ESSAY:

When asking friends and family about studying abroad in the UK next year, I am usually met with encouragement to go for it and *"broaden my horizons"*. However, amongst the affirmation, I have also received a fair share of doubt. Interestingly, I see most clearly the value in a term abroad when I'm presented with the reasons not to go.

"Why study abroad when you can just travel on your own time?" As much as I cherish the experiences I've collected from travelling in the past – I toured Eastern Europe with my mom and sister after graduating high school and planned my first international trip sans parents to Vietnam and Thailand last spring break – my trips always felt too short and a bit stressful. It can be overwhelming jumping from city to city every few days, visiting only a handful of sites at each place, and living from somewhere that's not home. I love exploring new places, but I always wish I had more time to become fully comfortable and familiar with where I'm visiting. I want to savor the little things – become a regular at a coffee-shop down the street, know where the best food is at any hour of the day, and have a favorite place to people watch. To me, study abroad is an opportunity to discover somewhere new at my own leisurely pace.

"You don't want to miss out on spending senior year with all your friends." I find so much value in the people I meet and the relationships I form wherever I go. One of the greatest benefits I see in studying abroad is the chance to connect with new and different people. A couple summers ago, I attended a four-week summer research program in Israel with 79 other pre-university students from 16 different countries, which to this day is one of my best memories. I recall staying up into the hours of the morning talking about life, education and politics, trekking through the Israeli desert laughing with people who just a month ago I would've called strangers, and feeling that pang of nostalgia now every time I get a message or postcard from a faraway friend checking in on how I'm doing. I hope that years down the line I can speak as equally fondly of the people I met studying abroad.

"You would be giving up a term of Caltech education, is that worth it?" Though I'll admit I feel a reluctance to leave behind the wealth of resources and talent at Caltech, I know my growth as a student from a term abroad will make it worth it. At Caltech, I've taken difficult to mean hours of conceptually hard and technically rigorous problem sets. However, I want to utilize study abroad to challenge myself in other ways academically and redefine the meaning of difficult. I want to be pushed to answer tough open-ended questions about engineering, have the time to discuss topics beyond my schoolwork, take classes not just because they're required but because I want to, and achieve a balance between school and extracurricular activities. I want to find a unique identity as a student and experience an education that is more than just the classes I take and the problems I solve. I'm also certain that after a term abroad I would return with a greater appreciation for the amazing opportunities I have here at Caltech.

PROGRAM FIT:

Cambridge

Cambridge draws me in initially with its beautiful architecture, rich history and college-town feel. However, when looking for classes to take, I found a deeper appreciation for the university in the interdisciplinary nature of offered classes and their relevance to the modern world. I don't feel limited only having classes in the Engineering Tripos to choose from, as the classes are a compelling integration of various topics I'm interested in. I've planned to study abroad since my freshman year, so I will have completed most of my option requirements by the end of this year aside from two classes my second term senior year. This opens up the possibility for me to take classes within my option that aren't required or offered at Caltech. For technical classes I picked Information Theory and Coding as it overlaps between EE and CS, Renewable Electrical Power as I originally came into Caltech interested in studying renewable energy and haven't had a chance to take any related classes, and Practical Optimisation as I was drawn to engineering since a young age because I loved optimizing different problems. Ideally, however, I would like to take 2 social science courses while abroad to take advantage of the wide range and strength of Cambridge's Social Science and also satisfy HSS requirements, thus I picked two interdisciplinary engineering and business/management classes.

PROPOSED COURSE LIST:

Cambridge Proposed Course List

Total CIT Units for term abroad: 45

Course by Correspondence/Units: 0

1. Information Theory and Coding (3F7)

Engineering Tripos
Part IIA
Term: Michaelmas
Number of lectures: 16
Lecture times: Wednesday 9-10, Friday 9-10
Caltech units: 9
Caltech evaluator: Babak Hassibi
Type of Caltech credit: option
Course description: The aims of the course are to introduce students to the principles of information theory, data compression, and error-correction, which form the foundations of modern communication and information processing systems.

2. Renewable Electrical Power (4B19)

Engineering Tripos
Part IIB
Term: Michaelmas
Number of lectures: 16
Lecture times: Monday 11-12, Thursday 10-11
Caltech units: 9
Caltech evaluator: Azita Emami
Type of Caltech credit: option
Course description: The aims of the course are to introduce the main electrical technologies that underpin the generation of renewable electrical power and its integration into the existing electrical transmission and distribution network, explain the technologies that enable renewable electricity sources to be integrated into the existing grid at both the transmission and distribution level, explain the implications for electrical power systems of the increasing integration of renewable electrical power sources, and outline the means of quantifying the economic viability of renewable electrical power generation, and show how Government policy can have a significant influence on this.

3. Practical Optimisation (4M17)

Engineering Tripos
Part IIB
Term: Michaelmas
Number of lectures: 12 lectures + 4 computer lab sessions
Lecture times: Thursday 11-12, Friday 12-1
Caltech units: 9
Caltech evaluator: Thomas Vidick
Type of Caltech credit: minor
Course description: The aims of the course are to teach some of the basic optimisation methods used to tackle difficult, real-world optimisation problems, teach means of assessing the tractability of nonlinear optimisation problems, develop an appreciation of practical issues associated with the implementation of

optimisation methods, and provide experience in applying such methods on challenging problems and in assessing and comparing the performance of different algorithms.

4. Environmental Sustainability & Business (3E11)
Engineering Tripos
Part IIA
Term: Michaelmas
Number of lectures: 8 (2 hours each)
Lecture times: Monday 2-4
Caltech units: 9
Caltech evaluator: Colin Camerer
Type of Caltech credit: HSS
Course description: The aims of the course are to identify the practical challenges and opportunities facing businesses in terms of integrating sustainability into their operations and value chains, critically examine the conceptual tools and best practices used to prioritize and deliver on improved environmental sustainability outcomes, and recognize that business sustainability requires systematic analysis coupled with prioritization of (sometimes incommensurable) aspects of the issues.

5. Management of Technology (4E4)
Engineering Tripos
Part IIB
Term: Michaelmas
Number of lectures: 8 (2 hours each)
Lecture times: Tuesday 4-6
Caltech units: 9
Caltech evaluator: Colin Camerer
Type of Caltech credit: HSS
Course description: The aims of the course are to provide students with an understanding of the ways in which technology is brought to market by focusing on key technology management topics from the standpoint of an established business as well as new entrepreneurial ventures, place emphasis on frameworks and methods that are both theoretically sound and practically useful, and provide students with both an understanding of the issues and the practical means of dealing with them in an engineering context.