



**NANYANG
TECHNOLOGICAL
UNIVERSITY**
SINGAPORE

SCSE – Part Time Freshmen Orientation AY 22/23

Dr. Loke Yuan Ren
School of Computer Science and Engineering

5 August 2022



Warm Welcome to SCSE!

(School of Computer Science and Engineering)



Faculty in SCSE to help you

Mentors



Assoc Prof Chan Syin

Associate Professor

Email: asschan@ntu.edu.sg

Phone: +65 67905748

Office: N4 02B 59



Assoc Prof Lau Chiew Tong

Associate Professor

Email: asctlau@ntu.edu.sg

Phone: +65 67905047

Office: N4 02B 58

Programme Coordinator



Dr Loke Yuan Ren

Lecturer

Email: yrloke@ntu.edu.sg

Phone: +65 65138040

Office: N4 02B 69A

FYP Coordinator



Dr Owen Noel Newton Fernando

Senior Lecturer

Email: ofernando@ntu.edu.sg

Phone: +65 69083322

Office: N4 02C 80



Contact Information

- SCSE-Part Time Programme
 - scse-pt@ntu.edu.sg
 - Please always provide your **matriculation number via NTU email account**
- SCSE Student Care
 - scse-sc@ntu.edu.sg
- IT and Finance Issues
Raise ticket via ServiceNow:
<https://ntuadminonestop.service-now.com/ntusp>



Outlines

- ❑ Background of NTU and SCSE
- ❑ Part Time Computer Science Program
 - Introduction of the curriculum
 - Relevant contacts
- ❑ How to reach SCSE and classrooms



Nanyang Technological University

- The Times Higher Education The World University Rankings: 46
- QS World University Rankings: 19

=40	Paris Sciences et Lettres – PSL Research University Paris 📍 France	20,547
=42	Heidelberg University 📍 Germany	19,530
=42	KU Leuven 📍 Belgium Explore	46,327
44	McGill University 📍 Canada	31,581
45	Georgia Institute of Technology 📍 United States	27,838
46	Nanyang Technological University, Singapore 📍 Singapore	23,951
47	University of Texas at Austin 📍 United States	49,845
48	University of Illinois at Urbana-Champaign 📍 United States	47,202
49	Chinese University of Hong Kong 📍 Hong Kong Explore	18,478

=16	EPFL 📍 Lausanne, Switzerland	89.2
=16	Princeton University 📍 Princeton, United States	89.2
18	Yale University 📍 New Haven, United States	89
19	Nanyang Technological University, Singapore 📍 Singapore, Singapore	88.4
20	Cornell University 📍 Ithaca, United States	87.2





- Best Global Universities for Computer Science (US. News and World Report): 4th
- Academic Ranking of World Universities: Computer Science & Engineering: 8th
- QS World University Rankings: Computer Science & Information Systems: 11th



	Nanyang Technological University Singapore Singapore #4 in Best Universities for Computer Science #33 in Best Global Universities (Uo) READ MORE	SUBJECT SCORE 91.6 GLOBAL SCORE 78.3 ENROLLMENT 23,951
	Carnegie Mellon University United States Pittsburgh #5 in Best Universities for Computer Science #102 in Best Global Universities READ MORE	SUBJECT SCORE 91.4 GLOBAL SCORE 70.6 ENROLLMENT N/A
	National University of Singapore Singapore Singapore #6 in Best Universities for Computer Science (Uo) #29 in Best Global Universities READ MORE	SUBJECT SCORE 91.0 GLOBAL SCORE 79.1 ENROLLMENT 31,819

1	Massachusetts Institute of Technology (MIT)	US	354.5
2	Stanford University	US	320.6
3	University of California, Berkeley	US	296.6
4	Carnegie Mellon University	US	279.8
5	Tsinghua University	CN	269.1
6	Harvard University	US	253.3
7	ETH Zurich	CH	248.0
8	Nanyang Technological University	SG	245.3
9	University of Oxford	UK	237.9
10	Princeton University	US	237.0
Rank	University	Overall Score	
11	Nanyang Technological University, Singapore	85	
12	University of Toronto	84.7	
13	Princeton University	83.7	
14	Cornell University	82.5	
15	Tsinghua University	82.4	
16	University of Washington	82.3	



DEGREE & ACCREDITATION

Bachelor of Engineering (Computer Science)

The Washington Accord: An international agreement among twenty signatories responsible for accrediting Engineering Degree Programmes.



Engineering Accreditation Board (EAB), Singapore:

- administered by IES
- provide a mechanism for mutual recognition
- granted accreditation to our degree



ENGINEERS
AUSTRALIA



Bachelor of Engineering (Computer Science)

- For a **professional career** in computing, information processing, digital media, intelligent systems, etc.
 - **Broad-based education:** a **solid foundation** to meet the future challenges brought on by the rapid pace of technological changes, and **prepare you for a life-time of learning** and **upgrading of skills**.
 - **Specialization tracks** include one or more of the following:
 1. **Artificial Intelligence:** *machine learning, intelligent agents, computer vision*
 2. **Security:** *applied cryptography, software/application/network security*
 3. **Data Science:** *data analytics & mining, information retrieval, big data management*



