ESSC ACADEMIC COUNSELLING

For 2021 Admission

24 AUG 2021

Filson Leung

Year 3
/ Atmospheric Science Stream
New Asia College

Gavan Wong

Year 3
/ Geophysics Stream
Wu Yee Sun College

WHAT IS ESSC?

Earth System Science (ESSC) studies the dynamics of the Earth as an interrelated system that includes the **atmosphere**, **biosphere**, **geosphere** and **hydrosphere**, as well as human impacts.

- Geology, geophysics
- Meteorology
- Oceanography
- Environmental chemistry
- **Quantitative** skills

STREAMS

***MUST** select stream at the end of Yr1 (Jul 2022)

- **Atmospheric Science/ Geophysics**
- Integrated learning package
- Different major requirements in terms of course combinations

- No strong interest on either side
  →may opt out at Y2+
  → **General stream**

Why choosing streams?

Major concentration
- For **interest** / Integrated learning package
- Will be printed on transcripts & letter of certification

Minor declaration
- Can minor physics easily with 1-2 additional courses

Career Prospect
- Acquire some important skills (mostly quantitative skills)

Physics, Maths(calculus), Programming Skills are important and useful in BOTH stream

*# General stream may offer a greater **flexibility** who wish to explore more in other sciences, such as chemistry, biology, statistics, environmental science etc.*

About ESSC streams

Atmospheric Science Stream

- Study of the dynamics and chemistry of the atmosphere, hydrosphere
- Quantitative understanding by models, numbers, statistics and physics of meteorology, oceanography, air pollution, etc

Geophysics Stream

- Studying Earth using gravity, electromagnetism and seismic methods
- Quantitative understanding of the solid earth: structures, dynamics, geohazards and natural resources
- Also includes course about Geology like Geomorphology, Petrology, Hydrogeology etc.

COURSE PLANNING

- Normally max 18 credits available each semester
- Total 39 credits each Academic Year (Including Summer semester)

- Major requirement: 72 credits
  - Most course are in 3 credits
  - Most courses have pre-requisites
  - Start 3000- level courses in Y2, 4000- level in Y3
  - Most 4000- level courses only open bi-yearly
  - Average major course-load per year
    - 72÷4= 18 credits ; 6 courses

GRADAUTION REQUIRMENT (123 CREDITS)

Graduation Requirement: 123cred

Sem 1 (Fall semester)

Sem 2 (Spring semester)

?

PE Course 2cred

UGE Course
1. **UGFH + UGFN**
2. **UGEX x4**

15cred

Minor/ Free electives

Major (ESSC): 72cred

CHLT 6cred ELTU 9cred

College GE 6cred

IT Course 1cred

ESSC REQUIRED COURSES

ESSC Course list can be found in MyCUSIS

Non-highlighted course can be chose freely, But remember to fulfill the stream requirement.

BOTH Stream

Geophysics stream

Atmospheric Science stream

Course List		
Course Code	***Course Title***	***Unit(s)***
ESSC1000	Exploring the Earth System	1
ESSC2010	Solid Earth Dynamics	3
ESSC2020	Climate System Dynamics	3
ESSC2030	Introduction to Computational Earth System Science	3
ESSC2110	Geoscience Field Study	1
ESSC2120	Integrated Geoscience Field Study	2
ESSC2130	Fundamental Geoscience Fieldwork	3
ESSC2800	Introduction to Environmental Engineering	3
ESSC3020	Analytic Methods in Earth and Environmental Sciences	3
ESSC3100	Structural Geology	3
ESSC3110	Geoscience Field Course	3
ESSC3120	Physics of the Earth	3
ESSC3200	Atmospheric Dynamics	3
ESSC3220	Atmospheric Chemistry	3
ESSC3300	Ocean and Climate	3
ESSC3320	Hydrogeology	3
ESSC3600	Ecosystems and Climate	3
ESSC3601	Principles of Ecosystems and Climate	2
ESSC3800	Global Environmental Change	3
ESSC3900	Internship	3
ESSC4010	Solid and Fluid Mechanics	3
ESSC4020	Rock and Soil Mechanics	3
ESSC4030	Engineering Geology	3
ESSC4110	Applied Geophysics	3
ESSC4120	Petrology	3
ESSC4130	Geomorphology	3
ESSC4140	Seismology	3
ESSC4160	Marine Geology and Geophysics	3
ESSC4180	Earthquake Source Physics	3
ESSC4210	Land-Atmosphere Interactions and Boundary Layer Meteorology	3
ESSC4220	Tropical Meteorology	3
ESSC4230	Introduction to the Physics and Chemistry of Aerosol	3
ESSC4240	Air Pollution Science and Engineering	3
ESSC4250	Advanced Topics in Atmospheric Dynamics	3
ESSC4260	Urban Climatology	3
ESSC4510	Statistical Methods and Data Analysis for Earth System Science	3
ESSC4520	Numerical Methods and Modeling for Earth System Science	3
ESSC4540	Remote Sensing – Principles and Applications	3
ESSC4810	Senior Project I	3
ESSC4820	Senior Project II	3

