



**NANYANG**  
TECHNOLOGICAL  
UNIVERSITY



**NTU Summer Programme 2012**

**“Sustainability and Innovation”**  
8 – 21 July 2012 (2 weeks)

# **NTU Summer Programme 2012**

## **“Sustainability and Innovation”**

### **8 – 21 July 2012 (2 weeks)**

The Centre for Continuing Education of Nanyang Technological University (NTU) is organizing a two-week summer programme from 8 to 21 July 2012 for international undergraduates.



The theme of the programme is “Sustainability and Innovation”. You will get to learn about Sustainable Trends and Mental Model, Strategic Tools and Methodologies for Sustainability, Climate Change and its impact on Sustainability, Economic Sustainability, Creativity & Innovation, and Entrepreneurship & Innovation: When East meets West.

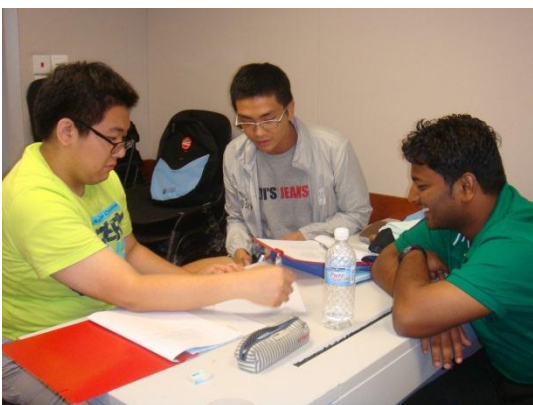
Join in the programme! Be the first to learn how to be innovative and sustainable in the 21<sup>st</sup> Century!

Experience a uniquely learning environment on the green, spacious and beautiful campus of NTU. Enjoy the exciting life in a vibrant and cosmopolitan city!



# IMPORTANT DATES

Early bird registration Deadline	20 April 2012
Registration & Payment Deadline	21 May 2012
Confirmation of Registration	31 May 2012





# Programme Outline

- ❖ Classes are conducted in English by NTU faculty members and associate trainers

Topics include:

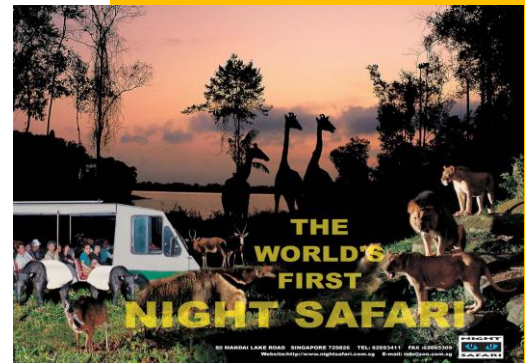
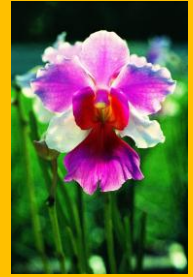
- Singapore, the Island Nation: An Overview
- Climate Change and its impact on Sustainability
- Creativity and Innovation
- Sustainable Trends and Mental Model
- Economic Sustainability
- Entrepreneurship and Innovation: When East meets West
- Strategic Tools and Methodologies for Sustainability

- ❖ Field trips include visit to:




- NeWater Plant
- Marina Barrage
- Building Construction Authority Gallery
- Biofuels Plant
- Merlion Park
- Marina Bay
- Singapore River
- Chinatown
- Little India
- Night Safari
- Jurong Birdpark

- ❖ Group Discussion and Presentation

- ❖ Activities with students



# Programme Schedule

<b>Date</b>	<b>Morning</b>	<b>Afternoon</b>
Sunday 8 July		<b>Arrival in Singapore &amp; check-in</b> (12 noon – 8pm) 
Monday 9 July	<b>Welcome Session</b>  <b>Class</b> Singapore, the Island Nation: An Overview  <b>Welcome Lunch</b>	<b>Campus &amp; Neighbourhood tour</b>  
Tuesday 10 July	<b>Class</b> Climate Change and its impact on Sustainability	<b>Visit Building Construction Authority Gallery</b>
Wednesday 11 July	<b>Class</b> Climate Change and its impact on Sustainability	<b>Visit NeWater Plant &amp; Marina Barrage</b> 
Thursday 12 July	<b>Class</b> Creativity and Innovation	<b>City Tour</b> 
Friday 13 July	<b>Class</b> Creativity and Innovation	<b>Activities with students</b>  <b>Visit (Evening) Night Safari</b> 