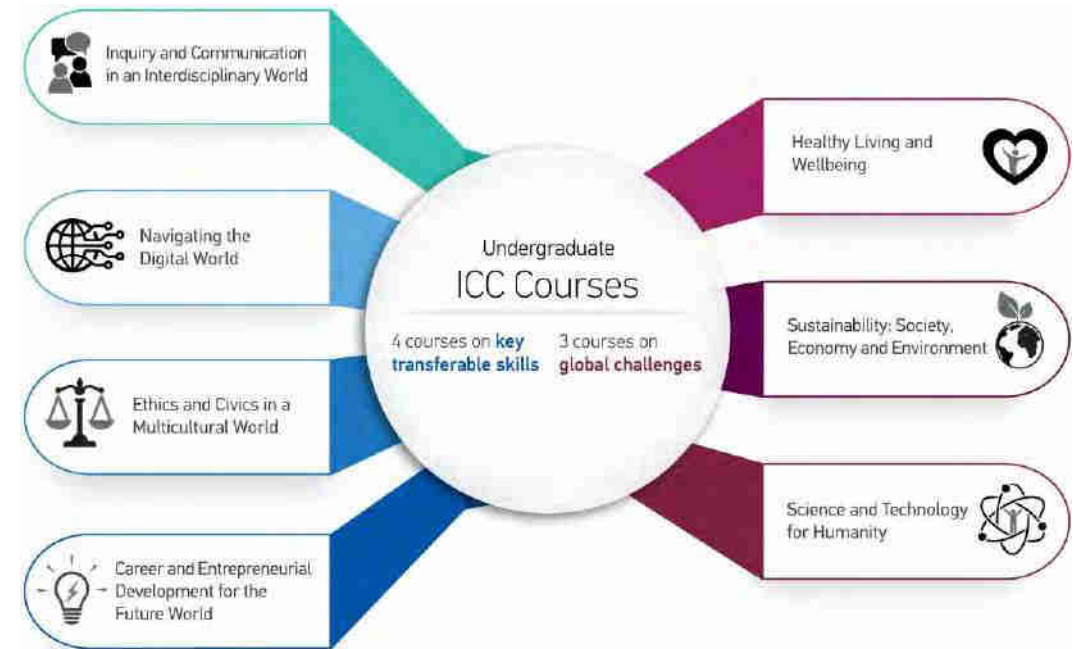
Bachelor of Engineering (Computer Science)

- Engineering Degree
 - Design & analysis
 - Theory & math are necessary tools for engineer
 - Learning how to learn
- Part-time Programme exempted
 - SC3079 Professional Internship (10AUs)
 - SC1013 Physics for computing (2AUs)
 - ML0004 Career & Entrepreneurial Development for the Future World (2AUs)
 - No further exemption for any other background students
- Same exam papers and assessments
 - You are expected at the same standard as the Full-time students



Courses

- **Core** Courses - Compulsory courses to satisfy programme requirements.
- **M**ajor **P**rescribed **E**lectives - for specialization in a specific area
- **I**nterdisciplinary **C**ollaborative **C**ore
 - **Common Core**: holistic education for the rapidly changing nature of work
 - **Foundational Core**:
 - Data Science & AI
 - Effective Communication



Curriculum for AY22/23 4-year SCSE Part-time B.Eng Programme

SUMMARY OF ACADEMIC UNIT REQUIREMENT						
Year	Core	MPE	ICC courses		BDE	Total AU
			C-Core	F-Core		
1	18	0	6	3	0	27
2	25	0	3	0	0	28
3	9	12	6	2	0	29
4	4	12	0	0	0	16
Total	56	24	15	5	0	100

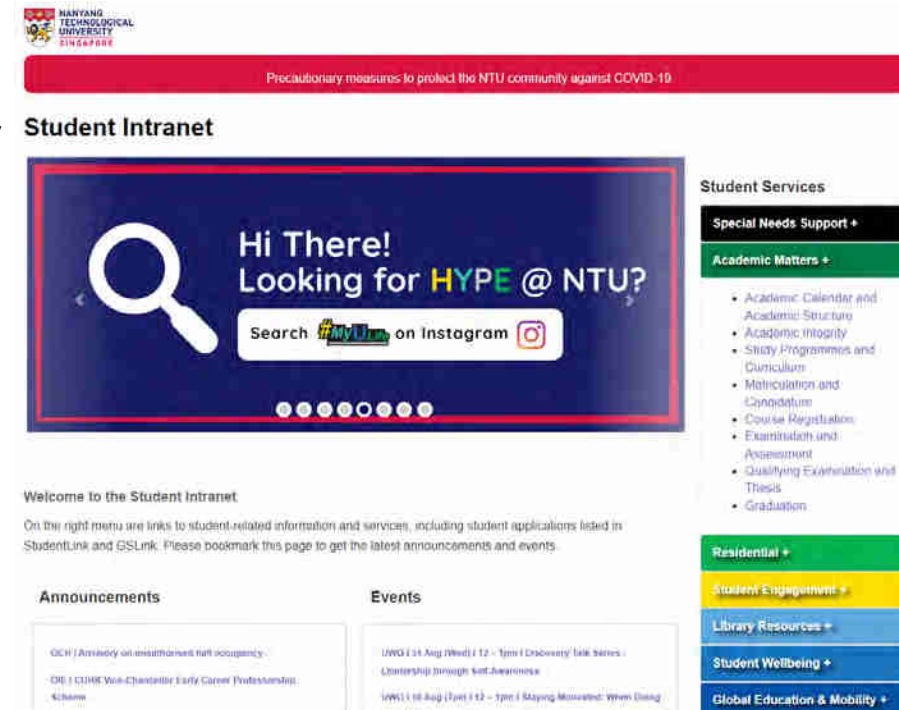


Course Registration

- <https://ts.ntu.edu.sg/sites/intranet/student/Pages/student.aspx>
- For first semester – SCSE will do it for you, and you have **1 week** for add/drop

5 August 2022 – Friday, 12 August 2022*

- Remember to register on your own (from Sem 2 onwards) – else you will take any courses for that semester
- Remember to check the exam dates – block your calendar with your company!



