

## **ECOLE POLYTECHNIQUE SCHOLARS PROGRAM: PARTICIPANT COMMENTS 2014-16**

### **Anusha Nathan '18 – Bioengineering Caltech/Biologie Ecole Polytechnique**

Three years ago, I applied to Caltech with the intent of studying abroad in France, and today I feel so thankful to say that dream has become a reality. I have always been enamored with the beauty of the French language and culture, and perhaps the most rewarding part of this experience was the opportunity to put my years of obsession to good use. It's the fact that people bite a chunk off of their baguettes when walking home from work, that crêpe stations line certain streets, that the *Tour Eiffel* is just 45 minutes away, and that the French people speak so beautifully that make you wish you could stay here forever.

X (another name for Ecole Polytechnique) exchange program is the only one at Tech that is a full language immersion program. That being said, not having a perfect grasp of the French language should in no way deter you from applying to the Ecole. Perhaps the best way to learn a language is to be surrounded by it, and I've found that my French has improved immensely in just one month! Because the school draws students from all over the globe, administration, faculty, and students alike understand that French is not our first language and are more than willing to help us get better! Some classes are even taught in English, but I would definitely recommend taking some classes in French to get a real feel for the Polytechnicien lifestyle.

All of the French students have spent two years in *concours*, classes in math and physics, prior to coming to X in order to prepare for the entrance exam. As a result, each student is highly advanced in those two fields of study. It is for this reason that Ecole Polytechnique is a recommended exchange program for senior year. However, as a Biology major (and premed), I have found that junior year is the ideal time to come as the classes are at a slightly lower level than those at Tech. This worked perfectly for me as I could still learn the material while, at first, playing catch-up with the French language. All classes have a two-hour lecture followed by a two-hour *petite classe*, or recitation section, taught by the professor herself or himself, which often results in minimal outside work.

Everyone in France has heard of both Polytechnique and Caltech, so it was a nice change of pace from the often obscure looks with which I am met when I tell people in the States that I go to Caltech. Studying at a university that nurtured the likes of Becquerel, Cauchy, Coulomb, Poisson, and Fourier has its benefits: the academics are thrilling and invigorating; yet, we still have time to cradle other aspects of our being. Sports are obligatory for the "regular" degree candidate students in the engineering program, and they are one of the gateways to a fulfilling social life. Students in sports sections often eat dinner and go on vacations together, and it's a

wonderful way for exchange students to meet the French students. I joined the rowing section, and every Tuesday and Thursday, I went rowing on the on-campus lake! I have never felt healthier, both physically and mentally, than I have at Polytechnique. I'm still not sure if I should attribute that to the numerous opportunities I have had to try new things on campus or simply to the Parisian air (except not really, since so many people smoke).

The *binets* are another great way to get involved on campus. They are essentially clubs, but there is a much greater variety of them here than at Tech. In fact, I joined the girls' soccer binet, and I had the chance to compete in *La Coupe de l'X*, a sports competition drawing students from the *grand écoles* all around Paris. There is something at Polytechnique for everyone, from the numerous binets such as painting, soccer, skydiving, and photography, and the chance to learn science in a different language has opened my eyes to the global world of STEM.

As a student in Europe, it's easy to get swept away by the sheer beauty of the surrounding countries, but I cannot count how many weekends I stayed near campus to participate in one of the many activities organized by Polytechnique itself, ranging from a treasure hunt in Paris to cheese tastings to soirées. That being said, take advantage of being a student in France! Go to the museums for free, visit the *châteaux* of the Loire Valley. Travel abroad: train to Triberg and Milan, take a chance with Eastern Europe.

All this aside, French bureaucracy is a bit much. I opened my French bank account (which is required to pay for housing) my first Friday at Polytechnique, and a month and a half into the program, I still hadn't received my bank card. Our international student orientation was rescheduled from the first Monday to the seventh or eighth week of the program! The shining light is the friendly faces of administrators and students alike, all of whom are always willing to walk you to your destination or find out why your mail never reached you.

As time passes, my days here at Polytechnique will be something that I can only reminisce about, with a faint smile appearing on my face as I remember seeing the names of Polytechnicien alumni etched into the Eiffel Tower, rowing on the campus lake, going to military soirées, taste-testing chocolate in Paris, and strolling along the Seine. Amidst all of these events, I come back to my room every night fluttering my eyelids so very fast in disbelief that this dream of mine became a reality. I wouldn't trade this opportunity of a lifetime for anything, as my decision to come here was without a doubt one of the best decisions I have ever made in my life. The combination of studying at a world-renowned university, immersing myself in the French culture, and enriching my cultural sensibilities has undoubtedly made me a happier and more interesting person.