<b>Date</b>	<b>Morning</b>	<b>Afternoon</b>
Saturday 14 July		<b>Free</b>
Sunday 15 July		<b>Free</b>
Monday 16 July	<b>Class</b> Sustainable Trends and Mental Model	<b>Class</b> Economic Sustainability
Tuesday 17 July	<b>Class</b> Entrepreneurship and Innovation: When East meets West	<b>Visit Jurong Birdpark</b> 
Wednesday 18 July	<b>Class</b> Entrepreneurship and Innovation: When East meets West	<b>Visit Biofuels Plant</b>
Thursday 19 July	<b>Class</b> Strategic Tools and Methodologies for Sustainability	<b>Class</b> Strategic Tools and Methodologies for Sustainability
Friday 20 July	<b>Class</b> Group Discussion and Presentation	
	<b>Certificate Presentation Ceremony Closing Lunch</b>	
Saturday 21 July	<b>Check-out from Hostel</b> (8.30am – 12 noon)	
	<b>Departure from Singapore</b> 	

\* Programme may be subjected to change.

# Course Synopsis

## Singapore, the Island Nation: An Overview

*Speaker: Dr. Chan Soon Keng*

1. Brief Introduction: history and geography
2. The Peoples of Singapore
3. Culture and Subcultures
4. Educational System
5. Housing
6. Transportation
7. Economy
8. Summary

## Climate Change and its impact on Sustainability

*Speaker: Dr. Tommy S. W. Wong*

As the human population continues to grow, while the world's natural resources are finite, there is already a concern whether there will be sufficient resources for human survival in the future. Added to this concern is the human-induced climate change which will inevitably have a significant effect on human activities such as food production and on the natural resources such as water resources. This session will examine the impact of climate change on human sustainability.

## Creativity and Innovation

*Speaker: Associate Professor Stephen Lee*

In today's fast-paced, constantly evolving world, the three R's of education – Reading, wRiting and aRithmetic – are inadequate to prepare youngsters for the future. They need to be educated in cReativity as well. This short course introduces participants to the notion of creativity and its characteristics, what fosters and what hinders creativity, the difference between 'invention' and 'innovation'; examples of innovators and innovations that have changed the lives of many.



# Entrepreneurship and Innovation: When East meets West

*Speaker: Mr Francis Tay*

Entrepreneurship and innovation goes hand in hand like a horse and carriage. However, the road to being an entrepreneur is not an easy one. Besides having the right characteristics, the necessary environment must also be there to encourage individuals to become entrepreneurs. Innovation, just like entrepreneurship, is not something that can be simply turned on when called upon. Innovation begins with a process that calls for individuals to be creative. Creativity however, is not necessarily something innate in all individuals. Research in the area of entrepreneurship indicates that entrepreneurs are not born and can be made. Entrepreneurs essentially start businesses to take advantage of opportunities and innovate in order to continue being successful. Thus, the potential for anyone to be an entrepreneur is there, however, only a few will take this route as a career. Why is this so? Can we train someone to be innovative? Can we turn the man on the street into an entrepreneur?

This session will look at the characteristics of an entrepreneur and the reasons why one would choose to be an entrepreneur. This session will also look at innovation from an "East vs West" perspective, e.g. how could would be entrepreneurs find innovative ideas from trends observed in the West and vice-versa in the East? For example, how can we see opportunities from demographic, technological and economic changes? How can a small country like Singapore potentially be the centre for innovation?

## Sustainable Trends and Mental Model

*Speaker: Professor Lim Mong King*

1. The challenge of sustainable development by analysing two major converging Trends: decline in resource availability and ecosystems as well as increase in population and consumption.
2. How these Trends are leading to a decline in the health and capacity of natural systems worldwide?
3. "Club of Rome Report" – Introducing the concept of the Limits to Growth and Earth Carrying Capacity.
4. Using the example of Climate Change to explain the concept of Planetary Boundaries.
5. Major global events of in Sustainable Development during the last three decades.
6. Triple Bottom Line – a new perspective in business.
7. We cannot expect to be able to resolve any complex problem from within the same manner of thinking that created it in the first place - new mental model required to solve sustainability issues.
8. Using systems thinking approach to have a better understanding of sustainability issues.
9. What skills do we need to build to become a systems thinker?