YEAR 1 SEMESTER 1

Code	Title	Type	AU	Pre-Requisite
MH1810	Mathematics I	C	3	Nil
SC1003	Introduction to Computational Thinking & Programming	C	3	Nil
SC1005	Digital Logic	C	3	Nil
HW0001	Introduction to Academic Communication	-	0	For student who failed QET
		Total	9	

HW0001 is for students who failed the Qualifying English Test (QET)



Timetable of Year 1 Semester 1

https://wish.wis.ntu.edu.sg/webexe/owa/aus_schedule.main

MH1810 MATHEMATICS 1 3.0 AU

INDEX	TYPE	GROUP	DAY	TIME	VENUE	REMARK
14503	TUT	PT1	WED	1830-2020	LT18	Teaching Wk2-13

SC1003 INTRODUCTION TO COMPUTATIONAL THINKING & PROGRAMMING~ 3.0 AU

INDEX	TYPE	GROUP	DAY	TIME	VENUE	REMARK
14501	LEC/STUDIO	PT1	THU	1830-1920	SWLAB1	
	TUT	PT1	THU	1930-2020	SWLAB1	Teaching Wk2-13
	LAB	PT1	THU	2030-2120	SWLAB1	

- SWLAB1 – N4-01a-02
- HWLAB3 – N4-B1a-05
- TR+33 – NS4-05-26

SC1005 DIGITAL LOGIC~ 3.0 AU

INDEX	TYPE	GROUP	DAY	TIME	VENUE	REMARK
14502	LEC/STUDIO	PT1	TUE	2030-2120	LT11	
	TUT	PT1	TUE	1830-2020	LT11	Teaching Wk2,4,6,8,10,12
	LAB	PT1	TUE	1830-2020	HWLAB3	Teaching Wk1,3,5,7,9,11,13

HW0001 INTRODUCTION TO ACADEMIC COMMUNICATION .0 AU

Remark: for students who fail QET

INDEX	TYPE	GROUP	DAY	TIME	VENUE	REMARK
14517	TUT	PT1	MON	1900-2050	TR+33	Teaching Wk3-13



NTU campus map: <http://maps.ntu.edu.sg/maps>



Course Coordinators

- **SC1003 Introduction to Computational Thinking & Programming**

Associate Prof. Hui Siu Cheung

asschui@ntu.edu.sg



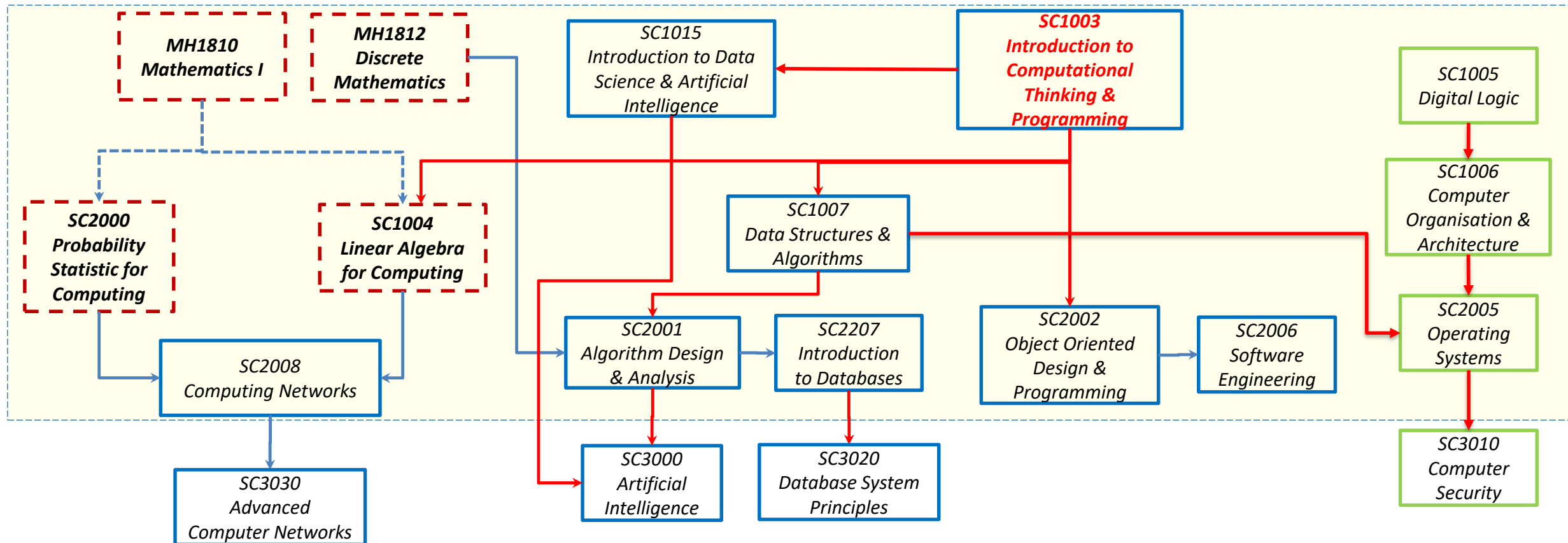
- **SC1005 Digital Logic**

Associate Prof. Chan Syin

asschan@ntu.edu.sg



Each course only offer once a year!



