

# 2013

**NUSRI (Education)**

## **NUSRI 2013 WINTER PROGRAMME IN SUZHOU: CLEAN ENERGY & ENVIRONMENT ISSUES (CEEI)**

NUSRI is offering a 6 weeks' "Clean Energy & Environment Issues" programme in Suzhou to international students in December 2013. Participating students will have the opportunity to attend credit earning courses delivered by NUS faculties, as well as cultural activities and industry visits organized to deepen their understanding of economy and culture in Asia.

**NUSRI 2013 Winter Programme in Suzhou: Clean Energy & Environment Issues (CEEI)**

Host University	Duration and Dates	Programme Features:	Credits	Cost
NUS Research Institute @ Suzhou	<p><b><u>Period:</u></b> 01 Dec 2013 (Sunday) to 10 Jan 2014 (Friday)</p> <p><b><u>Duration:</u></b> 6 weeks</p> <p><b><u>Application Deadline:</u></b> 31 Oct 2013</p>	<ol style="list-style-type: none"> <li>Courses by NUS faculty <ul style="list-style-type: none"> <li><b>Module 1</b> GEM1535 Clean Energy and Storage</li> <li><b>Module 2</b> GEK1522T Global Ecology &amp; Environmental Issues</li> </ul> </li> <li>Industry visits/talk/sharing to understand economy development of contemporary China</li> <li>Cultural visits/lecture/DIY sessions to understand Chinese culture</li> </ol>	<p>4</p> <p>4</p> <p>n/a</p> <p>n/a</p> <p>n/a</p>	<p><b><u>Application Fee:</u></b> SGD50 (not refundable)</p> <p><b><u>Tuition Fee:</u></b></p> <ol style="list-style-type: none"> <li><b>SGD1, 650 per module</b> for students from NUS partner universities.</li> <li><b>SGD3, 300 per module</b> for students from non-NUS partner universities.</li> </ol> <p><b><u>Programme Fee:</u></b> SGD400 per week</p> <p>*Students can register for either or both modules.</p> <p>**Programme fee includes accommodation (twin sharing apartment); cultural and industrial visits arranged as well as related ground transfer and admission charges to places of interests.</p>

Please visit <http://www.nusri.cn/edu/> for updated information.

## **NUSRI 2013 Winter Programme in Suzhou: Clean Energy & Environment Issues (CEEI)**

### **What is the programme about?**

NUSRI is offering a 6 weeks' "Clean Energy & Environment Issues" programme in Suzhou to international students from December 2013 to January 2014. Participating students will have the opportunity to attend courses delivered by NUS faculties, as well as cultural activities and industry visits organized to deepen their understanding of economy and culture in Asia.

Through classroom lectures, discussions and outside-classroom reading / researches, students will not only pursue knowledge with a special focus on Energy and Environmental Issues but get the direct and comprehensive understanding of China economy and culture.

### **When does it take place?**

The programme period is from 01 December 2013 to 10 January 2014.

### **How much does it cost?**

- 1 Application Fee: SGD50 (not refundable)
- 2 Tuition Fee:
  - SGD1, 650 per module for students from NUS partner universities;
  - SGD3, 300 per module for students from non-NUS partner universities.
- 3 Programme Fee: SGD400 per week

Students can register for either or both modules.

Programme fee covers accommodation (apartment nearby NUSRI, twin sharing), cultural and industrial visits arranged as well as related ground transfer and admission charges to places of interests.

### **Where does it take place?**

NUSRI ([www.nusri.cn](http://www.nusri.cn)) is the first overseas research institute of NUS. It is located within the Suzhou Dushu Lake Science and Education Innovation District (SEID) in the Suzhou Industrial Park (SIP). In collaboration with Suzhou Industrial Park Administrative Committee (SIPAC), NUS promotes research and entrepreneurship, and conducts education programmes through NUSRI. NUSRI has successfully held programmes for students from NUS and overseas in the past years and its 21,000 square meter building had been officially unveiled in May 2013. Please visit <http://www.nusri.cn/edu/> for information on past programmes and events organized.

