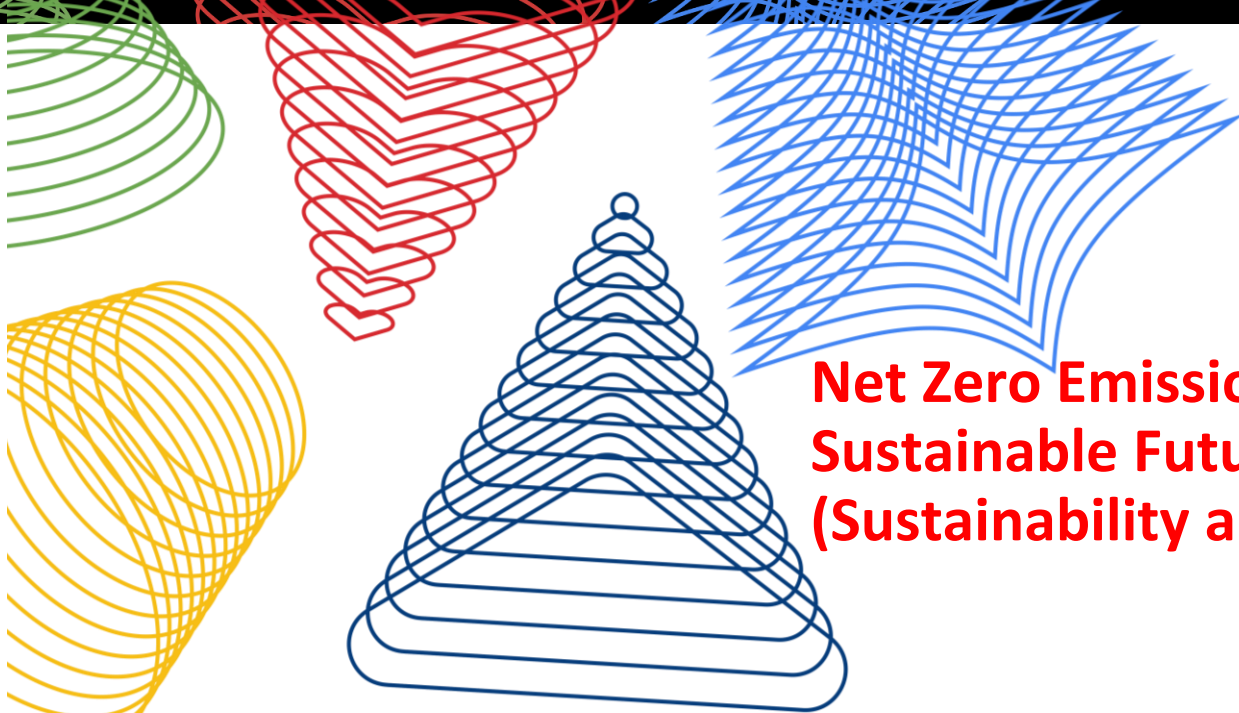




Net Zero Emissions by 2050 for a Sustainable Future (Sustainability and Climate Resilience)

Interdisciplinary Second Major in Sustainable Urban Development

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Second Major in Sustainable Urban Development

Augment First Major with an Interdisciplinary Major in "Sustainable Urban Development (SUD)*"



**Double-counting up to 16 Units (allowing students to further enhance their educational experience at NUS)*

By 2050, nearly 70% of people in the world will live in cities



**Already, cities consume 80%
of global material and energy
supplies**

**Produce over 70% of carbon
emissions-accelerated global
warming!**

SO WHAT?



Three Major Challenges

- *Decarbonize economies*
- *Reduce pollution*
- *Reduce the resources used in achieving prosperity*

Second Major in SUD

A Program For A Sustainable Future



NUS
National University
of Singapore

College of Design
and Engineering

❑ The Second Major provides our students with broad exposure to *urban sustainability*, equipping them with *interdisciplinary knowledge and skills* to be able to address the pressing issues of urban development and their impacts on cities facing the challenges of climate change

❑ **The Second Major covers:**

- Analysis of natural and built environments in urban areas
- Integrated approach to addressing urban sustainability challenges
- Practical strategies to deal with climate change and sustainable city development
- Collaboration, advocacy, and leadership to implement transformational change



Second Major in Sustainable Urban Development

FORGING NEW
FRONTIERS

Singapore Green Plan 2030



The Singapore Green Plan 2030 is a national sustainability movement which seeks to rally bold and collective action to tackle climate change.