## **Cedric Flamant '15 – Physics Caltech / Physics Ecole Polytechnique**

Out of all the Caltech students who have studied abroad at Polytechnique, I might be justified in saying that I have looked forward to it the longest. In fact, I even left a note in my Caltech application explaining that I was excited by this particular exchange program. Finally having realized this aspiration, I can say from experience that studying abroad at l'Ecole Polytechnique is an incredibly enriching experience, both socially and academically.

Here at Polytechnique, I have met wonderful people that I might never have had a chance to meet. Through sports and classes, I've met plenty of the students here, who are called Polytechniciens. Due to the prestige of Polytechnique, many of these students are likely to become CEOs, eminent scientists, and government officials, so if you're into networking, this is a good place to be. There are also a few dozen other exchange students from all over Europe who are eager to befriend you as you all adapt to the new environment together. As you start to form a group of friends here, dinner becomes a time to look forward to. The dorms have kitchens which are managed by each sport section and are constantly stocked with a variety of food. So, it is extremely easy to cook and dine with friends since there's no shopping or planning to worry about. Plus, the kitchens are cozy, friendly environments where you will often see other Polytechniciens playing games or watching movies.

One concern that a Caltech student might have with studying abroad is the academic rigor of the other school. After all, at Caltech you get used to a heavy workload and very challenging courses. So, for all the challenge-seekers out there, Polytechnique is definitely worth your while. Polytechnique is considered to be the most prestigious and selective school of France, and the students are selected through an extremely competitive entrance examination. Everybody in France knows Polytechnique, which is an interesting (and somewhat fun) change from the slightly esoteric reputation Caltech has in the US. To name-drop a bit, notable professors and alumni from Polytechnique include Becquerel, Liouville, Mandelbrot, Fourier, Navier, Ampère, Poisson, Cauchy, Carnot, Hermite, Poincaré, and Lagrange. Personally I have found the academic level here to be quite satisfying. The difficulty of the material is roughly on par with Caltech's; in fact, some of my courses feel like a perfect continuation of my previous studies. However, the teaching approach at Polytechnique is quite different than at Caltech. In general, Polytechnique has a strong focus on mathematics – an alumni who eventually became a professor at Caltech warned us that “at Polytechnique, every subject is an excuse to do mathematics.” The more abstract approach to physics often encountered at Polytechnique has been complementary to what I've learned at Caltech, and ultimately it solidified my desire to study theoretical physics in graduate school.

Finally, let's address some of the more pragmatic questions you may have about studying abroad at Polytechnique. This program is recommended for your senior year, and I think it works out perfectly for physics majors. The junior year physics courses at Caltech on graduate-level quantum and classical mechanics are the high-level tools you need for more specific studies. By the end of junior year you have a "full toolbox" to tackle fields like condensed matter, elementary particles, and astrophysics. Furthermore, in the physics option, by senior year you will have essentially finished all your specific requirements. Hence, you won't run into any curriculum-meshing issues when you get back to Caltech.

Also, one of the biggest worries about the Polytechnique exchange program is the French level required. ***I really want to stress that it isn't an issue and shouldn't impede you from trying for this fantastic opportunity. If you can communicate to some extent in French and are willing and excited to learn more, you are perfectly suited for the exchange.*** Since 1995, Polytechnique has been welcoming more foreign students and as such a lot of the infrastructure has been adapted to novice French speakers. In two of my classes, there are 2 or 3 foreign students who came here without knowing any French at all. Of course, you will get a lot more out of the program if you have already taken a few years of French, but it goes to show that there's nothing to be afraid of.

The Ecole Polytechnique exchange program also has plenty of cultural and traveling benefits (you'll be in Europe and right next to Paris!), but I'm sure it has been covered in the comments of my other two exchange-mates. All in all, I highly recommend the Polytechnique exchange, especially if you are interested in France and French culture!

### **Margaux Lopez '15 – Mechanical Engineering Caltech, Mécanique Ecole Polytechnique**

Paris is an incredible city, but I've been able to explore it so much more deeply by actually living here. I've picnicked on the banks of the Seine, corroborated the fact that Berthillon's is indeed the best ice cream in Paris, gone bouldering in Fontainebleau (the biggest bouldering site in the world!), and made friends that I look forward to coming back and visiting.

