodynamic theories may be hundreds of years old; these theories remain a critical foundation for solving many emerging problems in energy and sustainability.



Figure 2: ME3322 students touring the Holland Power Plant.

In addition, to teaching thermodynamics, I have helped to develop an elective class that is cross-listed in Mechanical Engineering, Chemical Engineering and Material Science.

This course also regularly has graduate students from Environmental Engineering that join this class. While it is difficult at times to teach across disciplines, I firmly believe that interdisciplinary courses that democratize learning, can aid in a student's overall understanding of the subject matter. Furthermore, by leveraging the diverse student body within the classroom, students can not only learn from the instructor (me), but also have the opportunity to learn from their peers. This I believe will be important when educating students capable of addressing and solving grand engineering challenges that inherently are crossdisciplinary.

In this elective, I have tried to bring hands-on experiences to the students through providing them with real world data to analyze. Every week we also spend  $\frac{1}{2}$  of a lecture discussing various big-picture aspects related to electrochemical engineering. Topics may range from the potential societal challenges with the introduction of the electric vehicle, to the importance of developing energy storage to level our electric grid. This discussion-based section of the class, allows students to communicate together in the class, as the students are in charge of driving the discussion. In addition, to developing opportunities for discussion, students also have projects where they must design electrochemical systems that are capable of obtaining performance similar to internal combustion engines, but mitigate all carbon emissions. Ultimately, students leave the course with a better understanding of the prospects and challenges electrochemical technologies will play in the transportation and power sector.

Finally, I have taught graduate thermodynamics (ME 6304) twice in the Mechanical Engineering department. In this course, I begin to expand the course to focus on aiding graduate students who were preparing for their qualifying exams. To do this, I developed oral exams for the class. Traditionally, the first time a graduate student experiences an oral exam is in their qualifying exam, and therefore my aim was to change this. By introducing students to oral exams in a lower stress environment, I wanted to demystify the process. Students in the class also had the opportunity to develop a project and present to the class. The aim of the project was to connect the fundamental ideas from graduate thermodynamics to their research. This opportunity also allowed students to begin to grow their technical writing and presenting skills.

### **Illustrations of teaching excellence and impact on student learning**

Since arriving at Georgia Tech, I have taught 582 students (excluding this semester) of which 482 have filled out the CIOS survey (~82% response rate). Of the 482 respondents, 430 have rated my teaching effectiveness either a 4 or 5, with my average CIOS score being 4.6. Below are some of the representative comments from my CIOS surveys.

#### **Undergraduate Thermodynamics (ME 3322) – Taught course seven times.**

- Dr. Hatzell made learning the material more manageable and exciting, I've already suggested that students should register for any class she teaches. Her style of teaching and the lecture handouts may have motivated students to come to class, but the manner in which we were learning was similar to how I would learn if I had time to teach myself; which personally made coming to class very easy and enjoyable. Dr. Hatzell's real-world-experience of how things are applied helped us further understand the material from the book. Being excited at 8 a.m. is difficult, yet I was usually thrilled to have this course as the start of my day's worth of classes, despite the profound sleep deprivation.
- I was surprised by how interesting I found this class. I learned a lot and gained an overall interest in thermodynamic systems.
- Her greatest strength is that she is very approachable and she is super interested in helping her students understand.
- Considering that she was a new teacher, you couldn't tell at all. She's great and really approachable and really wants the class to learn and do well.
- Lecture notes were an excellent guide/review source for material
- Professor Hatzell. I really appreciated all of the real-world applications that were incorporated into the class to show us how the concepts we were learning were actually applicable. Additionally, the skeleton notes were AMAZING! I really felt like this class was oriented around the students and how they learned and not just about shoving information down our throats. A very nice change for GT
- Professor Hatzell was great at presenting the concepts in a way that made it easy to understand. She gave a lot of real life examples which helped a lot.
- The best aspect was either the holland labs or professor Hatzell's friendly nature during office hours. Getting to see real world examples of the stuff we were learning during class was pretty wonderful!
- I think Professor Hatzell really cares about her students and wants to facilitate learning. If you put in effort you can do well in the class and complacency is not rewarded.
- Really enjoyed the SLS aspect of the class
- Very good teacher, challenges students but does not try to confuse them. Genuinely wants students to understand and appreciate thermodynamics and how useful it is.
- She has a deep and wide knowledge about thermodynamics. She told interesting stories way back to her PhD time, and that to my opinion gives the impression that thermodynamic is very close to real-life than it initially sounded to me. She really knows how to endorse the learning process of the students.
- The instructors constant excitement about the material and the real world tie ins.