NTU Degree

Classification	CGPA Cut-off
Honours (Highest Distinction)	4.50 – 5.00
Honours (Distinction)	4.00 – 4.49
Honours (Merit)	3.50 – 3.99
Honours	3.00 – 3.49
Pass	2.00 – 2.99

Bachelor of Engineering (Computer Science) degree

Grade	GP
A+	5.0
A	5.0
A-	4.5
B+	4.0
B	3.5
B-	3.0
C+	2.5
C	2.0
D+	1.5
D	1.0
F	0.0

- The period of candidature for PT CSC is **6** years.
- Academic Warning – if the **CGPA <2.00** for any given semester.
- Academic Probation – if the CGPA <2.00 for the following semester.
- Academic Termination – if the CGPA <2.00 for the **3rd consecutive** semester, or at the end of the final semester of study.





Code of Conduct



- Luckily, PT program students “have seen the world”
 - Generally more mature, self-disciplined; Sense of pride
- Student Code of Conduct
 - Acts such as cheating, collusion, fabrication, plagiarism, falsification, facilitating academic dishonesty, and violation of intellectual property and copyright laws of any nature are considered to be academic misconduct.

<https://ebook.ntu.edu.sg/student-code-of-conduct.html>

- **Implications**
 - **Need to work hard!**
 - **Do not challenge NTU Rules and Regulations**
 - **Reject cheating or pirating**
 - Plan ahead to **balance your work and family commitments**



YEAR 1 SEMESTER 2				
Code	Title	Type	AU	Pre-Requisite
MH1812	Discrete Mathematics	C	3	Nil
SC1004	Linear Algebra for Computing	C	3	MH1810, SC1003
SC1007	Data Structures & Algorithms	C	3	SC1003
SC1015	Introduction to Data Science & AI	F-Core	3	SC1003
			12	

YEAR 1 SEMESTER SPECIAL				
Code	Title	Type	AU	Pre-Requisite
CC0001	Inquiry and Communication in an Interdisciplinary World	C-Core	2	Nil
CC0002	Navigating the Digital World	C-Core	2	Nil
CC0003	Ethics & Civics in a Multi-Cultural World	C-Core	2	Nil
			6	



YEAR 2 SEMESTER 1				
Code	Title	Type	AU	Pre-Requisite
SC1006	Computer Organisation & Architecture	C	3	SC1005
SC2000	Probability and Statistics for Computing	C	3	MH1810
SC2001	Algorithm Design and Analysis	C	3	SC1007, MH1812
SC2002	Object Oriented Design and Programming	C	3	SC1003
			12	

YEAR 2 SEMESTER 2				
Code	Title	Type	AU	Pre-Requisite
SC2005	Operating Systems	C	3	SC1006, SC1007
SC2006	Software Engineering	C	3	SC2002
SC2207	Introduction to Database	C	3	SC2001
			9	

YEAR 2 SEMESTER SPECIAL				
Code	Title	Type	AU	Pre-Requisite
CC0005	Healthy Living & Mental Wellbeing	C-Core	3	Nil
SC2079	Multidisciplinary Design Project	C	4	Year 3 standing
			7	

YEAR 3 SEMESTER 1				
Code	Title	Type	AU	Pre-Requisite
EG1001	Engineers in Society	C	2	Nil
SC2008	Computer Networks	C	3	SC1004, SC2000
SC3000	Artificial Intelligence	MPE-1	3	SC1007, SC1015, SC2000
SC30xx	Major Prescribed Elective	MPE-1	3	Year 3 standing
			11	

YEAR 3 SEMESTER 2				
Code	Title	Type	AU	Pre-Requisite
SC4079	Final Year Project	C	2	Year 4 standing
SC30xx	Major Prescribed Elective	MPE-1	3	Year 3 standing
SC3010	Computer Security	MPE-1	3	SC2005
HW0288	Effective Communication 2	F-Core	2	CC0001
			10	

YEAR 3 SEMESTER SPECIAL				
Code	Title	Type	AU	Pre-Requisite
CC0006	Sustainability: Human Society Economic & Environment	C-Core	3	Nil
CC0007	Science & Technology for Humanity	C-Core	3	Nil
SC4079	Final Year Project	C	2	Year 4 standing
			8	



YEAR 4 SEMESTER 1				
Code	Title	Type	AU	Pre-Requisite
SC4079	Final Year Project	C	2	Year 4 standing
SC4xxx	Major Prescribed Electives 2	MPE-2	3	Year 3 standing
SC4xxx	Major Prescribed Electives 2	MPE-2	3	Year 3 standing
			8	