At first it was a bit overwhelming to speak almost exclusively in French, but I have greatly improved just in the first month of being immersed in the culture and I am now completely confident in my abilities to navigate my way through the system. Talking to fellow students in French was the most intimidating part because when everyone is talking at once it can be really hard to follow the conversation, but everyone was really patient at the beginning and now I'm perfectly comfortable conversing with them smoothly as well. It's hard to really become fluent in another language without living it, and studying at Ecole Polytechnique is an incredible opportunity to really immerse myself in French culture.

The student life is quite vibrant because the school is somewhat geographically isolated; I have to take the train for about thirty minutes to get to Paris. There are parties or activities almost every evening, and students cook dinner together in kitchens that are located in the dorms. Students live according to what sport they practice, so as a member of the rock climbing section I eat lunch and dinner every day with the other climbers in the climbing kitchen. Since students are sorted into sections by sport (similar to the house system at Caltech), it is really important to choose a sport in the beginning and get to know students in that section. I felt really welcomed by the French students in the climbing section and I love getting to improve my climbing skills every week.

Academics are about the same level as Caltech except with less work. Since none of the classes have required homework, the final grade is based on one exam or project at the end of the semester. At first I was very intimidated, but the teaching style is quite different here and the professors do their best to communicate well with the students and answer any questions we may have. Recitation sections, led by another professor, give students a chance to do practice problems and apply the concepts learned in lecture. It's interesting to compare the two teaching styles and I really appreciate the effort put in by the professors here to teach well.

French bureaucracy can be a pain to handle, but it's definitely worth it in the end. There are always difficulties in adjusting to a new place but the experience in navigating this different culture and making new friends will definitely help me adjust more smoothly to a new work environment after I graduate. Learning to be independent is incredible important and what better place to do that than Paris!

### **Yubo Su '16, Physics/Computer Science Caltech, Physics Ecole Polytechnique**

*La Ville Lumière*, City of Lights. So Paris is often called, and so much as a brief walk along the Seine during the heart of the night testifies to Paris's deep synonymy with a grandiose romanticism. As the river dances in the warm dusk cast by the elaborate streetlights, as castles and palaces stand guard over the delicate streets, as far in the distance a particular tower saturated with flickering lights stamps on the scene in big twirling letters "Paris," one wanders about the roads, infatuated with the seemingly ephemeral beauty of the archaic landscape. In this first half of my stay at Ecole Polytechnique (also called "X"), I've had the opportunity to visit many other cities, but none have struck me the same way as did my first evening in the capitol of France.

X finds itself a single forty-minute metro ride away from the heart of Paris, in a town built around the hallowed institution. If not yet clear, X sits atop a brutal meritocracy, and their classes present a correspondingly difficult challenge. I came to X to take math and physics classes, the two fields on which the two years of

French prep school between high school and admission to X focus the vast majority of their attention. So while many of my friends who are also abroad, both from Caltech and other schools, are able to travel wanton about Europe, I come home from each vacation to a sobering reminder of what work awaits me.

However, X is made significantly more manageable by its educational system. First, it replaces homework with mandatory, guided practice sessions, *petites classes*, where the professor leads the students through a tailored set of problems to reinforce the lecture earlier in the day. Second, while one might expect only a lecture or two (out of four) to be in English, many of the *petites classes* are held in English to cater to the copious numbers of foreign graduate students. Third, the numerous students to whom I've posed questions have been gracious almost to a fault in their explanations.

I would be remiss to discuss my time at X without mention of the innumerable nuisances. Whether the bank account I finally set up halfway through my stay, or the unbelievable difficulty I have in paying for things with an American Visa card (I've been told Mastercard works fine), or the unworldly number of often redundant certifications required by the various departments, to name but a few grievances, France has certainly been no smooth ride. However, one learns to adjust, both by the hearty friendliness of the students here and by simple practice.

Most rewarding for me personally has been the chance to experience firsthand the culture about which I'd learned for eight years, to learn the language that for so long was just an agglomeration of vocabulary in my head. And even amidst the somewhat taxing travelling schedule I've set for myself, my heart remains somewhere in Palaiseau, where from a dorm room, on the campus of one of the finest schools in the ever so quaint world of France, every magical day starts.