# Economic Sustainability

*Speaker: Prof Chew Soon Beng*

All citizens want a job (J) with good pay. They want to own a house (H) and enjoy effective healthcare coverage (H). They want their children to receive good education (E). When they retire, they want to have money so that they can maintain the same standard of living as before (R). Of course, all these basic goods EHHHER can be provided by the government such as in Greece. Public sector employment is large. Healthcare, education, housing are subsidized and public sector employees have a pension and the age of retirement is 60. They can negotiate the age of retirement to be earlier if they can prove that the health is not very good. The system of relying on the government to provide EHHHER is not sustainable as we can see that Greece, among other countries, is in trouble now. How to enjoy the good life and yet it is sustainable is not easy.

The purpose of this session is to show that, in the case of Singapore, the EHHHER described above can be obtained provided the following conditions are fulfilled; First, there is no free lunch. Everyone needs to work and save for HHER. The government must ensure that there will be many job opportunities and is able to control the price of housing, healthcare, education and CPI for low income citizens. It is a win-win outcome for all. We can achieve EHHHER (Social Security) without a budget deficit.

# Strategic Tools & Methodologies for Sustainability

*Speaker: Professor Lim Mong King*

1. How might the trends that threaten sustainable development affect the industry and our company and how can we react strategically?
2. Sustainable development trends can create business constraints as well as opportunities.
3. Redesigning our industrial system to be sustainable requires a shared framework to understand how nature works.
4. Using the concept of sources and sinks to explain the impact of our expanding industrial system on the environment.
5. New business models and tools are emerging that will help companies shift to sustainable practices.
6. Eco-efficiency.
7. Industrial Ecology.
8. Life Cycle Analysis.
9. Design for Environment.
10. The Natural Step.

# Registration Fee

Category	Early-bird Registration (Payment made by 20 April 2012)	Standard Registration (Payment made after 20 April 2012)
Students from NTU partner universities	SGD 2,100 + 7% Good & Services Tax  = <b>SGD 2,247</b>	SGD 2,300 + 7% Good & Services Tax  = <b>SGD 2,461</b>
Students from non NTU partner universities	SGD 2,500 + 7% Good & Services Tax  = <b>SGD 2,675</b>	SGD 2,700 + 7% Good & Services Tax  = <b>SGD 2,889</b>

The registration fee covers twin-sharing student hostel accommodation (air-conditioned), tuition fee, field trips, programme materials, welcome lunch and closing lunch. Each participant will be issued an official receipt from NTU.

The fee does not include airfare, insurance, meals, visa application, personal expenses or any expense not stated above.

## Registration

All international undergraduates are eligible to apply for the programme but must possess a good command of English language as the programme will be conducted in English.

Please submit your registration form either by email to [cce@ntu.edu.sg](mailto:cce@ntu.edu.sg) or via fax to (+65) 6774 2911.

You are required to submit a letter from your university verifying your student status.

You will receive an email acknowledgement within 2 working days from your registration. If you do not receive any acknowledgement from us, please send an email to [cce@ntu.edu.sg](mailto:cce@ntu.edu.sg).

The early bird registration & payment deadline is 20 April 2012. The standard registration & payment deadline is 21 May 2012. If you wish to register after the deadline, please send an email to [cce@ntu.edu.sg](mailto:cce@ntu.edu.sg) to check if vacancy is still available.

The programme may be cancelled if there are insufficient participants and full refund will be made.

You will be notified on the final confirmation of your registration and the status of the programme **by 31 May 2012.**

# Modes of Payment

You may pay by one of the following payment modes:

## a) Bank Draft

Bank draft in **Singapore dollars** is to be made payable to “**Nanyang Technological University**”.

A copy of the registration form must be attached with the bank draft which has to be sent by registered mail or by courier to the following address.

**Nanyang Technological University**  
**Centre for Continuing Education**  
**11 Slim Barracks Rise (off North Buona Vista Road)**  
**NTU@one-north campus, Executive Centre #05-01**  
**Singapore 138664**  
**Attention: NTU Summer Programme 2012**

## b) Telegraphic Transfer

Payment to be transferred to NTU bank account as stated below:

<b>Beneficiary's Name</b>	Nanyang Technological University
<b>Beneficiary's Banker Name</b>	Overseas-Chinese Banking Corporation Limited
<b>Beneficiary's Banker Address</b>	NTU Branch Lounge at Canteen A, NTU Nanyang Avenue, Singapore 639798
<b>Beneficiary's Account Number</b>	537-010027-001
<b>SWIFT Code</b>	OCBCSGSG

\*Please note that you have to bear all the bank charges incurred in your home country and Singapore. You are also requested to state in the telegraphic transfer slip that the payment is for “NTU Summer Programme 2012”.

