Asian School of the Environment

Environmental Earth Systems Science
Environmental Earth Systems Science and Public Policy and Global Affairs
Environmental Earth Systems Science with Second Major in Data Analytics
Environmental Earth Systems Science with Second Major in Sustainability
Environmental Earth Systems Science with Second Major in Entrepreneurship
Asian School of the Environment

The Asian School of the Environment (ASE) at NTU is a world leader in environmental research focused on environmental challenges in Asia. We integrate earth and environmental life science, ecology, engineering and technology, humanities, and the social sciences to address Asia and the world’s key environmental challenges, including climate change, deforestation, natural disasters and sustainability. The ASE builds upon the strengths of the Earth Observatory of Singapore (EOS) and the Singapore Centre for Environmental Life Science Engineering (SCELSE), two research Centres of Excellence within NTU.

You will learn skills to tackle the following big issues the world is facing today:

- Human impact on the environment
- Effects of climate change
- Location and management of natural resources
- Forecast and mitigation of natural disasters
- Water resource availability
- Implementation or alternative energy systems
- Ecosystem conservation

Why ASE?

- Favour small cohort that encourages an innovative and interactive learning environment
- Close interaction with faculty and faculty work individually with students on career counselling
- Field Experience and Overseas opportunities
- Opportunity to conduct an independent final-year research project in collaboration with a faculty advisor
- Conduct a professional internship with industrial attachment with a local or overseas employers
- Real world application of skills and concepts taught in classes
Programmes Offered

Environmental Earth Systems Science (EESS)
Gain a strong background in quantitative skills such as spatial analysis, core science and modern computing techniques, while applying these skills through critical thinking, communication, and collaboration. Within this programme, students can specialize in Geosciences, Ecology and Ecosystems or Society and the Earth Systems.

Environmental Earth Systems Science with a 2nd Major in Data Analytics (ESDA)
Build a strong background in quantitative environmental earth systems science (EESS) and statistics, algorithms, and data analytics, enabling students to gain actionable insights that complement the research aspect of EESS.

Environmental Earth Systems Science with a 2nd Major in Data Analytics (ESDA)

Develop a strong background in quantitative environmental earth systems science (EESS) and communication, public affairs, and international relations, providing students with the opportunity to build complementary skills in leadership, collaboration, and innovative problem-solving.
Programmes Offered

**Environmental Earth Systems Science with a 2nd Major in Entrepreneurship (ESMiE)**

This programme equips students with fundamental entrepreneurship competency, which broadens their understanding of enterprise and innovation and enriches them to deal with uncertainties in the VUCA and be the driver of technology innovation.

**Environmental Earth Systems Science with a 2nd Major in Sustainability (ESSN)**

Allows students to understand how our environment, economy and society interact. By applying this knowledge to technological innovation and communicating readily with decision-makers, we can maintain the health of our world for the benefit of current and future generations.

**Minor in Environmental Sustainability**

Students will receive the most up-to-date scientific background to the environmental challenges that will shape our future. This includes the relationship between humans and the natural world, the availability and management of natural resources, etc.
Interdisciplinary Collaborative Core (ICC)

The key elements of ICC curriculum and pedagogy are as follows:

- **Interdisciplinary** – content is developed and taught by faculty from different disciplines and integrated to understand issues from various perspectives.

- **Collaborative** – students discuss and work in interdisciplinary teams on problems, projects or assignments.

- **Core** – learning outcomes are aligned to the 3Cs (Character, Competence, Cognitive Agility) of NTU graduates.

ICC courses include:

- 7 Core Modules focusing on Key Transferable Skills and Grand Challenges.

- Foundational Core Courses including Effective Communication, Digital Literacy, and a Mandatory Professional Attachment.

