

Exchange at Nanyang Technological University

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1 Introduction

In this document, I would like to summarize the experience from my yearlong exchange at the Nanyang Technological University. An overview of NTU, the courses that I've taken and the main differences between the CTU and NTU academic systems are presented. Moreover, the concept of cocurricular activities is introduced.

2 NTU

The Nanyang Technological University (NTU) is one of the top public Singapore universities. It is located in Jurong West, the far west of Singapore, about an hour away from downtown (as a joke, it is often said it is located in Malaysia). It has a large closed campus with all amenities including multiple shops, a plethora of canteens and eateries, and 24 halls (dormitories). The campus seems like it is in nature as lush greeneries and open spaces are everywhere. There are 3 free shuttle services riding around the campus and 2 public bus services.

3 Living in Singapore

3.1 Language

English. Everyone speaks it, in addition to their native language. Of course, many people speak with an accent or even in singlish¹, so I've heard myself saying "pardon" and "can you repeat that" quite a few times when I first arrived. Fortunately, you'll get used to it quite quickly, and it's definitely very easy to communicate in Singapore.

3.2 Housing

On campus housing is not guaranteed for exchange students. Applications are submitted through the exchange portal, to which one gets access quite early, around June. Halls are allocated through a "random" ballot, and the results are announced only a few weeks before the start of the semester. They are the cheapest option though, as halls cost around SGD 300/month.

For off campus housing, there are a few options:

1. Student hostel

Student hostels are like campus housing. They are long term rental hostels and offer single and shared rooms. E.g. Yo:Ha, if you rent for a whole year it starts at 500SGD/month.

2. HDBs²

The most convenient locations can be typically found with HDBs. Do consider that legally, they can only be rented out for a year. Together with condos, these are a great choice if you can find a few friends to stay with. Expect prices from SGD 500 to SGD 1000+/month depending on location, state of the apartment and your negotiation skills.

3. Condominiums

¹ Singlish is the Singaporean english and contains words from Malay, Hokkien, Teochew, Cantonese, Tamil. The government has been discouraging its use.

² HDB: House development board; HDB is the colloquial term for public housing.

Condominiums (or condos) are premium housing. They are more expensive than HDBs, but are fancier, and come with extra amenities such as gyms and swimming pools. Expect prices from SGD 800 to SGD1500+/month.

Note: All housing prices are per person, and assume sharing with others.

3.3 Food

Most food items in the supermarket are roughly twice or three times the price in a Czech supermarket, e.g. 5 apples or 1 baguette for SGD 3. Luxury items such as cheese are very expensive, for example 150g of President Brie is SGD 12.

Most Singaporeans don't cook at home but eat outside. Thanks to this there are eateries everywhere, including malls at almost every MRT stop, and you can get normal meals between SGD 3 and SGD 12. This means that at the time of writing, eating outside can be cheaper than in Czechia. Meals in restaurants start around SGD 8.

3.3.1 Alcohol

Alcohol is very expensive in Singapore, mainly due to a very high tax. For example, you can expect to pay SGD 6+ for a can of beer in a supermarket and of course even more in a restaurant.

3.4 Transportation

1. Public Transport is almost everywhere, the cost is calculated based on distance travelled. The prices start at SGD 0.77 and are capped at SGD 3. Even though there are two main transportation providers - SBS and SMRT, all payment is united and all you need is a single EZ link card with which you tap in and out of public transport. When you arrive in Singapore, I'd highly recommend you get an EZ Link card at the MRT Station at Changi Airport. Buying tickets separately is roughly twice as expensive as using the EZ Link card, and you will almost never get change.
2. Taxis, Uber, Grab are getting very popular. Depending on the service expect prices from SGD 8 to SGD 25+
3. Bike sharing is just getting started with 3 main competitors OFO, Obike and MObike. OFO and Obike offer free rides for now, but that might possible change
4. Campus shuttles, NTU has 3 free campus shuttles which ride around the campus quite frequently (10 - 15 minutes). There are also several free shuttles to various parts of Singapore with much wider timing.