A copy of the telegraphic transfer slip has to be faxed to +65-6774 2911 or you may email a scanned copy to [cce@ntu.edu.sg](mailto:cce@ntu.edu.sg).

## Certificate

NTU will issue a Certificate of Attendance to participants who achieved at least 75% attendance.

Academic credits will not be awarded by NTU but home universities may consider awarding credit to their own students.

## Insurance

You are required to purchase travel insurance to cover your stay in Singapore. Proof of purchase of travel insurance must be submitted to NTU prior to your arrival. You will not be able to participate in the programme if you do not comply with this requirement



# Accommodation

Twin-sharing student hostel accommodation (air-conditioned) will be provided at NTU main campus during the programme period.

**Check-in:** 8 July 2012 (Sunday), 12 noon to 8pm

**Check-out:** 21 July 2012 (Saturday), 8.30am to 12 noon.

## Remarks:

\* No extension of stay in the hostel is allowed and you have to adhere strictly to the check-in/check-out timing. Please arrange your own accommodation outside campus if you wish to extend your stay in Singapore.

\* A CASH deposit of SGD 100 is required upon checking in. The deposit will be fully refunded upon checking-out if there are no damages to the hostel room.



# Introduction of NTU

Nanyang Technological University (NTU) is a research-intensive university with globally acknowledged strengths in science and engineering. The university has roots that go back to 1955 when Nanyang University was set up.

Today, NTU has four colleges with 12 schools, and three autonomous entities, the National Institute of Education, the S Rajaratnam School of International Studies, and the Earth Observatory of Singapore.

NTU provides a high-quality global education to more than 21,700 undergraduates and 9,400 graduate students. The student body includes top scholars and international Olympiad medalists from the region and beyond.

Hailing from 55 countries, the university's 2,700-strong teaching and research staff bring dynamic international perspectives and years of solid industry experience.

## Diverse disciplines for diverse talents

NTU is ranked among the world's top 100 universities by the Times Higher Education-QS World University Rankings 2008.

The College of Engineering, with six schools focused on technology and innovation, has a research output among the top four in the world.

The College of Science, with award-winning faculty and world-class laboratories, runs Singapore's only direct honours bachelor's degree programmes in the biological, physical and mathematical sciences.

The Nanyang Business School is the first and only Singapore business school to be ranked in the top 25 of the Financial Times Global MBA 2009 rankings. It is also one of only three in Asia to be awarded both the EQUIS (European Quality Improvement System) and AACSB (Association to Advance Collegiate Schools of Business) accreditations - international hallmarks of quality.

The College of Humanities, Arts, & Social Sciences is home to the Wee Kim Wee School of Communication and Information, a top journalism and media school in Asia; a fast-growing humanities and social sciences school with distinctive niches of excellence; and Singapore's first professional art school offering degree courses in art, design and interactive digital media.

The National Institute of Education, Singapore's only teacher-training institute, is internationally-acclaimed and provides educational consultancy to countries from Indonesia to Abu Dhabi.

The S Rajaratnam School of International Studies, an autonomous graduate institution of NTU, runs the Institute of Defence and Strategic Studies, long recognised as a world authority on strategic studies and security research.

The Earth Observatory of Singapore, established in 2008 with S\$150 million in state funding, is dedicated to hazards-related earth science.

## Well-rounded, global education; tailored programmes for high-achievers

The university's academic and research programmes, with real-world relevance, have reaped dividends in the form of strong support from major corporations and industry leaders, in terms of both research funding and partnerships and global internship opportunities for our students.

NTU's Undergraduate Experience, offering a broad education in diverse disciplines, including residential living and international experience, has also received external endorsement for its holistic curriculum featuring a rich selection of majors and minors.

At NTU, academically-inclined students with a yen for research can take part in the Undergraduate Research Experience on Campus programme. High-calibre students with a deep passion for science and technology also have the option to pursue the CN Yang Scholars Programme, a premier undergraduate programme that prepares science and engineering talents for top graduate schools as well as greater feats in the 21st century.

Tech-savvy and adaptable, graduates of the university are sought-after and well-paid, drawing some of the highest starting salaries among local university graduates.