**Electrochemical Storage (ME/MSE/CHBE 4759A)- Course taught once. I am currently teaching the course for a second time.**

- The enthusiasm Prof Hatzell has for the topic shows through the way she teaches which got me more interested in the topics we learned about in class as well.
- Was very approachable
- Dr. Hatzell clearly knew the material well, and made sure we got a good overview of the subject without burying us in material. The weekly quizzes were a nice way to make sure we were up to date on what was happening
- She seemed very interested in what she was teaching and it translated to a positive learning environment
- Dr. Hatzell knows the subject area very well and tried to focus the course on hitting a variety of subjects.
- Marta is very flexible and understanding about your life outside of academia.
- It was great to see how electrochemistry was necessary in many different areas

**Graduate Thermodynamics (ME 6304) – Course taught two times.**

- Prof. Hatzell did a great job instructing the course, I have nothing but good things to say about the quality of the course she provided us, the students.
- The class is incredibly well structured, even when the pace of the class can be high. Examples provided in class are clearly representations of the problems considered in exams.
- Good course. I think it's especially good that the 1st half of the class covers the qualifier material. This is both good for the younger students as well as those preparing for the qualifier
- The professor is very enthusiastic about the course content, teaches well and responsive to questions
- Great professor
- Dr. Hatzell did seem genuinely interested in student projects.
- The office hours and commitment to helping students outside of class including the practice oral exam.
- She cares about the students and her lectures are very well structured.
- Lots of office hours. Very helpful and helped work through the problems
- Respect for the students as shown through office hours time/conversations, and the mock qual offering. Care for students seems to be a huge strength for this professor.

### Impact on Students:

In addition to the impact described through the CIOS responses, I have also had the opportunity to interact with undergraduates through research. In fact, nearly half of my undergraduate researchers have come to me through my thermodynamics and electrochemical engineering courses. Several have gone on to top Graduate programs in Mechanical, Chemical and Environmental Engineering schools such as Princeton, University of Southern California, and Georgia Tech. Many of my undergraduates have also gone on to industrial positions in the energy sector, working at companies such as Exxon Mobil, Hillphoenix, Enercon and Arup. I have also worked with ~5 undergraduates who are now pursuing a MS degree at Georgia tech post their undergrad, many of whom have maintained an interest in Energy science. Many of my undergrads have received numerous awards such as the PURA undergraduate research awards, and have applied to prestigious fellowship such as the NSF graduate research fellowship.