3.5 Healthcare

Healthcare in Singapore is extremely expensive, fortunately as a student you are covered under NTU Group Hospitalization scheme and your care is almost free (SGD 3 for every doctor visit + medicine cost).

3.6 Mobile

There are 4 main telecom operators: Singtel, Starhub, M1 and newly Circles Life. Depending on your phone and data usage expect to pay SGD 10 - 30/month.

4 Academics

4.1 Exams

There are a few differences between the examination system at CTU and NTU:

1. Each course has exactly 1 exam. It's timing is already predetermined when choosing a course. Missing an exam for a valid reason means that the exam may be retaken next year, but cannot be retaken in the same semester (Because there is only one term). Not writing the exam results in an F in the course.
2. The only identification of the student on the exam paper is their matriculation number. Thus, in theory the person marking the paper doesn't know who wrote it.
3. Students typically don't get to see their papers, or the grade of the paper itself (i.e. how correct it is). The final grade is calculated by fitting the grades of all students onto a normal distribution and adjusting them. This means that there is virtually no transparency from the students' side, unless the professors release the grades. Some professors do release correct answers to the exam papers though. To me this was a rather inconvenient point because I couldn't gauge how much I learned in the class.
4. Exam results are released about a month after the exams, all together in one day, and it takes another month for the transcript to be sent to the home university.

4.2 Bachelor vs Master courses

To be eligible to take graduate courses at NTU, one must provide either their graduation certificate or proof that they have finished studying 7 semesters at their home university. Since the applications typically filled in the beginning of the preceding summer semester, I had to apply for undergraduate exchange even though I graduated a few months later. I have taken one mixed course bachelor and master course - CE4053/ES6153 Embedded Operating Systems, and the main difference was only in the projects and quizzes/exam. The master's students had to use more complex data structures to develop their projects.

5 Cocurricular Activities

Like many "western style" universities, NTU and all other Singapore universities have a plethora of co-curricular activities, colloquially called CCAs. Simply put, they are clubs with funding from the university. There is most probably a CCA for just about anyone, as they range from performing clubs like orchestra, and dance through martial arts like karate all the way to cultural and welfare clubs, such as the Chinese society and red cross.

Every CCA holds a variety of events, such as concerts, various talks and presentations, competitions, or fundraisers. Some CCAs are very large and have outreach outside the school, even outside the country. I really like that thanks to the funding, most CCAs have a few events with catering such as the welcome tea³

Usually the commitment to a CCA is around 1-2 hours every week, but can be less or more such as Symphonic Band which met for a total of 9 hours every week. Fulltime students typically join a few clubs in the first year. In the following years, they typically stay in one or two CCAs and

³ Welcome tea: typically, the first meeting of the club where everyone can mingle and see the specifics of the CCA

aim for leadership positions. Unfortunately, most of the exchange students I've talked to don't join CCAs. Although maybe it's because their home universities have CCAs.

As a member of String Orchestra, Symphonic Band, Cat Management Network, Japanese Appreciation Society, and Research Society and I can suggest joining a CCA if you go to a university which has them. I've helped organize and participated in some amazing events such as String Orchestra's Stringendo concert and I've met lots of great people with similar interests.

Note: Since hall availability is limited, fulltime students who want to live in halls must get "hall points". These can be gained only by participating in CCAs. The more "hall points" students have, the higher the chance that they will be allocated a hall.

6 Employment Opportunities

Just like faculties at CTU, NTU offers a career fair every semester. NTU also has an office dedicated to helping students with their employment applications - CAO, where they can get help perfecting the resumes or even take mock interviews. This office also organizes quite a few events throughout the entire year. As a cherry on top, many companies, including Google and Microsoft, come to give employment talks directly on campus.