YEAR 4 SEMESTER 2				
Code	Title	Type	AU	Pre-Requisite
SC4079	Final Year Project	C	2	Year 4 standing
SC4xxx	Major Prescribed Electives 2	MPE-2	3	Year 3 standing
SC4xxx	Major Prescribed Electives 2	MPE-2	3	Year 3 standing
			8	



Elective Focus Areas

- 1. Artificial Intelligence:** *machine learning, intelligent agents, computer vision*
- 2. Security:** *applied cryptography, software/application/network security*
- 3. Data Science:** *data analytics & mining, information retrieval, big data management*



Elective Focus Area: **Artificial Intelligence**

- **Intelligent System:** a machine with an embedded, internet-connected computer that demonstrates some level of *intelligence*
- Can gather and analyse data and communicate with other systems
- ***How to emulate intelligence?***

Sample Courses:

- SC4000 Machine Learning
- SC4001 Neural Networks & Deep Learning
- SC4002 Natural Language Processing
- SC4003 Intelligent Agents
- SC4020 Data Analytic and Mining
- SC4061 Computer Vision



Singtel/NCS-NTU
Cognitive & AI Joint Lab for next generation
Smart & Safe City Solutions

THE WORLD UNIVERSITY RANKINGS PROFESSIONAL JOBS SUMMITS RANKINGS

Which countries and universities are leading on AI research?

Institution	Country	Publications	Field-Weighted Citation Impact
Massachusetts Institute of Technology	United States	1,000	3.57
Carnegie Mellon University	United States	1,010	2.98
Nanyang Technological University	Singapore	1,157	2.91
University of Guelph	Spain	587	2.45
University of Southern California	United States	622	2.35
Technical University of Munich	Germany	666	2.27
Institute of Automation, Chinese Academy of Sciences	China	566	2.26
Hong Kong Polytechnic University	Hong Kong	602	2.20
National University of Singapore	Singapore	807	2.14
Chinese University of Hong Kong	Hong Kong	530	2.09

Source: ResearchGate



Three NTU SCSE Profs named "AI's 10 to Watch" 2018 by IEEE Intelligent Systems



Elective Focus Area: **Security**

- Foundations for e-commerce, e-services, homeland security, personal privacy, financial safety, etc
- ***How to secure an information system or a cyber-physical system?***

Sample Courses:

- SC4010 Applied Cryptography
- SC4011 Security Management
- SC4014 Concepts & Techniques for Malware Analysis
- SC4012/SC4013/SC4033 Software/Application/Network Security
- SC4015 Cyber Physical System Security
- SC4016 Cyber Threat Intelligence



Two ACM SIGSOFT Distinguished Paper Awards at ISSTA 2022



Team members (from left): Mr. Li Zhenduo (PhD, Year 2), Mr. Liu Yu (PhD, Year 4), and Prof. Li Yi, Assoc. Prof. Lin Sheng (Wise) and Prof. Liu Yang.

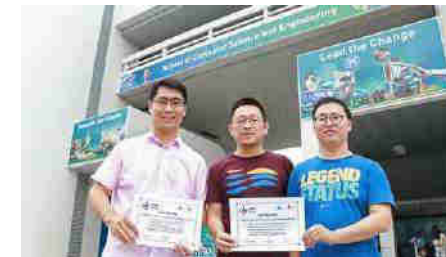
NTU researchers and AI leaders launch landmark standard for AI security

The standard aims to guide AI practitioners in dealing with malicious attacks on AI systems.

NTU 12-Nov-2022



From left: Dr. Li Zhenduo, Chair of the Cybersecurity Engineering Centre of the Cyber Security Agency of Singapore, Mr. Liu Yang, Vice President of Alibaba, Mr. Sheng Lin, Director of Innovation at AI Singapore, Prof. Li Yi, Mr. David Sheng, and Mr. Li Sheng, Regional Manager of NVIDIA AI Technology Centre.



Two ACM Distinguished Paper Awards at The 33rd IEEE/ACM International Conference on Automated Software Engineering (ASE 2018)



Elective Focus Area: *Data Science*

- New specialisation on data
- Study the mathematical foundation and computational algorithms for extracting information from data

- Need to be good at math and statistics!!

Sample Courses:

- SC4000 Machine Learning
- SC4002 Natural Language Processing
- SC4020 Data Analytics & Mining
- SC4021 Information Retrieval
- SC4022 Network Science
- SC4023 Big Data Management
- SC4024 Data Visualization



SMRT to use data system to predict potential defects, improve rail reliability
<https://www.channelnewsasia.com/news/singapore/smart-to-use-data-system-to-predict-potential-defects-improve-10049570> 16 Mar 2018



Team NTU represented by students from SCSE, led by Assoc Prof Francis Lee Bu Sung, has been awarded the special prize for the “Deep Learning Excellence” at the 6th Annual ISC-HPCAC Student Cluster Competition at the International Supercomputing Conference 2017 in Frankfurt, Germany on 21 June.



AI Speech Lab demoing to Minister Heng Swee Keat in his visit to AI.SG on 4th Sep 2018



Summary

- NTU SCSE offers good opportunities for useful, higher education
- **Same degree: the same papers!**
- Expect workload: Plan well, manage time!
- Priority: study, study, study!
- Motto: self-discipline, self-discipline, self-discipline!