Foundation Courses

Intermediate-level Courses

Capstone Project (Final Year Thesis)

ESSC REQUIRED COURSES

1. Intermediate-level Physics:

- PHYS1122 & PHYS2041

- ENGG1310 & MAEG2030

More favourable for student without DSE Physics background

2. Programming:

Prefer this, more suitable for ESSC student

ESSC2030
CSCI1120, 1510, 1520, 1530, 1540
PHYS2061

3. Intermediate & Advanced ESSC Course:

-Atmo-
2 extra 3000level ESSC course

-Geo-
3 extra 3000level ESSC course

- At least 4 4000 level courses from respective streams

ESSC REQUIRED COURSES

Faculty Package

✓DSE M1/M2 or strong calculus background

✗DSE M1/M2
!! MUST obtain B or above for further Math Courses

		Units
1.	Faculty Package: Group C: MATH1010 (preferred) or 1018 or 1520 Group D: PHYS1111(preferred) or 1001 or 1002 or 1113 A course from the following Group B: CHEM1070 (preferred) or 1072 Group E: STAT1011(preferred) or 1012	9

For both stream:

2.	Required Courses:	
(a)	Foundation Science: One course from the remaining group in the Faculty Package	3

ESSC REQUIRED COURSES

Faculty Package

		Units
1.	Faculty Package:	
	Group C: MATH1010 (preferred) or 1018 or 1520	
	Group D: PHYS1111(preferred) or 1001 or 1002 or 1113	
	A course from the following	
	Group B: CHEM1070 (preferred) or 1072	
	Group E: STAT1011(preferred) or 1012	

Require basic DSE PHYS

✓DSE PHYS

✗/☹DSE PHYS

For both stream:

2.	Required Courses:	
(a)	Foundation Science:	3
	One course from the remaining group in the Faculty Package	

ESSC REQUIRED COURSES

Faculty Package

		Units
1.	Faculty Package: Group C: MATH1010 (preferred) or 1018 or 1520 Group D: PHYS1111(preferred) or 1001 or 1002 or 1113 A course from the following Group B: CHEM1070 (preferred) or 1072 Group E: STAT1011(preferred) or 1012	9

✓DSE CHEM

✗DSE CHEM

For both stream:

2.	Required Courses:	
(a)	Foundation Science: One course from the remaining group in the Faculty Package	3

ESSC REQUIRED COURSES

Faculty Package

		Units
1.	Faculty Package: Group C: MATH1010 (preferred) or 1018 or 1520 Group D: PHYS1111(preferred) or 1001 or 1002 or 1113 A course from the following Group B: CHEM1070 (preferred) or 1072 Group E: STAT1011(preferred) or 1012	9

✓ Suggested

For both stream:

2.	Required Courses:	
(a)	Foundation Science: One course from the remaining group in the Faculty Package	3

For general stream:

2.	Required Courses:	
(a)	Foundation Science: One course from the remaining group in the Faculty Package or one course from LSCI1002 (preferred) or 1000 or 1001	3

You can choose 2 from LSCI / STAT / CHEM
However, STAT and CHEM are recommended.

