

# Erasmus Exchange TU München, Germany

Summer semester 2016

I went to the Technische Universität München (TUM) in Germany during the summer semester of 2016, and it was an experience I will never forget. I will try to explain in a few words why, and how this semester played out for me.

## München

As the third biggest city of Germany, hosting the two best universities of the country (TUM and LMU), you won't miss out on the fun. The place is brimming with students, making it very enjoyable to live in. With its enormous park, the *Englischer Garten* (surpassing New York's Central Park in size), surrounded by lakes and mountains, the city is ideally located for relaxing afternoons of swimming and chilling, or for hiking trips in the German Alps.

The local population is also great to hang out with. Proud of their origins, your love of beer (albeit German) will be satisfied. Having eaten way too much sausages and other kinds of meat, I must admit the cliché of German cuisine proved to be a reality. As the hometown of the *Bayern München* football club, I soon found out that its citizens love the sport, wholeheartedly supporting their team, as well as *die Deutsche Mannschaft*, the national team. I had the pleasure of witnessing the full extent of their cheering during the Euro Cup, as the city organised public viewings for the German games.

## Housing

Even though the cost of living in München is pretty much the same as in Belgium, housing proved to be a (painful) exception. Finding an accommodation was quite difficult, especially from abroad. The prices also were way above what we are used to in Brussels. I would recommend making a trip (well) in advance, just to search for a room. Good places to start looking for online are the Facebook groups, as well as [www.wg-gesucht.de](http://www.wg-gesucht.de). You can also apply for a room in Student Dorms (a nice place to live in), which is one of the most affordable options, but the application must be sent months in advance, and the chances of getting accepted are slim, as more than 20% of the students at TUM are international.

## Technische Universität München

As the best university in Germany, and one of the leading technical universities in Europe, TUM offers an exceptional quality of education. The courses I followed over there were all very interesting, all taught by professors with impressive background and knowledge. The first week I went to a massive amount of classes to pick what I liked best, as the course catalogue varies greatly with the years,

making it difficult to compose a selection in advance. This results in 98%(!) of the exchange students modifying their initial course planning.

The facilities also are top notch, with teaching rooms full of modern equipment, study rooms, university restaurants and cafeterias, cheap printing (Computer Scientists got 500 free printing pages as a welcome gift), libraries... as well as an intuitive and organised campus.

## Campuses

Although the university boasts many campuses, two of them need to be mentioned. If you study Architecture, Electrical Engineering, Geography or Management, then you are in luck, as those departments are situated on the Main Campus in the center of the city. Most of the other departments (Chemistry, Physics, Computer Science, Mechanical Engineering, Mathematics) are located in Garching, north of München. This is actually the largest campus of TUM, and they are continuously expanding it. Studying there means you will spend a lot of time in the public transports, except if you rent a room in Garching. However, I do not recommend this option. Even though it is cheaper, living there means being far away from the activities and night life of the city.

## Courses

### Machine Learning for Applications in Computer Vision

10 ECTS

TUM offers some special practical courses, where the student is supposed to apply his theoretical knowledge to practical applications, following a specific theme. Machine Learning for Applications in Computer Vision was one of them, it involved a group project, each group being supervised by a PhD student.

For our project, we were provided with MRI scans of patients with multiple sclerosis and we used Machine Learning to automatically find sick brain cells, and this over the widest range of patients possible. Other group's projects involved using a camera to detect distracted car drivers using deep neural networks (the members participated in an international competition), or combining Gaussian Classifiers and Random Forests to segment images, allowing to detect which part of an image is a tree, a road, a car...

The final results of the course were entirely based on the project and the presentation at the end of the semester.

### Computer Vision 2 – Multiple View Geometry

8 ECTS

This course introduces the mathematical knowledge and algorithms necessary to reconstruct a three-dimensional world and camera motion from multiple images. This is useful in for example autonomous driving, where cars equipped with a camera would be able to situate themselves in a 3D environment.

The student was graded with a written exam at the end of the semester.

## Cyber-physical Systems

6 ECTS

The goal of this course was to teach us how to design, analyse and control cyber-physical systems. The systems are called that way as they are a combination of physical entities (mechanical parts) and software. Not only did we learn how to work with discrete systems (Finite State Automata, Petri Nets, Statecharts), control them and verify their correctness, as well as continuous systems (SISO and MIMO systems) ; we also learned how to handle models depending on both discrete and continuous dynamics (so-called hybrid systems).

An oral exam at the end of the semester determined our final grade.

## Semesters

Instead of counting their study progress in years, as we are used to in Belgium, Germans count in Semesters. It is thus entirely possible (and happens quite frequently) to start a Master in the Summer Semester, instead of the start of a new year. Those semesters are also completely shifted compared to ours. The Winter Semester starts in October and ends in March, while the Summer Semester (which I attended) starts in April and ends at the end of September. My exams started in the second half of July, and ended during the first week of August. Resits happen at the end of September.

## International Office

TUM's international office is active and helpful. They organise tons of activities, especially the first weeks, in order for exchange students to get better acquainted. I recommend heavily participating in those gatherings the first weeks, in order to get to know as many people as possible, and thus start an intense (but so satisfying) exchange.

City trips are also in order, with the possibility of going to Berlin, Köln, Prague, Budapest and more.

All in all, if you want an exchange filled with interesting courses and one of the best educations Europe has to offer but if you also want to live Erasmus the fullest, living in a city with a great lifestyle, open-minded people and possibilities of voyaging to the centre of Europe, I can but recommend München.

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