- Co-curricular Modules.
Field Courses

Work in the field is a key part of the undergraduate studies ASE. We believe that field studies provide an understanding of the Earth and environment that cannot be gained from classroom studies alone. With this opportunity, our students will be able to:

- Connect concepts learned in the classroom with the real world
- Learn cutting-edge techniques used in scientific research
- Engage with the world around them
- Connect with faculty and fellow students in a collaborative and fun environment

Introductory Field Course

After their first year of study, all students will participate in a 2 weeks introductory field course. This field course is designed for them to experience all three specialisations (ecology, society, and geoscience), giving them a better idea of the specialisation to go into.

Advanced Field Courses

Students will have the opportunity to participate in overseas advanced field courses, depending on the specialisations they have chosen.

- Mount Batur - Geoscience
- Padang Bai - Ecology
- Ubud - Society
- Taiwan - Ecology
- California - Geoscience
- Sri Lanka - Ecology/Society

Note: Field work courses are subjected to changes depending on regulations set out by the government. There will also be multiple opportunities to have similar field work experiences in Singapore.
Curriculum Overview for EESS

**EESS Core Modules:**
- Environment & Society
- Solid Earth
- Biosphere
- Climate Change
- Introductory Field Experience
- Computational Earth Systems Science
- GIS and the Earth System
- Calculus for the Sciences
- Physical Environments of Singapore
- Introduction to Scientific Writing

**Specialisation Core Modules:**

**Geochemistry and Geophysics**
- Earth Materials
- Structural Geology and Tectonics
- Sedimentary Geology
- Geochemistry and Geophysics
- Field courses in Geology

**Ecology and Ecosystems**
- Bioinformatics & Statistics
- Microbes on Natural Ecosystem
- Heredity & Genetics
- Plant & Animal Physiology
- Conservation Biology & Biodiversity
- Experimental Design & Data Analysis
- Field courses in Ecology

**Society and the Earth Systems**
- Field courses in Society and the Earth Systems
- Law & Economics, Sustainable Development, and Environmental Protection
- Data Analysis
- Global Environmental Politics and Governance
- Coupled Human and Natural Systems
- Principle of Economics
- Resilient Urban Systems

*Electives for Honours Eligibility (by application): Final Year Project*
Curriculum Overview for ESPP

EESS Core Modules:
- Environment & Society
- Solid Earth
- Biosphere
- Climate Change
- Introductory Field Experience
- Computational Earth Systems Science
- GIS and the Earth System
- Calculus for the Sciences
- Physical Environments of Singapore
- Introduction to Scientific Writing

EESS Society Specialisation Modules:
- Law & Economics, Sustainable Development and Environmental Protection
- Data Analysis
- Global Environmental Politics and Governance
- Coupled Human and Natural Systems
- Resilient Urban Systems
- Principle of Economics

PPGA Core Modules:
- Introduction to International Relations and Foreign Policy
- Introduction to Political Theory
- Politics of Singapore
- Introduction to Public Administration and Policy
- Fundamentals of Politics
Curriculum Overview for ESDA

EESS Core Modules:
- Environment & Society
- Solid Earth
- Biosphere
- Climate Change
- Introductory Field Experience
- Computational Earth Systems Science
- GIS and the Earth System
- Calculus for the Sciences
- Physical Environments of Singapore
- Introduction to Scientific Writing

Either Geosciences or Ecology and Ecosystems or Society and the Earth Systems Specialisation Courses

DA Courses:
- Probability and Statistics
- Linear Algebra
- Data Analysis/ Computing
- Algorithms
- Database
- Data Mining
- Data Visualization/ Management
Curriculum Overview for ESSN

EESS Core Modules:

- Environment & Society
- Solid Earth
- Biosphere
- Climate Change
- Introductory Field Experience
- Computational Earth Systems Science
- GIS and the Earth System
- Calculus for the Sciences
- Physical Environments of Singapore

Either Geosciences or Ecology and Ecosystems or Society and the Earth Systems Specialisation Courses

Sustainability Course Requirements

Students are required to complete:

- 1 core course in each knowledge area (People, Planet, Profit, Practice and Policy)
- Sustainability elective courses
- Interdisciplinary project