### **How to register?**

The registration period is from 1 Sep to 31 Oct 2013. For students from NUS partner universities with exchange agreements please contact your home universities to apply through NUS International Relations Office to enjoy special programme rates. Students from non- NUS partner universities, please download the application form from our website and have the completed form to be submitted via email during the stated registration period.

**What this programme includes?**

This programme aims to provide a platform for international students to experience NUS' academic excellence as well as to benefit from gaining comprehensive understanding of China economy and culture by pursuing knowledge through formal lectures, discussions in NUSRI and local universities in SIP, and a series of cultural and industry visits around Yangtze River area.

The programme consists of the following 3 parts:

1. **Credit bearing courses** (*course details please refer to annex 1*)
  - Module 1: GEM1535 Clean Energy and Storage (4 MCs, 36 contact hours over 6 weeks)
  - Module 2: GEK1522T Global Ecology & Environmental Issues (4 MCs, 36 contact hours over 6 weeks)
2. **Industry visits/talk/dialogue sessions to experience economy situation of contemporary China** (*details please refer to annex 2*)
  - Talk: The Present and Future of Suzhou Industrial Park (SIP)
  - Visit Suzhou Industrial Park Exhibition Hall
  - Talk: Contemporary China-Its Economy (at Soochow University)
  - Dialogue Session with Chinese Scholars on "China Economy"
  - Visit Jurong International China etc.
  - Talk and Discussion: Igniting Entrepreneurship in Asia
3. **Cultural visits/talk/DIY sessions for Chinese culture understanding** (*details please refer to annex 3*)
  - Talk: Garden Culture in Suzhou
  - Visit Humble Administrator's Garden and the Master of Nets Garden
  - Visit Oriental TV Tower and Shanghai Museum
  - Visit Zhouzhuang Village
  - Cultural Lecture and DIY: Tea Appreciation
  - Cultural Lecture and DIY: Chinese Calligraphy

## 1. Credit bearing courses

### Module 1 : (GEM1535) Clean Energy and Storage

<b>Duration</b>	: 36 contact hours over 6 weeks
<b>Modular Credits</b>	: 4 MCs (as in NUS curriculum)
<b>Lecturer</b>	: Dr Nidhi Sharma (Department of Physics, Faculty of Science, NUS)
<b>Delivery Language</b>	: English
<b>Assessment</b>	: 2 MCQ Tests+ Essay

#### Module Description:

Modern civilization, which on the one hand boasts of having discovered the behaviour of subatomic particles, has also to its credit the impending intensified energy crisis and global warming. The urgent need to address these challenges has now become obvious. The course will acquaint students with the current global energy crisis and the role of clean energy resources and energy storage devices in answering it. In addition to the principles of various energy processes, the course will highlight the research done by the scientific community. Topics include: the present energy scenario, solar energy, photovoltaic converters, nuclear energy, ocean energy, tidal energy, ocean thermal energy converters, wind energy, biomass, fuel cells, the world of hydrogen, and Lithium ion batteries.

#### Learning Outcomes:

1. Understand present energy production, delivery, consumption and efficiency.
2. Learn about fossil-fuel reserves, consumption of these reserves, finding new fossil-fuel resources, and drawing future trends of fuel production, consumption and consequences.
3. In the context of the above, realization of the Global energy crisis and the issue of global warming.
4. Understanding the need to address these challenges on an urgent basis and the role of clean energy and storage devices in this direction.
5. Learning about basic principles and R&D on various energy systems and power projects based on them.

Upon successful completion of the course students will have more fully developed thinking about the fundamentals of clean energy systems and will be better prepared to take up energy related higher study programmes suited to their interests and aspirations in NUS. With added energy consciousness and knowledge they can be more responsible citizens.

**Module 2 : (GEK1522T) Global Ecology & Environmental Issues**

<b>Duration</b>	: 36 contact hours over 6 weeks
<b>Modular Credits</b>	: 4 MCs (as in NUS curriculum)
<b>Lecturer</b>	: Dr. Obbard, Jeffrey Philip (Associate Professor, Department of Civil & Environmental Engineering, NUS)
<b>Delivery Language</b>	: English
<b>Assessment</b>	: 2 MCQ Tests

**Module Description:**

Environmental protection is now fundamental to the development of a sustainable global society. No longer is human influence on the planet confined to the local environment, but now extends across political boundaries - often resulting in regional or even global impacts. As a result, society, industry and agriculture are under increasing pressure to improve environmental performance and cut resource consumption and pollution. Around the world, governments are striving to minimize waste production, protect water resources, reduce energy consumption and improve the quality of the urban living environment.