NTU Shuttle Bus Service

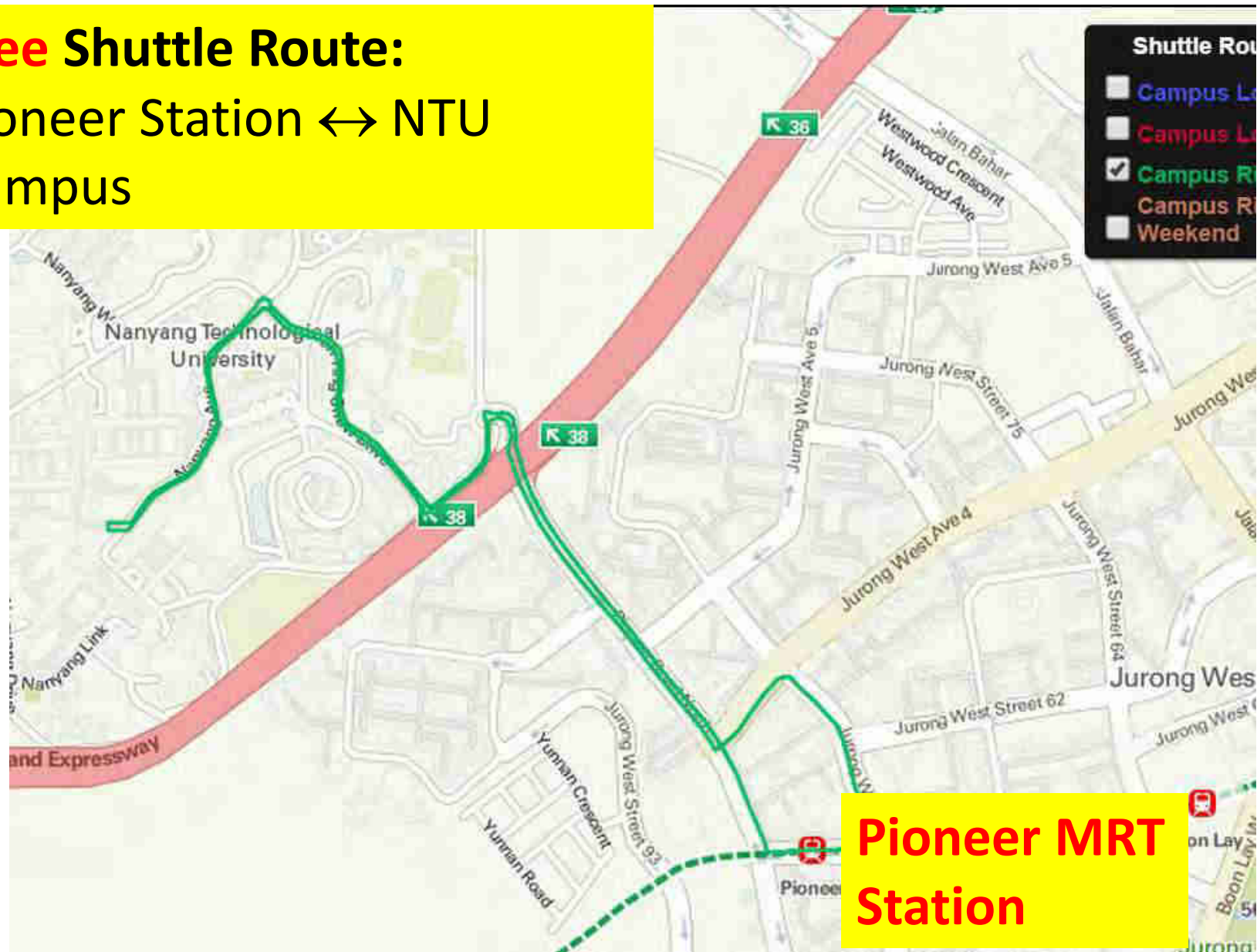
Campus Rider is a free shuttle bus service to and from Pioneer MRT station.

Campus Rider (CR) [Map](#)

- Pioneer MRT Station at Blk 649A
- Hall 1 (Blk 18)
- Food Court 2
- Student Services Centre
- TCT LT, Opp. Admin Bldg
- Opp. Food Court 2
- Pioneer MRT Station at Blk 649A

[illegible]