*A minimum total of 30 AU has to be completed (core courses + electives + interdisciplinary project)
Curriculum Overview for ESMiE

EESS Core Modules:

- Environment & Society
- Solid Earth
- Biosphere
- Climate Change
- Introductory Field Experience
- Computational Earth Systems Science
- GIS and the Earth System
- Calculus for the Sciences
- Physical Environments of Singapore

Either Geosciences or Ecology and Ecosystems or Society and the Earth Systems Specialisation Courses

Entrepreneurship Course Requirements

Students are required to complete:

- Compulsory Entrepreneurship courses
- Entrepreneurship elective courses
- Compulsory experiential programme

Environmental Earth Systems Science with a 2nd Major in Entrepreneurship
Exciting Career Opportunities

**Environment and Conservation**
- Academic research
- Environmental media and journalism
- Non-Government Organizations and Volunteer-Welfare Organizations such as WWF, Nature’s Society or Birdlife
- International Governance such as World Food Bank or UNESCO

**Private Sector**
- Natural resource exploration, extraction, and management (oil, gas, and minerals)
- Environmental consulting
- Geotechnical consulting
- Geologic surveying or monitoring

**Public Sector**
- Foreign and domestic policy
- Government roles in Environmental Planning, Policy and Management
- Water resource management or hydrogeology
- Teaching

**Entrepreneurship & Finance**
- Where firms seek quantitative knowledge about the science that drive changes in the energy market.
- Reinsurance companies, who rely on a balance of earth science data and policy intuition to help assess longterm risk

**Business & Sustainability**
- Businesses or corporations that value technical knowledge, creative problem solving and leadership ability when dealing with changing environmental policy and the global move towards improved global sustainability practices
- Sustainability reporting

**Postgraduate Studies**
- Our graduates have gone on to Masters and PhD studies in some of the world’s top institutions, including Harvard, Caltech and UCLA, studying issues such as Climate Change and Physical Science
Admissions

Students will be evaluated on an oral interview and academic background. ASE undergraduate programmes accept ‘A’ Level, IB, NUSHS Diploma, Polytechnic Diploma, and other equivalent international qualifications on a selective basis. All candidates with strong academic potential who satisfy the minimum subject requirements as well as the general admission requirements set by NTU will be considered.

Minimum Subject Requirements:

<table>
<thead>
<tr>
<th>Programme</th>
<th>Environmental Earth Systems Science</th>
<th>Environmental Earth Systems Science and Public Policy and Global Affairs (Double Degree)</th>
<th>Environmental Earth Systems Science with a 2nd Major in Data Analytics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Singapore Cambridge ‘A’ Level</strong></td>
<td>• H1 Level Pass in Mathematics AND</td>
<td>• H2 Level pass in Mathematics AND</td>
<td>• H2 Level pass in Mathematics AND</td>
</tr>
<tr>
<td></td>
<td>• A good grade in General Paper/Knowledge &amp; Inquiry/H1 Level History/English Literature/Geography (for ESPP students only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IB Diploma</strong></td>
<td>• Mathematics at Standard Level AND</td>
<td></td>
<td>• Mathematics at Higher Level AND</td>
</tr>
<tr>
<td></td>
<td>• Physics/Chemistry/Biology/Economics/Computer Science at Higher Level</td>
<td></td>
<td>• Physics/Chemistry/Biology/Computer Science at Higher Level</td>
</tr>
<tr>
<td></td>
<td>• A good grade in English at Standard Level (for ESPP students only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NUS High School Diploma</strong></td>
<td>• Major CAP of 2.0 in Mathematics AND</td>
<td></td>
<td>• Major CAP of 2.0 in Mathematics AND</td>
</tr>
<tr>
<td></td>
<td>• Major CAP of 2.0 in Physics/Chemistry/Biology</td>
<td></td>
<td>• Major CAP of 2.0 in Physics/Chemistry/Biology</td>
</tr>
<tr>
<td></td>
<td>• Good Overall CAP in English Language (for ESPP students only)</td>
<td></td>
<td>• Good Overall CAP in English Language (for ESPP students only)</td>
</tr>
<tr>
<td><strong>International and other qualifications</strong></td>
<td>• O-Levels/Additional Mathematics at Junior High School AND</td>
<td>• Mathematics at Senior High School Level AND</td>
<td>• Mathematics at Senior High School Level</td>
</tr>
<tr>
<td></td>
<td>• Physics/Chemistry/Biology/Economics at Senior High School</td>
<td></td>
<td>• Physics/Chemistry/Biology at Senior High School Level</td>
</tr>
<tr>
<td></td>
<td>• A good grade in General Paper/English at Senior High School Level (for ESPP students only)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Scan the QR code to learn which polytechnic diplomas are eligible for our programme.