On a side note, a graduation requirement for NTU, and many other Singaporean universities, is having an internship for one whole semester⁴. Unfortunately, this leads to a huge demand for internship positions and thus most internships are very low paying.

7 Travel Opportunities

Singapore is very conveniently located in a very strategic position for travelling around South Asia. If bought in advance, flights can be bought very cheaply e.g. (round trips) I travelled to Taiwan for SGD 160, and to Thailand (Phuket) for SGD 120. There are quite a few public holidays and a weeklong recess week, so I would highly recommend to travel!

8 Photos

<https://photos.app.goo.gl/2UYTgWjwAR7vLWZ22>

9 Thanks

I would like to thank all the members of FEL and the rectorate of CTU who enabled me to experience such a fruitful cultural and academic exchange. To those wondering whether to apply for an exchange program (in general) I can only recommend it.

⁴ The students can't take any other courses during that semester and of course have to pay all university fees

Appendices

A Course Summaries

A.1 Semester 1

1. CE3002 Sensors, Interfacing and Control

This was an interesting course which focuses on the whole chain in using sensors, i.e. from details about sensors, their connection and amplification all the way to processing on a computer. The lectures were worthwhile and the professors gave numerous insights into the industry. The labs were very easy as the whole theoretical part was given to us and we only had to wire up the components and update a MATLAB script.

2. CE4023 Advanced Computer Networks

This course was, in my opinion, hard to follow and not very interesting as it covered mainly old and/or not relevant technologies.

3. CE4052 Embedded Software Development

CE4052 was a well-paced course giving a broad overview of the planning and development phase of the software lifecycle. The most interesting topics were the finite state machine, function programming, UML, multithreading/multiprocessing and networking with sockets, which both discussed and implemented in labs. Even with such a broad scope, most of the work was done within the 2-hour lab. Crosscompilation, remote debugging with gdb and other related concepts were also discussed.

4. CE4062 Computer Security

CE4062 was an interesting course giving an overview of the problematics of security, including confidentiality, integrity and availability. Only about a third of the course was dedicated to various exploits such as buffer overflow.

5. CE8003 Human Resource Management and Entrepreneurship

CE8003 gave a broad, introduction to management and entrepreneurship. Unfortunately, there was no hands-on experience with the human resources. To me this was a very beneficial course pointing out the things to do and think about, but when I discussed it with colleagues from other faculties, they said it was obvious. I.e. if you think you understand how to communicate with people, this course is most probably not for you. The course project is writing a business plan in a team of 3-6 people.

6. LC9001 Chinese Language Level 1

An introductory course to Chinese. It is much faster paced than the language courses at CTU, but you will not be fluent, or have much of a conversation after the semester (or even the second LC9002). It is however a great introduction if you want to continue learning in the future.

A.2 Semester 2

1. CE4013 Distributed Systems

This was my favorite course during the whole study. The lectures were well paced and the tutorials were led as discussions about the topic. The final project was building a distributed system (Server/Client) based on UDP. Only about 20 people took the course and only about 3 people attended lectures, which is quite sad considering the lectures were delivered superbly.

2. CE4053 Embedded Operating Systems

CE4053 gave an overview of programming embedded systems and then went in depth about real time operating systems. Most of the lectures focused on scheduling, while the labs/course project focused on adding functionality to the RTOS. Compared to other courses, the workload in this one was quite high and required good understanding of C pointers (or learning them in the process).

3. EE4478 Digital Video Processing

The focus of this course was on the inner workings of JPEG and MPEG. To me it was not very interesting.

4. LC9002 Chinese Language Level 2 Continuation of LC9001.

5. AAI138K Band II (Taken unofficially)

NTU offers many "art" courses, including band. The instruments are provided and there are 4 hour rehearsals every Friday evening. If you want to play a wide variety of genres, I'd highly recommend this course, or joining a CCA (see Section 5 - Cocurricular activities).