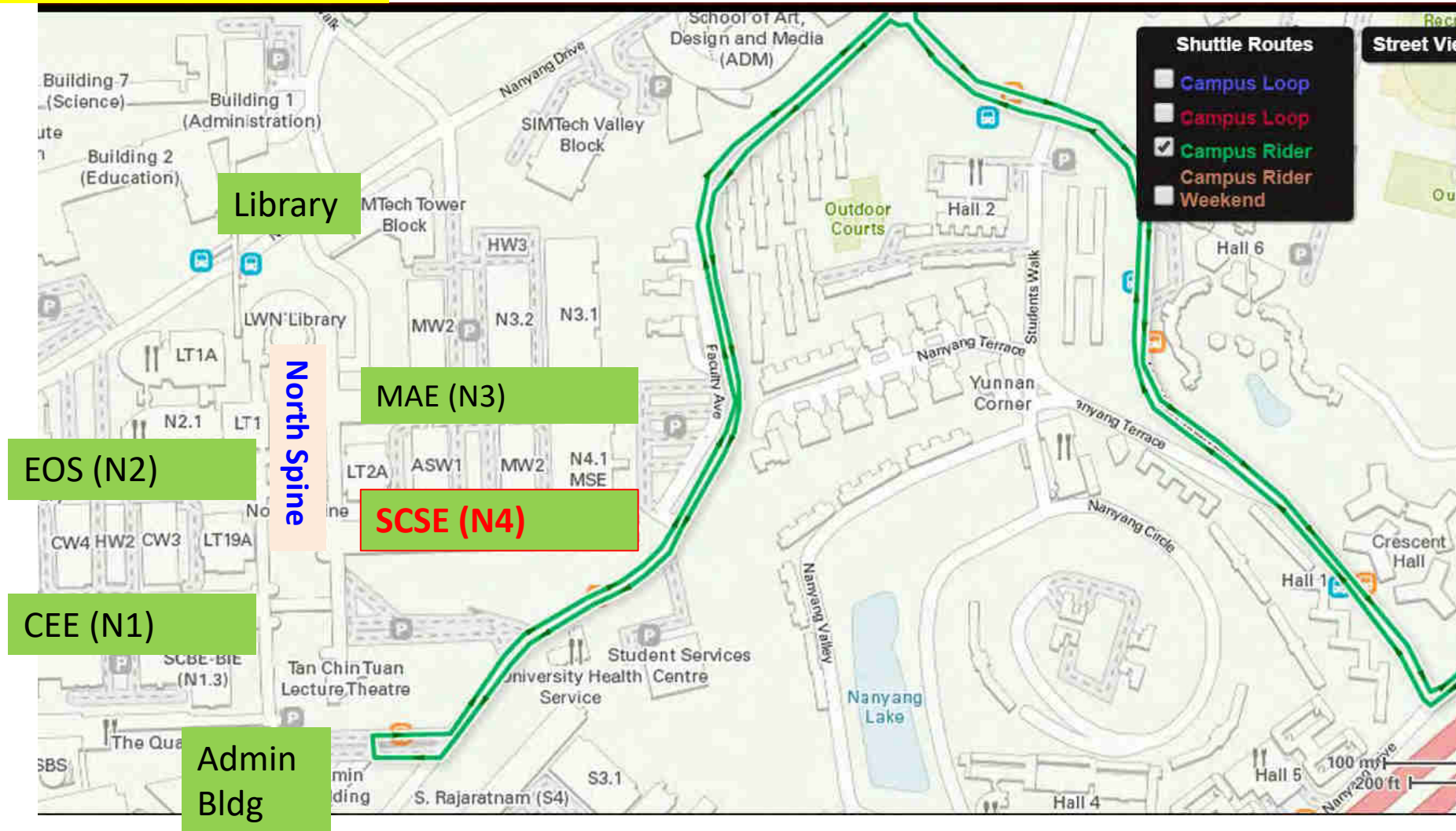
Free Shuttle Route:
Pioneer Station ↔ NTU
Campus



NTU campus map: <http://maps.ntu.edu.sg/maps>



Zoomed-in



Shuttle Buses stop at **Student Services Centre**

NTU campus map: <http://maps.ntu.edu.sg/maps>

Lab	Location
SW1	L1-A
HW1	L1-A
HW2	L1-B
SW2	L1-C
HWProj	L1-C
HW3	B1-A
SWProj	B1-B
SW3	B1-C

Again, this is how the school looks like 😊



By Bus

- **Services 179 & 199**
SBS 179 and 199, between **Boon Lay Bus Interchange** and NTU.
- **0600-2400 hrs on weekdays and Saturdays**
- **0630-0020 hrs on Sundays and Public Holidays**
- **Service 179A**
179A provides seasonal [weekday short trips](#) supplementing Service 179.
- **Check latest bus schedule:**
<https://www.sbstransit.com.sg/service/sbs-transit-app>

By Train & Bus

The nearest train stations to NTU are **Boon Lay** (EW27) and **Pioneer** (EW28) on the [East West Line](#) operated by [SMRT Corporation](#).

From Boon Lay station, make your way to the adjacent bus interchange. Services 179 & 199 will take you in to NTU.