Contact us for more detailed information about admissions: ase_undergrad@ntu.edu.sg
Overseas Opportunities

### Field Experience
- Participate in a 2 weeks introductory field work course after the first year of study
- Advanced students have opportunities to participate in longer field work courses abroad in places like Malaysia, Indonesia, Taiwan or California

Note: Field work courses are subjected to changes depending on regulations set out by the government. There will also be multiple opportunities to have similar

### Overseas Entrepreneurship Programme (OEP)
- Acquire invaluable skills through start-up internships, international immersion, and entrepreneurship experience
- Students have the chance to gain the experience, know-how, contacts, and skillsets they need to kick-start their own entrepreneurial journey

### Exchange Programme
- Students are encouraged to study abroad for one or two semesters on an exchange programme with our partner universities in Australia, Canada, East Asia, Europe, New Zealand, the United Kingdom, and
Testimonials from Our Students

I embarked on my semester exchange at the University of Waterloo, ON. Aside from completing my modules, it was a thrilling experience to be overseas for a semester and I had the opportunity to explore Canada’s nature through road trips and forged meaningful friendships. I experienced the transition from Fall to Winter (which is something we do not get in Singapore) and picked up ice skating as a leisure activity. Needless to say, exchange was the highlight of my undergraduate studies.

Ng Jing Yi, Stephanie

During my month-long summer program at the University of British Columbia in Canada, I made friends from around the world, got the chance to explore Vancouver and the Rockies, and had a fantastic time there! I also enjoyed the hands-on classes under the School of Community and Regional Planning at UBC.

Teo Zhi Ying

Being an adventurous soul, I’ve always loved gaining new experiences in science and research and being in ASE gave me many opportunities to do so. Here in ASE, our professors encourage us to reach for the stars and we are always able to seek for advice and guidance from them. My exchange in Sydney, Australia was really meaningful as I was able to learn new skills and experience marine research in a completely different environment and ecosystem from Singapore through the Undergraduate Research on Campus Experience (URECA). During my final summer as an undergraduate, I also had the opportunity to be involved in sea turtle research and conservation work in Northern Cyprus for a month through the Marine Science Research and Development Programme (MSRDP). These experiences enabled me to see my passion in research and conservation and motivated me to embark on my final year project this year focusing on the hawksbill turtles in Singapore.

Regine Tiong

The MSRDP grant allowed me to conduct my own marine science research and furthered my interest in corals. I had the opportunity to explore the mysteries surrounding the blue coral which was extremely fulfilling and eye-opening. This research experience has prepared me numerous skills which will be beneficial for me as I progress forward into the working world or towards graduate schools. The technical and social aspect of skillsets that I have acquired during this journey is definitely worth the time and effort that I’ve spent in this project.

Leon Sun
Scholarships & Financial Aid

The Nanyang Scholarship
Awarded to students who excel academically, with strong leadership potential and outstanding CCA track records.