#### Undergraduate

1. Avery Agles- CHBE Undergrad- GT 2018 Graduate - Now at Princeton University pursuing a PhD in Chemical Engineering
2. Rebecca Ambrecht - NRE Undergrad- GT 2019 Graduate
3. Nicholas Carrasco - ME Undergrad - GT 2017 Graduate - Now pursuing a MA in Physics Education at Augusta University
4. Bianca Costa - Envr Eng Undergraduate - GT 2019 Graduate - Now at the University of Southern California pursuing a PhD in Environmental Engineering
5. Kelsey Dobson- ME Undergrad - GT 2018 Graduate - Now at Textron Specialized Vehicles
6. Chris Dugan- ME Undergrad- Now
7. Katherine Freesemann- ME Undergrad - GT 2018 Graduate- Pursing MS in MechE at GT
8. Mason Herbert- CHBE Undergrad - GT 2020 Graduate -
9. Alana Homa- ME Undergrad - GT 2019 Graduate - Now pursuing a PhD at GT in MechE with Comas Haynes
10. Zeya Luo - CHBE Undergrad - Now at MacDermid Graphics Solutions
11. Luka Malashkhia - ME Undergrad - GT 2018 Grad- Now pursuing a MS at GT
12. Claire Miller -ME Undergrad - GT 2018 Graduate- Now at Enercon
13. Raj Nair - CHBE Undergrad - GT 2019 Graduate - Now working in Oil and Gas in South Carolina
14. James Padgett - NRE Undergrad - GT 2017 Graduate - Now working as a Nuclear Engineering in Newport News
15. Viraj Patel - ME Undergrad - GT 2017 Graduate
16. Aashna Punwani- CHBE Undergrad - GT 2018 Graduate- Now at ExxonMobil
17. Hailey Rogers- CHBE Undergrad - GT 2020 Graduate- Now at ExxonMobil
18. Jessica Solomon- CHBE Undergrad - Now at Micromeritics Instrument Corporation
19. Sean Taylor - ME Undergrad - Now at at Hillphoenix
20. Sharon White - MSE Undergrad - GT 2019 Grad - Pursing BS/MS at GT

# Georgia Tech George W. Woodruff School of Mechanical Engineering

February 28, 2020

Re: Recommendation Letter for Dr Marta Hatzell for the CTL/BP Junior Faculty Teaching Excellence Award

Dear members of the award selection committee,

I strongly recommend Dr Marta Hatzell to receive the CTL/BP Junior Faculty Teaching Excellence Award. Dr Hatzell is the teacher that all engineering student would love to have. I have known Marta, as a colleague, since 2015 when she joined the Woodruff School of Mechanical Engineering as faculty. I was aware of her numerous research accomplishments but it's only recently that I came to know how great of a teacher she is. She is dedicated to her community and to enabling our students to reach their potential.

I had the opportunity to observe Marta in classroom. I sat in one of her lectures for the "Electrochemical Storage and Conversion" multidisciplinary elective class she is currently teaching. In the first few minutes, it became obvious that Dr Hatzell has put so much thought and planning into organizing and presenting the material, which is chemistry and math heavy, to these undergraduate students with mechanical engineering or chemical and biomolecular engineering or materials science and engineering majors. She provides hand-outs in the beginning of the class and she projects on the board the equations adding in real-time comments and clarifications as she explains the concepts. I was impressed how engaged students were, taking notes and asking questions.

Dr Hatzell has a very welcoming attitude and her calm demeanor and clear instructions create a stress-free learning atmosphere during her lectures. She poses questions and then provides enough time and finds ways to get a conversation going instead of yes/no answers that the students are often provide. It became clear to me that her students love her and that she showed them mutual respect. This is also obvious from the letters and the comments she receives from her students. Dr Hatzell is a passionate hard working teacher who enjoys working with undergraduate and graduate students.

For all these reasons, I strongly believe Marta would be an exceptional selection for the CTL/BP Junior Faculty Teaching Excellence Award.

Kyriaki Kalaitzidou   
*Associate Chair for Faculty Development and  
Rae S. and Frank H. Neely Professor  
G. Woodruff School of Mechanical Engineering and  
School of Materials Science and Engineering  
Georgia Institute of Technology  
Atlanta GA 30332, USA; [kyriaki.kalaitzidou@me.gatech.edu](mailto:kyriaki.kalaitzidou@me.gatech.edu)*

Dear CTL/BP Junior Faculty Teaching Excellence Award Committee,

It is my pleasure and honor to support Prof. Marta Hatzell for the CTL/BP Junior Faculty Teaching Excellence Award nomination. I am currently her student for the ME/CHBE/MSE 4759 Electrochemical Storage and Conversion class, which is an elective class for me to complete my Mechanical Engineering Thermal, Fluid, and Energy Systems Concentration. Prof. Hatzell made this class my favorite by how she structured the class to inspire, as well as, by how she adds her excellent teaching qualities and passion.