## Distinctive edge in science and engineering; Nobel boost

As the main science and technology university in Singapore, NTU makes significant contributions to the nation's renewed drive for research and innovation spearheaded by the Singapore National Research Foundation. This effort will see S\$2.4 billion being invested over five years in biomedical sciences, environmental and water technologies, and interactive and digital media - areas NTU is strong in.

A key node in NTU's pursuit of research excellence is the endowed Institute of Advanced Studies, focused on promoting science and technology at the highest level. The institute has attracted 10 Nobel laureates and a Fields Medallist to its panel of International Advisors, and regularly flies in Nobel laureates and other scientific giants to enrich the life and work of the university community.

## Local and overseas campuses

NTU's main 200-ha garden campus - housing Singapore's largest on-campus residence infrastructure including 16 halls of residence for undergraduates and a graduate hall - is located in the southwestern part of Singapore and will be the Youth Olympic Village of the inaugural Youth Olympic Games in 2010. Besides the Yunnan Garden campus, NTU has another campus, NTU@one-north, located next to the Biopolis, Singapore's biomedical research hub, and Fusionopolis, a new epicentre of engineering and physical sciences. With its strategic location, NTU is considering setting up a graduate school at the one-north campus. The graduate school will better synergise the university with the considerable national resources invested in the Biopolis and Fusionopolis, and facilitate collaboration with other institutions and agencies in the one-north region.

NTU@one-north is also home to the NTU Alumni Clubhouse. Its proximity to the city means that it is more convenient for alumni to gather and connect with the university. The one-north campus also allows NTU's evening and part-time students better access, so that the university can enhance its delivery of continuing education programmes, through the Centre for Continuing Education and





Confucius Institute of NTU also located at the new campus.

In addition to the Yunnan Garden campus and the NTU@one-north campus, NTU has other campuses in US, Europe, India and China hosted by well-known partner universities, such as Georgia Institute of Technology in the US, University of St Gallen in Switzerland and Indian Institute of Technology and Peking University in Asia. Through the university's flagship Global Immersion Programme, covering 19 cities in six countries, NTU undergraduates also spend from six months up to a year at these overseas campuses.

### **Outstanding international profile**

NTU's international outreach is broad and strong and includes academic and research partnerships with more than 400 institutions in about 45 countries.

The university's multi-country programmes and initiatives are conducted with institutions such as MIT, Stanford University, Cornell University, Caltech, University of Washington, Georgia Institute of Technology, Carnegie Mellon University, Peking University, Shanghai Jiaotong University, Waseda University, Indian Institute of Technology, Cambridge University, Imperial College and Swiss Federal Institute of Technology.

### **A rich heritage: national monuments on campus**

Gazetted as a national monument in 1998 and now housing the Chinese Heritage Centre, the beautifully restored former Nanyang University Administration Building, with a distinct oriental character, overlooks the historical Yunnan Garden. The Nanyang University Memorial and original Nanyang University Arch were also declared national monuments of Singapore in 1998. The NTU Art & Heritage Museum is an approved public museum under the National Heritage Board's Approved Museum Scheme; benefactors who donate artworks and artifacts to NTU enjoy double tax deductions.



# NTU- Centre for Continuing Education

The Centre for Continuing Education (CCE) of Nanyang Technological University (NTU) was set up in July 1991. It acts as a link between NTU and the community by providing continuing education for our alumni and others who are keen to advance their knowledge and learn practical skills.

To sharpen your competitive edge and maximise your potential, you need to talk to the expert in professional development and executive training - Nanyang Technological University's Centre for Continuing Education (NTU-CCE).

With our innovative and practical training programmes, you will embark on a journey to explore new frontiers and sharpen your mind. From engineering to management disciplines, we design programmes that realise your talent and challenge your thinking. We create unique opportunities for growth and transformation.

Since 1991, we have trained tens of thousands of leaders and professionals and continue to strengthen our position as a leading professional development training provider in Singapore and the region.

## Our Mission

Our mission is to create opportunities for growth and transformation for the professionals, organisations and the communities we work with, by imparting knowledge and skills through innovative and value-enhancing education programmes and services.

## Our Vision

We aim to be a leading provider of continuing education programmes and services in Asia.

## Our PRIDE - Your Choice

Come and experience our professional training and services:

- Professional Development Courses
- Regional Executive Programmes
- International Corporate Training
- Distance Learning
- Event Management

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**Email: [cce@ntu.edu.sg](mailto:cce@ntu.edu.sg)**

**<http://www.ntu.edu.sg/cce/>**



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