☑️ Full coverage of subsidised tuition fees (after Tuition Grant).
☑️ Living, accommodation and computer allowance.
☑️ Travel grant for an overseas programme.
☑️ Priority for Overseas Programme.
☑️ Participation in Scholars Orientation Programme, Scholars Award Ceremony, Outreach Programmes, and Eminent Speaker Series.

The College Scholarship
Awarded to outstanding freshmen pursuing full-time undergraduate programmes in NTU.

☑️ Full coverage of subsidised tuition fees (after Tuition Grant).
☑️ Living allowance.

The School Scholarship
Awarded to outstanding freshmen pursuing full-time undergraduate programmes in NTU.

☑️ Full coverage of subsidised tuition fees (after Tuition Grant).
Treis ASE Scholarship
Awarded to outstanding freshmen pursuing full-time undergraduate programmes in NTU.
☑ Full coverage of subsidised tuition fees (after Tuition Grant).

For enquiries pertaining to financial assistance:
📞 (65) 6790 4115
✉️ FinAid@ntu.edu.sg

For enquiries pertaining to scholarships:
📞 (65) 6790 6766
✉️ ug_scholarships@ntu.edu.sg

For enquiries pertaining to CN Yang Scholars programme:
📞 (65) 6514 1900
✉️ d-cnyang@ntu.edu.sg

For enquiries pertaining to University Scholars Programme (USP):
📞 (65) 6908 3345
✉️ usp@ntu.edu.sg
Testimonials from our Alumni

“...I have always been impressed by how students’ interests and learning has always been at the heart of the ASE faculty. The faculty has been extremely receptive to our feedback, with constant improvements made to the curriculum based on present-day developments. I recalled how the faculty designed a field trip curriculum to palm oil plantations from scratch, after students of the Society specialisation students expressed their desire for more field exposure.

ASE has been supportive of my personal growth – I had the opportunity to pursue multiple internships during the duration of my undergraduate life and was granted time off classes to attend regional conferences. There is a high level of flexibility in the ASE programme as well as I could always choose to work on a diverse range of topics that interest me for ASE modules.

I am thankful to be placed in this faculty which opened my eyes to the wonders of the world we live in today through the multiple field trips in and out of Singapore. Most importantly, ASE taught me how to learn through questioning and reignited my passion for learning.

Chua Ying Xuan  
Alumni, EESS

“I’m currently working as an Analyst at RENERGii; a venture-building, innovation and advisory start-up that functions in the sustainability sector. My work goes into making urban cities more sustainable by employing circular economy strategies. Working in a start-up is very dynamic and I have found myself involved in a range of roles and activities. I can be helping to build an insect farming business one day, organising a zero waste design workshop the next and pouring through literature the next week. ASE and the faculty has helped me in this job by building my foundation to analyse and tackle environmental problems. In particular, I have employed the use of systems thinking, stakeholder management and the analytical frameworks taught to me at ASE. My research skills gained from working on projects with ASE faculty has also been particularly useful in my role as an analyst, allowing me to easily handle and summarise research into succinct findings for real life usage.

Jaslyn Chan  
Analyst, RENERGii
Prior to my graduation, I completed an ASE internship with Sentosa Development Corporation to incorporate geology as a new frontier in nature outreach. My positive experience has propelled my interest in planning for Sentosa’s future developments as part of the Sentosa-Brani Master Plan.

Foo Zhen Hui
Member of the 2019 Sentosa Graduate Development Programme

My work revolves around sustainability reporting and encouraging the bank to improve its environmental and social impacts, based on the policies and processes in place. Lessons from ASE on complexity and systems science are valuable in understanding the interdependencies in environmental, social issues and business considerations.

Eunice Tan
Sustainability Executive at DBS

My experience with ASE has allowed me to gain a deeper understanding of natural disasters occurrence in the Asia Pacific region through the Geoscience field trips and the research experience I had in earthquake modeling. This has benefited me greatly for my role now in analysing crisis that are occurring around the world and their impact on the community.

Miranda Ong
Crisis Response Analyst APAC at Facebook (SRS)