



EXCHANGE REPORT

Name

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Year and semester for
exchange

Autum 2024

Exchange university

Politecnico di Milano

Degree programme

Engineering Physics

A vibrant city and university with great culture, food and plenty of students to socialise with — highly recommend!

Before departure

Wanting to escape the Swedish weather and experience a new culture, I was initially drawn to Southern Europe, South America, and Asia. Since I wanted to study in a larger city with strong theoretical physics courses taught in English, my search narrowed down to Lisbon and Milan. I ultimately chose Milan because a friend recommended it, and the university offered a wider range of courses different from those at KTH.

Having visited Italy before but never Milan, I had a general idea of the culture but spoke little to no Italian. I didn't make any special preparations, but I missed the chance to apply for my Codice Fiscale (Italian tax code) ahead of time through the Italian embassy in Sweden. This code is required for things like rental contracts, health documents, travel cards, and banking. Sorting this out upon arrival at the Italian tax agency was time-consuming, so I'd highly recommend handling it in advance.

Upon arrival

I arrived about one week before the introduction week and two weeks before classes started. Since the introduction week happens the week before the semester starts, arriving that early wasn't necessary — but it gave me time to settle in and explore the city.

Politecnico di Milano provided useful introduction materials and campus tours. The Erasmus Milano network organized social events throughout the introduction week — easy to follow on their website and Instagram. I'd highly recommend attending these events as they're a great way to meet other exchange students and make new friends.

Financials

I did not apply or receive any scholarships from KTH during my exchange. I felt that CSN plus Erasmus funding was enough for my main expenses during my stay. Food, drinks and activities were cheaper than in Stockholm. However, I recommend additional funding or personal savings for accommodation if you want to live centrally as this was quite expensive. There were no additional student fees and the university and Erasmus offered some good student discounts. I also recommend getting your ATM student travel card as early as possible.

Accommodation

I found my accommodation through a website called Spotahome which worked well. Since all my lectures were at the Leonardo campus, I rented a single room with a balcony in a shared flat near Piola

— only a 3-minute walk from campus, which was very convenient. Due to the central location, high Milan rents, and booking relatively late, I paid €980 per month. The university offers some housing options, but availability is limited. If you organize with other exchange students in advance, you might be able to find cheaper shared accommodation.

University and studies

Politecnico di Milano is a large university with over 48,000 students across multiple campuses, mainly focused on design, architecture, and engineering. The university offers a solid range of engineering physics courses and a decent selection of theoretical physics courses in English. I found they had more lecture hours but at a similar difficulty compared to KTH at the master's level. Some courses had lacking lecture notes, so attendance was not mandatory but highly recommended.

Exams happen after a full semester rather than being split into two periods like at KTH, with fewer continuous assignments or coursework during the term. However, Politecnico allows multiple exam sessions for most courses — if you fail or aren't happy with your grade, you can try again. Also note some classes fill up quickly, so register as early as possible to secure a spot.

Courses

I chose to take three physics courses worth 20 credits, one machine learning course worth 5 credits, and one philosophy course worth 5 credits, which I chose not to complete, for a good balance between transferring credits and maintaining a manageable workload while exploring different subject areas.

097609 – 10 ECTS – Plasma Physics I + II

This course covered the fundamentals of high-temperature plasmas, including electromagnetism, particle orbit theory, and wave propagation. It also introduced magnetically confined plasmas, relativistic plasmas, laser-plasma interactions, and controlled thermonuclear fusion. Having not studied plasma before, this course provided an enjoyable introduction, strong mathematical foundations, as well as interesting and advanced material. Examination was through an oral exam focusing on mathematical and physical understanding. *Potential transfer courses:* EF2200, EF2215

059497 – 5 ECTS – Magnetism and Superconductivity

This course explored magnetism and superconductivity, focusing on electron interactions and macroscopic behavior. Topics included magnetic order, Bose-Einstein condensation, superconductivity, superfluidity, and experimental techniques like scattering and magnetic resonance. I appreciated the balance between theory and experimental methods. Examination was an oral exam focusing on both theory and experimental understanding. *Potential transfer course:* SK2908

058171 – 5 ECTS – Quantum Circuits and Devices

The course introduced qubits, quantum gates, and entanglement. It covered superconducting qubits, quantum dots, and error correction. Practical work involved designing and simulating quantum circuits using IBM's Qiskit Metal. The first part was mostly a review of quantum mechanics, but the latter part on physical implementation was very engaging. The course included optional homework and labs for deeper understanding. Examination was an oral exam focused on theoretical and technological understanding. *Potential transfer course:* SK2906

054307 – 5 ECTS – Artificial Neural Networks and Deep Learning

This course introduced neural networks and deep learning models like CNNs and LSTMs. It focused on practical applications in language processing and image recognition, combining theory with coding exercises. Examination included two coding assignments (team-based) and a short online theory quiz. The assignments were demanding but rewarding. *Potential transfer course:* DD2437

City and country

Milan is a vibrant and diverse city with a rich history, world-class food, and a lively student atmosphere. I didn't experience much culture shock since I had visited Italy before, but adjusting to the Italian way of life — like late dinners and more relaxed scheduling — took a little time getting used to but ultimately enjoyable. The people were generally friendly and helpful, even though I spoke little Italian. Learning a few basic Italian phrases early on definitely helped in day-to-day interactions.

Leisure and social activities

Milan offers plenty to do in your free time. I attended many Erasmus events in the beginning, which made it easy to meet other exchange students. The city has an amazing café and bar culture, and exploring the local food scene was a highlight. The university also had some sports clubs and student events, but I found my social life mainly revolved around the Erasmus network. Traveling around Italy was easy and affordable, and I took advantage of weekends to visit nearby cities like Florence, Venice, and Lake Como.

Sustainability

Public transport was affordable and reliable in Milano — I mainly used the metro, buses and trams. The city encourages recycling, and the university had sustainability initiatives like reusable bottles and student discounts on bike rentals. Also, many second-hand stores and markets made it easy to shop sustainably.

Other recommendations and observations

- **Codice Fiscale** – As mentioned earlier, apply for your Codice Fiscale before arriving to avoid the hassle of dealing with Italian bureaucracy.
- **Accommodation** – Start looking for housing early — Milan rents are high, and student accommodation fills up fast.
- **Food Tips** – Try the aperitivo culture — paying for one drink usually includes free snacks or even a small meal.
- **Student Card** – The ATM travel card for students gives great discounts on public transport.
- **Flights** – Although Ryanair offers cheap flights, I found that SAS Youth (for people under 26) often has even cheaper and more convenient options since they fly to Linate instead of Bergamo or Malpensa, which are further from the city center.
- **Italian Administration** – Although some services are digitized, don't expect fast responses to emails or online requests. Things tend to move slowly, so if you need something done quickly, it's best to go in person.
- **Office Hours** – Professors are approachable, but they're not always quick to respond to emails. It's often easier to show up during office hours or ask directly after a lecture to get answers or schedule a meeting.