By car 😊

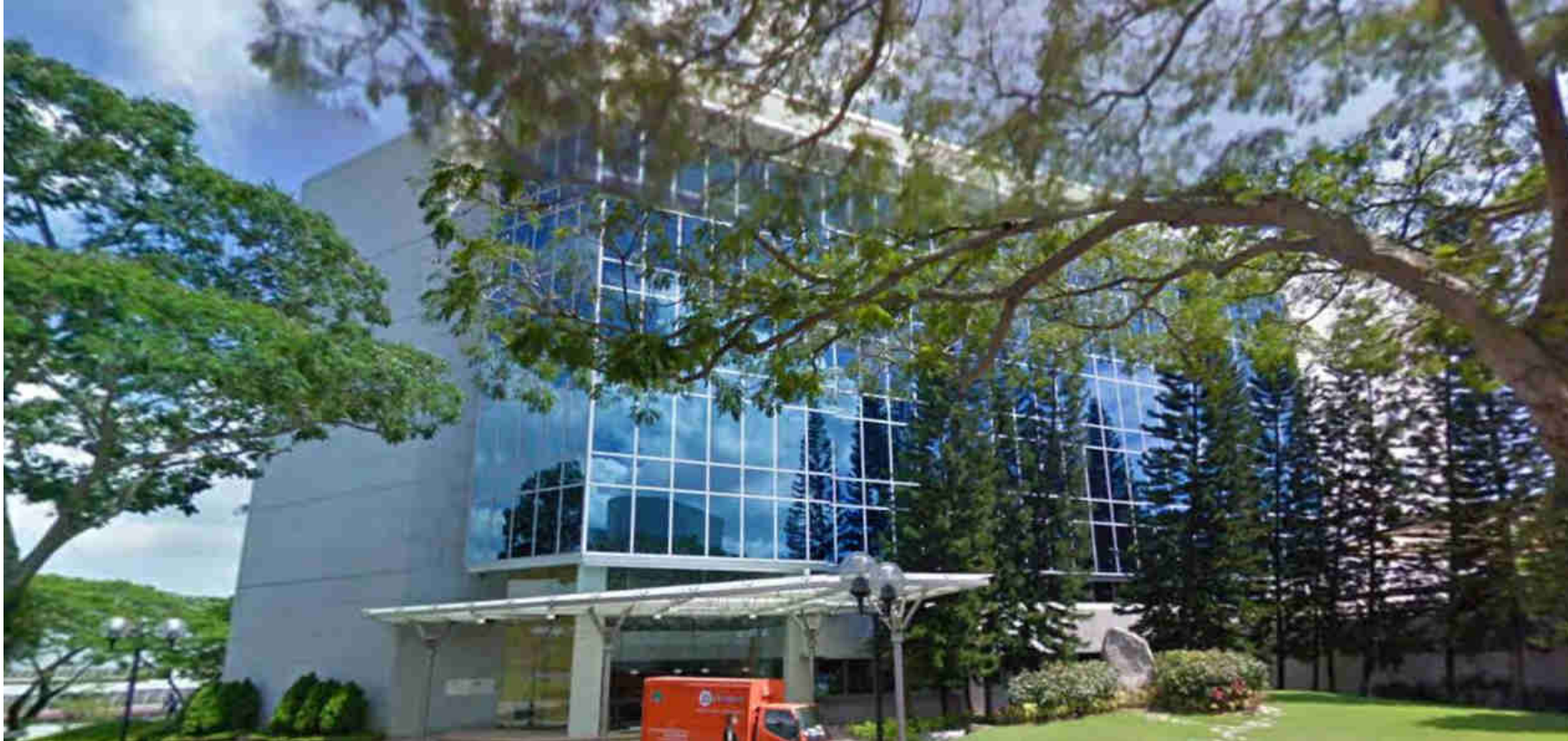


To city



Source: <http://maps.ntu.edu.sg/maps>

NTU Admin Building



Yunnan Garden (you will see Chinese Heritage Centre)



Contact Information

- SCSE-Part Time Programme
 - scse-pt@ntu.edu.sg
 - Please always provide your **matriculation number via NTU email account**
- SCSE Student Care
 - scse-sc@ntu.edu.sg
- IT and Finance Issues
Raise ticket via ServiceNow:
<https://ntuadminonestop.service-now.com/ntusp>



Q & A



FAQs / Tips (Academic matters)

❑ How are the classes conducted?

- Most of the time, a video will be given to you – **same content** as daytime.
- This video may be lectures conducted in the morning, or flip classroom type.
 - You should spend time watching the video – **before** coming to class.
 - During the class, you should be asking questions (like a tutorial).
 - The lecturer may not go through the recorded video verbatim – he may summarise it.
 - Hence you must have watched the video, else you will not understand.
 - This is so that the 3 hours contact time is sufficient to cover lab and tutorial – since lecture is recorded.

❑ How much time to study (revise) per course?

- Each subject typically you have to study 3 hours per hour lecture additionally.
- For each tutorial, you will have to spend 2 hours approx.
- For lab, approx. 2-3 hours for preparation.
- Hence for each subject of 2 hours lecture, 1 hour tut, and alternate week of lab, you should spend about 9 hours per week additionally.



- ❑ How to provide feedback about the lecturer?
 - Do not wait till last minute.
 - Send the supervisor an email and cc to me (Dr Loke Yuan Ren).

- ❑ How to provide feedback about your fellow classmate (for group work)?
 - Send an email to explain and meet up with the lecturer in charge of your lab.
 - Provide evidence and talk through the issue. Note: Focus on the problem – not person.



FAQs / Tips (Admin matters)

- ❑ If I failed a course, can I register to take it the next semester with full-time students?
 - Yes, if you have taken this course before, subjected to:
 - a. Max. number of courses does not exceed number of courses offered to part-time students (4)
 - b. Company's official support letter is provided

- ❑ How do I apply for semester leave?
 - Follow the procedures via the link below (listed on our part-time website):

Administrative Matters
[Apply for Semester Leave](#)
 - Students may be permitted to take **up to 3 years** of leave cumulatively that are not counted towards their candidature period over the entire duration of their studies.
 - Send an email to Ms Irene Soh and Ms Selina Pang.



Useful links

- ❑ Library Services:

<https://www.ntu.edu.sg/education/libraries>

- ❑ IT Services (Email/NTULearn/StudentLink): Hotline 6790 4357

Monday to Thursday – 8.30am to 5.30pm

Friday – 8.30am to 5.00pm



Thank you