City in Nature

Green, Liveable and Sustainable Home for Singaporeans

- Plant 1 million more trees, and have every household within a 10-minute walk from a park by 2030
- Develop over 130 ha of new parks, and enhance around 170 ha of existing parks with more lush vegetation and natural landscapes by end-2026
- Add 1000ha of green spaces by 2035

Green Government

Public sector will lead on sustainability

- Be exemplary in taking sustainability action, including to peak public sector carbon emissions around 2025, ahead of national target
- Encourage and enable citizens and businesses to adopt sustainability practices, such as through green procurement

Sustainable Living

Strengthen Green Efforts in Schools

- Introduce an Eco Stewardship Programme to enhance environmental education in all schools
- Work towards two-thirds reduction of net carbon emissions from schools sector by 2030
- At least 20% of schools to be carbon neutral by 2030

Green Commutes

- 75% of trips during peak periods to be on mass public transport by 2030
- Triple cycling path network to 1,320km by 2030, from 460km in 2020
- Expand rail network to 360km by early 2030s, from around 230km today

Green Citizenry: Reduce waste and consumption

- Reduce amount of waste to landfill per capita per day by 20% by 2026, and 30% by 2030
- Reduce household water consumption to 130 litres per capita per day

Energy Reset

Cleaner-energy Vehicles

- New diesel car and taxi registrations to cease from 2025, with all new car and taxi registrations to be of cleaner-energy models from 2030
- Further revise road tax structure to bring down road tax for mass-market electric cars
- Target 60,000 electric vehicle (EV) charging points by 2030, with 8 EV-Ready Towns by 2025

Greener Infrastructure & Buildings

- Green 80% of Singapore's buildings (by Gross Floor Area) by 2030
- 80% of new buildings (by Gross Floor Area) to be Super Low Energy buildings from 2030
- Best-in-class green buildings to see 80% improvement in energy efficiency (over 2005 levels) by 2030

Sustainable Towns & Districts

- Reduce energy consumption in HDB towns by 15% by 2030

Green Energy

- Quadruple solar energy deployment to 1.5 gigawatt-peak by 2025
- Tap on cleaner electricity imports, and increase R&D on renewable energy and emerging low-carbon technologies

It is a living plan which will evolve as we work with Singaporeans and partners from all sectors to co-create solutions for sustainability. Let's work together to make Singapore a green and liveable home.

Green Economy

Sustainability as New Engine of Jobs and Growth

- New Enterprise Sustainability Programme to help local enterprises adopt sustainability practices
- Develop Singapore to be a carbon services hub, and a leading centre for green finance in Asia and globally
- Develop Jurong Island to be a sustainable energy and chemicals park
- Leverage opportunities in sustainable industries to create good jobs for Singaporeans

New Investments to be Carbon and Energy Efficient

- Seek new investments to be among the best-in-class in energy/carbon efficiency

Resilient Future

Safeguarding our Coastlines against Rising Sea Levels

- S\$5b dedicated to coastal and drainage flood protection measures
- Formulation of coastal protection plans for City-East Coast, North-West Coast (Lim Chu Kang and Sungai Kadut) and Jurong Island by 2030

Safeguarding Food Security

- Produce 30% of our nutritional needs locally and sustainably by 2030, through developing land and sea space and skilled workers, funding support, and promoting R&D

Keeping Singapore Cool

- Moderate the rise in urban heat, such as with cool paint and by increasing greenery

Jointly led by:



Ministry of Education
Singapore



MINISTRY OF DEFENCE
SINGAPORE



Ministry of Sustainability
and the Environment
Singapore



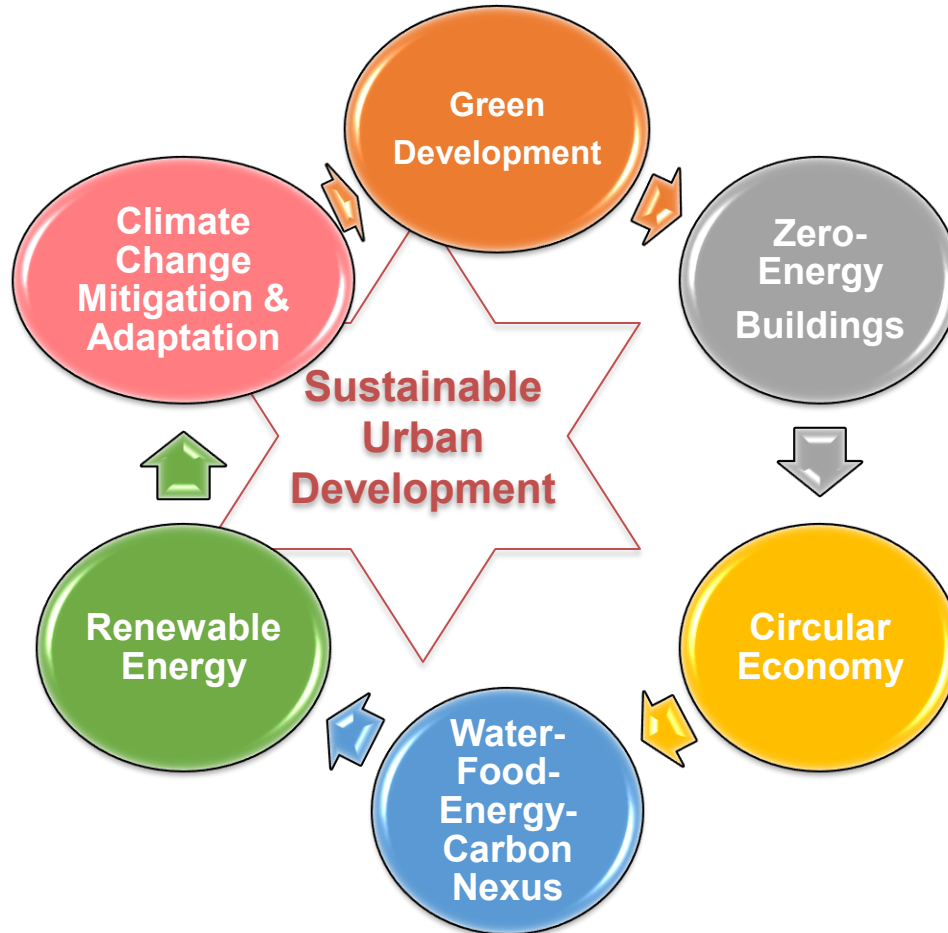
MINISTRY OF TRADE
AND INDUSTRY
SINGAPORE



MINISTRY OF
TRANSPORT
CONNECTING SINGAPORE

www.GreenPlan.gov.sg

Innovative Curriculum



Curriculum Structure



4

Cross-Disciplinary Project or 2 subjects related to “**Sustainable Urban Development**” (8 Units)

or 2 subjects to be selected from a basket of courses in lieu of the project

- ESE4408 *Environmental Impact Assessment* (4 Units)
- ESE3011 *Integrated Project for Environmental Sustainability* (4 Units)
- PFM4502 *Green Development* (4 Units)
- AR3223 *Introduction to Urbanism* (4 Units)

3

Interdisciplinary Electives Courses (12 Units) Choose any 3 courses

- PFM3210 *Total Building Performance (Net Zero Energy Building)* (4 Units)
- PFM3504 *Energy Management* (4 Units)
- PFM4208 *Safety and Health Management* (4 Units)
- ESE4406 *Energy Systems and Climate Change Mitigation* (4 Units)
- CE5315 *Climate Science for Engineers* (4 Units)
- ESE5880B *Climate Change & Urban Ecosystems* (4 Units)

2

Core Courses (16 Units)

- GES1019 *Managing Singapore's Built Environment* (4 Units)
- CE2003 *Energy, Environment, and Economy* (4 Units)
- CE3003 *Water-Food-Energy Nexus* (4 Units)
- ESE3101 *Resource Management and Circular Economy* (4 Units)

1

Foundation Course (Level 1000) (4 Units)

- GEC1040 *A Culture of Sustainability* (4 Units) (open to all)
- or ENV1101 *Environmental Studies: An Interdisciplinary Overview* (offered by CHS)
- or EG2501 *Liveable Cities* (4 Units) (offered by CDE)

New education pathways to achieve your career goal



Technical depth in the first major



**Cross-disciplinary breadth
(Sustainable Urban Development)**



**Icing on the cake
(double-counting up to
16 Units) 2 majors in 4
years with no increase
in academic workload!**



Second Major in Sustainable Urban Development

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Career Prospects



NUS
National University
of Singapore

College of Design
and Engineering

- **Employment:** Graduates are well equipped to work in the private sector, government and international organizations, as well as in non-governmental organizations, consultancy and research. There is a strong need for companies to comply with regulations related to Environmental, Social and Governance (**ESG**) risks.
- **Career Paths**
 - Academia
 - Business
 - Industrial Fields and Sectors
 - Government
 - Non-profit organisations
 - Consulting Firms
- **Career Options**
 - Sustainability Director
 - Sustainable City Planner
 - Carbon Footprint Manager
 - Renewable Energy Manager
 - ESG Specialist
 - Green Process Design Consultant

College of Design
and Engineering



**COME, JOIN US &
LET'S WORK TOGETHER TO MAKE THIS MISSION
POSSIBLE**



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Civil and Environmental Engineering | NUS**