When I first signed up for the class, it was mainly for the popularity of ‘Electrochemical Storage and Conversion’ in the world and to add another elective to my concentration. I wasn’t that interested in the topic but thought I could benefit from learning about it. Now, thanks to Prof. Hatzell, this class has been my favorite among many great classes. Since this is a course that involves both ME, CHBE, and MSE students, as well as undergraduate and graduate students, it is not very easy to structure the class to address and interest everybody from these different educational backgrounds. Prof. Hatzell is a very balanced educator in that way where she knows and can address what the students from each area of study has a knowledge of or not. Thus, when she gives a lecture, she makes sure that she both fills in the blanks that we have and adds more to the existing background at the same time.

Regarding the structure of her lectures, they have been more than just a “teacher teaches, and students listen” lectures. She prepares us packets each week with the topics that we will cover, and together, we fill in the empty parts in the packet. This makes me fully focus on the class and learn as I both listen to her and write down good, structured notes that I can look back later. Additionally, her classes do not only cover theory, but also application. Thanks to Prof. Hatzell’s preparedness and research before the class, we get introduced to a lot of tools that we can find online and at Georgia Tech regarding methods and research for Electrochemistry. Moreover, Prof. Hatzell makes sure that we learn more about Electrochemical Storage and Conversion than only the lecture material. Every week, a student or two presents a section from the ‘Global EV Outlook 2019’ report by the International Energy Agency. This is one of my favorite parts of the class as we get to learn current improvements and issues regarding electric vehicles and discuss with my peers to see what their different opinions are. While I learn so much each week, it also has given me opportunities to start many conversations and connections with my peers. Furthermore, Prof. Hatzell has many great anecdotes from her professional life that she shares with us briefly at the beginning of the class, which helps the students to create a personal connection with her and learn how the actual professional life is in the Electrochemical field. One time in class, she showed us an interview of 2019 Nobel laureate John B Goodenough, and later, we discussed the significance of Electrochemistry in the Chemistry world and beyond. All these examples lead me to finally say that, in Prof. Hatzell’s class, I am not only a student that just listens and answers questions, but a contributor. Prof. Hatzell achieved to make me feel that my opinions and contributions matter and are encouraged in a class of 40 students, which I don’t see often in my other classes. Every day, I look forward to going to her lectures and learning more about Electrochemistry.

Overall, Prof. Hatzell has been an inspiration to me to learn more about Electrochemistry. I never even thought about this field before I took this class, and I am so thankful and happy to have been introduced to it by Prof. Hatzell. She is a very knowledgeable, caring, friendly, and at the same time, a very professional educator. I fully support her nomination for the CTL/BP Junior Faculty Teaching Excellence Award.

Sincerely,

Ece Polat

B.S. in Mechanical Engineering – Georgia Institute of Technology 2020

Invention Studio at Georgia Tech | Director of Safety



George W. Woodruff School of  
Mechanical Engineering  
801 Ferst Drive  
Georgia Institute of Technology  
Atlanta, GA 30332-0405

March 2, 2020

Selection Committee  
CTL/BP Junior Faculty Teaching Excellence Award  
Center for Teaching and Learning  
Georgia Institute of Technology

Dear Selection Committee,

It is my pleasure to write a letter of support for Dr. Marta Hatzell regarding her nomination for the CTL/BP Junior Faculty Teaching Excellence Award. I met Dr. Hatzell in 2017 as an undergraduate student in her Thermodynamics course. Her passion for teaching and her enthusiasm for the subject of energy and sustainability inspired me to pursue undergraduate research in her lab, which further developed into a Master's degree. I have worked closely with Dr. Hatzell in both undergraduate and graduate thermodynamics (ME 3322 and ME 6304) and through three years of research under her mentorship.