EARTH SYSTEM SCIENCE COURSE REQUIREMENT APPLICABLE TO STUDENTS ADMITTED IN 2021-22

1. CUSIS
2. ACADEMIC RECORD
3. BROWSE PROGRAM INFORMATION
4. BASIC SEARCH
5. SEARCH “UG”
6. FIND “ESSC”

COURSE SCHEDULE (FOR YEAR I AND 2)

	Sem 1 (Fall)	Sem 2 (Spring)
2000 Level ESSC	ESSC 1000 ; ESSC 2020 ; ESSC 2800	ESSC 2010
3000 Level ESSC	ESSC 3120 ; ESSC 3200 ; ESSC 3320	ESSC 3100 ; ESSC 3220 ; ESSC 3300 ; ESSC 3600
Faculty package courses	Offered in both semesters (Please check for alternatives)	Offered in both semesters (Please check for alternatives)
PHYS / Alternatives	PHYS 2041	PHYS 1122 ; PHYS 2401 ; ENGG 1310 ; MAEG 2030
MATH		MATH 2550
Programming Course	CSCI 1120 ; CSCI 1540 ; PHYS 2061	ESSC2030 CSCI 1510 ; CSCI 1520 ; CSCI 1530
Languages	ELTU, Other languages (I, III, V)	CHLT, Other languages (I, II, IV)

EXAMPLE (FOR YEAR I STUDENTS)

	Sem 1 (Fall)	Credits
ESSC	ESSC 2020 (advised) ; ESSC 1000 (advised) (1 credit)	3 - 4
Sci Fac Pack	MATH 1010 / STAT 1011 / PHYS1111 / CHEM1070 (or Alternatives)	6
Language	ELTU 1001 / 1002 (pre-reg)	4
P.E.	1 course (1 credit)	1
Foundation GE	(UGFN1000 / UGFH1000)	0 - 3
College GE	0-3 credits (Depends on college)	0 - 3
Others	(Minor/ elective)	0 - 3

EXAMPLE (FOR YEAR I STUDENTS)

	Sem 2 (Spring)	Credits
ESSC	ESSC 2010 (Required)	3
Sci Fac Pack	MATH 1010 / STAT 1011 / PHYS1111 / CHEM1070 (or Alternatives)	3-6
Language	CHLT 1100 (pre-reg)	3
IT	ENGG 1000 (pre-reg)	1
P.E.	1 course (1 credit)	1
Intermediate Physics	PHYS1122	0 - 3
Foundation GE	(UGFN1000 / UGFH1000)	0 - 3
College GE	0-3 credits (Depends on college)	0 - 3
Others	(Minor/ elective)	0 - 3

BETTER FINISH ALL FACULTY PACKAGE IN YEAR I

SHOULD AT LEAST STUDY EITHER FH/FN IN YEAR I

FILSON YEAR 1 SEMESTER 1

Time	Monday Sep 2	Tuesday Sep 3	Wednesday Sep 4	Thursday Sep 5	Friday Sep 6
8:00AM					
9:00AM					CHEM 1070 - A Lecture 8:30AM - 10:15AM T.Y.Wong Hall LT
10:00AM	CHEM 1070 - A Lecture 10:30AM - 11:15AM T.Y.Wong Hall LT	PHED 1027 - F Lecture 9:30AM - 11:15AM Lingnan Stadium	PHYS 1111 - A Lecture 9:30AM - 10:15AM Science Centre L1		
11:00AM			PHYS 1111 - AT01 Interactive Tutorial 10:30AM - 11:15AM Science Centre L1		
12:00PM	CHEM 1070 - AT01 Interactive Tutorial 11:30AM - 12:15PM T.Y.Wong Hall LT		ESSC 1000 - - Lecture 11:30AM - 12:15PM Science Centre L1		GENA 1000 - AA01 Assembly 11:30AM - 1:15PM Sir Run Run Shaw Hall
1:00PM		ELTU 1002 - EAC1 Classwork 12:30PM - 2:15PM Yasumoto Int'l Acad Park 504	PHYS 1111 - AE05 Exercise 1:30PM - 2:15PM William M W Mong Eng Bldg 405	ELTU 1002 - EAC1 Classwork 12:30PM - 2:15PM Yasumoto Int'l Acad Park 407	
2:00PM					
3:00PM	ESSC 2020 - - Lecture 2:30PM - 4:15PM Lady Shaw Bldg LT2		ESSC 2020 - - Lecture 2:30PM - 3:15PM Lady Shaw Bldg LT2		
4:00PM			ESSC 2020 - - T01 Interactive Tutorial 3:30PM - 4:15PM Lady Shaw Bldg LT2		GENA 1112 - - Lecture 3:30PM - 5:15PM Sir Run Run Shaw Hall
5:00PM	PHYS 1111 - A Lecture 4:30PM - 6:15PM Yasumoto Int'l Acad Park LT3				
6:00PM					

FILSON YEAR 1 SEMESTER 2

Time	Monday Feb 3	Tuesday Feb 4	Wednesday Feb 5	Thursday Feb 6	Friday Feb 7
8:00AM					
9:00AM		PHED 1023 - A Lecture 8:30AM - 10:15AM United College Gymnasium	CHLT 1100 - QM Lecture 8:30AM - 11:15AM Hui Yeung Shing Bldg 306	ESSC 2010 - - Lecture 9:30AM - 10:15AM Mong Man Wai Bldg 710	
10:00AM				ESSC 2010 - - T01 Interactive Tutorial 10:30AM - 11:15AM Mong Man Wai Bldg 710	
11:00AM		MATH 1010 - J Lecture 10:30AM - 12:15PM Yasumoto Int'l Acad Park LT5			GENA 1000 - AA01 Assembly 11:30AM - 1:15PM Sir Run Run Shaw Hall ⚠ GENA 1113 - AW Lecture 11:30AM - 1:15PM Mong Man Wai Bldg 706
12:00PM			ENGG 1000 - AT Lecture 12:30PM - 1:15PM Wu Ho Man Yuen Bldg 301		
1:00PM					
2:00PM	UGFH 1000 - YT01 Interactive Tutorial 2:30PM - 4:15PM Chen Kou Bun Bldg 706B	ESSC 2010 - - Lecture 1:30PM - 3:15PM Lady Shaw Bldg C2		UGEA 2100 - A Lecture 2:30PM - 4:15PM Humanities Building 12	UGFH 1000 - Y Lecture 2:30PM - 3:15PM Esther Lee Bldg LT1
3:00PM					
4:00PM				MATH 1010 - J Lecture 4:30PM - 5:15PM Yasumoto Int'l Acad Park 201	
5:00PM				MATH 1010 - JT01 Interactive Tutorial 5:30PM - 6:15PM Yasumoto Int'l Acad Park LT7	
6:00PM					

GAVAN YEAR 1 SEMESTER 1

Time	Monday Sep 2	Tuesday Sep 3	Wednesday Sep 4	Thursday Sep 5	Friday Sep 6
8:00AM				ELTU 1001 - DLC1 Classwork 8:30AM - 10:15AM Lee Shau Kee Archi Bldg 211	
9:00AM					
10:00AM		ELTU 1001 - DLC1 Classwork 10:30AM - 12:15PM Yasumoto Int'l Acad Park 608		UGFN 1000 - ST05 Interactive Tutorial 10:30AM - 12:15PM Chen Kou Bun Bldg 706B	
11:00AM			ESSC 1000 - - Lecture 11:30AM - 12:15PM Science Centre L1		GEYS 1000 - - A01 Assembly 11:30AM - 1:15PM Lee Shau Kee Building LT6
12:00PM	MATH 1520 - A Lecture 12:30PM - 2:15PM Yasumoto Int'l Acad Park LT6		MATH 1520 - A Lecture 12:30PM - 1:15PM Yasumoto Int'l Acad Park LT6		
1:00PM			MATH 1520 - AT01 Interactive Tutorial 1:30PM - 2:15PM Yasumoto Int'l Acad Park LT6		UGFN 1000 - S Lecture 1:30PM - 2:15PM Esther Lee Bldg LT4
2:00PM		PHED 1025 - D Lecture 2:30PM - 4:15PM Lingnan Stadium	STAT 1011 - - Lecture 2:30PM - 5:15PM Yasumoto Int'l Acad Park LT3		
3:00PM					GEYS 1010 - - Lecture 3:30PM - 6:15PM Mong Man Wai Bldg LT1
4:00PM					
5:00PM					
6:00PM					