Dr. Hatzell is an exceptional teacher and mentor outside and in the classroom. She is very approachable and passionate about teaching and encourages questions and participation in all her classes. She explores subjects that are of general interest to the students and allows them to work on innovative design projects that will prepare them for success beyond school.

Dr. Hatzell's dynamic style of teaching allows students to truly participate in class and enhances the process of learning thermodynamic concepts and principles. Her lectures usually include a concise explanation of thermodynamic principles, which she does with both written materials and oral presentations. However, most of the lecture time is spent solving problems to help students familiarize themselves with using these thermodynamic principles. She does this by going through different in-class problems that resemble real-world applications and encouraging students to participate and derive step-by-step solutions. Finally, she allows students to explore their passions by encouraging open-ended design problems chosen by the students. These problems are then presented at the end of the semester in front of the whole class.

Dr. Hatzell is also a talented researcher in the area of electrochemistry. She uses her research experience to emphasize how and why the concepts we are learning in class are relevant to solve problems experienced in industry and academia. She often showcases new technologies that are innovating in areas such as energy storage and conversion and explains the thermodynamic principles behind them. This tie between the theory learned in class and applications in industry motivates students to dig deeper into the possible applications of the concepts learned in class.

In conclusion, Dr. Hatzell has shown great teaching qualities in both undergraduate and graduate courses as well as in mentoring her research students. I strongly believe that Dr. Hatzell's passion for teaching is contributing to making Georgia Tech a leading university and that she is an excellent choice for this award.

Sincerely,

Carlos A. Fernandez  
Graduate Research Assistant  
George W. Woodruff School of  
Mechanical Engineering  
Georgia Institute of Technology

Dear Teaching Award Review Committee,

I feel uniquely honored to write this letter of support for Dr. Marta Hatzell. In Spring 2017 I worked as an undergraduate researcher in her WATER Lab, and I always felt welcomed and valued in her lab. I was also fortunate enough to be a student in her Thermodynamics course in Fall 2018 where she was a powerfully engaging yet compassionate professor.

From rumors of other students' experiences, I know that undergraduate researchers are sometimes underappreciated in their labs, but Dr. Hatzell helped me to feel cherished as a member of her team. During lab meetings she frequently encouraged student participation and stopped periodically to ensure we understood everything. She sent out current scientific articles and news for us to review and discuss. Students were also urged to give presentations about their research, an important experience to help us learn by teaching and to keep us accountable for our growth. Overall, students in Dr. Hatzell's lab were treated respectfully, a factor that helps the sometimes-unreachable realm of academic research seem more accessible to undergraduates.

Outside of the lab, Dr. Hatzell was also a superb lecturer. She kept students engaged in class (a difficult task in a warm, stuffy classroom in the basement of an old physics building) by supporting student questions and participation in example problems. She also provided indispensable lecture notes to help students stay on track and follow along in class. Just as she treated researchers in her lab fairly, you could tell that she valued her students and whether they understood the material. This, in my opinion, is an indispensable trait in a lecturer: their dedication to ensuring every student actually learns the material. Additionally, Dr. Hatzell is clearly very interested in thermodynamics. This interest is evident in her teaching and carries over to her students. Her teaching sparked my own fascination in the rules of heat and energy, and I now work as an engineer designing energy systems every day.

Dr. Hatzell is overall an outstanding research leader, lecturer and human being. She cares for her students' well-being and is committed to their success. For these reasons I believe she is an ideal candidate for this award.

Sincerely,

Christopher Dugan

Georgia Institute of Technology

Graduated Fall 2019 B.S. Mechanical Engineering

Mechanical Engineer at Arup in San Francisco