GAVAN YEAR 1 SEMESTER 2

Time	Monday Jan 6	Tuesday Jan 7	Wednesday Jan 8	Thursday Jan 9	Friday Jan 10
8:00AM			CHLT 1100 - QM Lecture 8:30AM - 11:15AM Hui Yeung Shing Bldg 306		CHEM 1070 - B Lecture 8:30AM - 9:15AM T.Y.Wong Hall LT
9:00AM				ESSC 2010 - - Lecture 9:30AM - 10:15AM Mong Man Wai Bldg 710	CHEM 1070 - BT01 Interactive Tutorial 9:30AM - 10:15AM T.Y.Wong Hall LT
10:00AM		PHYS 1001 - - Lecture 10:30AM - 12:15PM Lady Shaw Bldg LT3		ESSC 2010 - - T01 Interactive Tutorial 10:30AM - 11:15AM Mong Man Wai Bldg 710	
11:00AM			ENGG 1000 - AS Lecture 11:30AM - 12:15PM Lee Shau Kee Archi Bldg G01		GEYS 1000 - - A01 Assembly 11:30AM - 1:15PM Lee Shau Kee Building LT6
12:00PM					
1:00PM		ESSC 2010 - - Lecture 1:30PM - 3:15PM Lady Shaw Bldg C2		PHYS 1001 - - Lecture 1:30PM - 3:15PM Yasumoto Int'l Acad Park 505	
2:00PM	CHEM 1070 - B Lecture 2:30PM - 4:15PM T.Y.Wong Hall LT		PHED 1021 - F Lecture 2:30PM - 4:15PM New Asia College Gymnasium		UGFH 1000 - Y Lecture 2:30PM - 3:15PM Esther Lee Bldg LT1
3:00PM					
4:00PM	UGFH 1000 - YT02 Interactive Tutorial 4:30PM - 6:15PM Chen Kou Bun Bldg 706B				
5:00PM					
6:00PM					

Reminders

1. SHOULD FINISH **ESSC 1000, 2010 AND 2020** (DEPENDS) BY YEAR 1
2. SHOULD FINISH **MOST FACULTY PACKAGES** BY YEAR 1
3. **MUST OBTAIN B OR ABOVE** FOR MATH 1520
4. SHOULD FINISH **PROGRAMMING COURSE** BY YEAR 2
5. **MUST** FINISH **UGFH + UGFN** BY THE END OF YEAR 2
6. BE CAREFUL WITH STREAM REQUIREMENTS, COURSE
7. PREREQUISITES AND AVAILABILITY

CREDIT LIMIT:

- 18 CREDS / SEMESTER
- 6 CREDS / SUMMER
- 39 CREDS / YEAR

Reminders for further study plan

1. MAKE USE OF SUMMER SEMESTER FOR UGEX COURSES
2. FINISH INTERMEDIATE LEVEL PHYSICS (PHYSII22, PHYS2041) ASAP (PHYS COURSE OCCUPY MANY TIMESLOTS→TIME CLASH)
3. 4XXX COURSES OFFERED EVERY OTHER YEAR
4. CAN START STUDYING 3XXX COURSES IN YEAR 2/ 4XXX COURSES IN YEAR 3
5. COURSE CODE >= 2000 COUNT TOWARDS MAJOR(HON) GPA

Reminders for further study plan

CGPA: Cumulative (weighted mean) GPA

- Include all courses you have studied
- For applying scholarships/ exchange

Major GPA: (Honors) GPA

- Include all 2000+ level courses that contribute to your major requirement
- For distributing Honors when you graduate

APPENDIX: COURSE SCHEDULE (ADVANCED COURSES)

	2020 Fall	2021 Spring	2021 Fall	2022 Spring
Solid Earth	ESSC 4130		ESSC 4030 ; ESSC 4110 ; ESSC 4120	ESSC 4140
Atmospheric Science	ESSC 4260	ESSC 4220 ESSC 4240	ESSC4210	ESSC 4230 ESSC 4250
Mechanics		ESSC 4010		ESSC 4010
Data processing / Modeling	ESSC 4540	ESSC 4510		ESSC 4520
Others	ESSC 3900 (Internship)			

MOST 4000- LEVEL COURSES ONLY OPEN BI-YEARLY

Q&A