As the human global population grows exponentially and the life-support systems of the planet continue to deteriorate, there is a growing international recognition that environmental problems require truly global solutions. This course will focus on the issues and causes of global environmental issues including: earth system science; population growth; resource exploitation and threats to the atmosphere hydrosphere and biosphere.

Global environmental issues include some of the most significant challenges facing mankind today. Loss of biodiversity, deforestation, climate change, ozone depletion...how are these issues inter-related? Exponential human population growth, unbridled economic and industrial development, widespread use of industrial chemicals. How does this affect the natural world and maybe even your health?

Scientists and engineers are making major advances in our understanding of the environmental processes that shape life on Earth. This has called into question humankind's relationship with the natural world and has led governments to strive for a more sustainable future. Solutions to complex environmental problems require skills and initiative from people of all backgrounds - from planners-to-business people, from scientists to politicians.

**Learning Outcome:**

The 'Global Environmental Issues' course provides insight into some of the fundamental causes of the key global issues facing humanity today. We will also focus on Earth system science, the challenges and the potential solutions to complex environmental problems. At end of the course, students will master basic principles of ecological, energy and ecosystems; learn about sustainable use of resources, tragedy of the commons, biodiversity; be aware of climate change, mitigation, adaptation, carbon sequestration, population growth, biodiversity, pollution and toxicology, waste management as well as renewable energy.

## **2. Industry visits/talk/dialogue sessions to experience economy situation of contemporary China**

### **Talk: The Present and Future of Suzhou Industrial Park (SIP)**

Launched in February 1994, SIP is a cooperative project of priority between the China and Singapore government. During the past decade, SIP has developed rapidly and it is now one of the most developed industrial zones across China. The talk shall provide students a clear picture on SIP's development in different phases.

### **Visit Suzhou Industrial Park Exhibition Hall**

Built in 2006, SIP Exhibition Hall covers 2000 square meters. The hall serves as the window to showcase the harmonious and sustainable development of SIP over the past 20 years. By visiting the hall, students will get comprehensive understanding of SIP's economic development model.

### **Talk: Contemporary China – Its Economy**

Located in Suzhou, Soochow University is a key comprehensive university providing high quality education that prepares to make significant contributions to the nation. Professors from local university will be engaged to deliver the talk relating to China's economy. Students will gain not only the knowledge but also experience education in the local institute.

### **Dialogue Session with Chinese Scholars on "China Economy"**

In this session, students will have the opportunity to exchange their ideas, opinions and thinking on the topic of China Economy with Chinese scholars. They can also have the chance to make friends with local Chinese students to understand further on Chinese's thinking.

### **Visit JURONG International China**

JURONG International is synonymous with Singapore's industrialisation efforts. It has come a long way since the 60s, having adapted to changing market conditions and performed in challenging environments. Jurong International today has offices in China, India and the Middle East, reaching out to a truly global mix of customers. JURONG International strives to be the globally preferred service provider for the built environment.

### **Talk and Discussion: Igniting Entrepreneurship in Asia**

The ubiquitous assertion "You can't teach entrepreneurship" was probably accurate back when schools fielded chiefly sterile exercises in business-plan writing. Discover what it takes Singapore to become a thriving economic and enterprising city from the session.

### 3. Cultural visits/talk/DIY sessions for Chinese culture understanding

#### **Talk: Garden Culture in Suzhou**

Suzhou is a city famous for its gardens. Laid out within a limited area by the house, a classical garden of Suzhou is a microcosm of the world made of the basic elements of water, rocks, vegetation and various kinds of buildings. Like the freehand brushwork in traditional Chinese painting, it is the creation of “urban scenery” or an amicable environment that brings man into harmony with nature.

#### **Visit: Humble Administrator’s Garden（拙政园） and the Master-of-Nets Garden（网师园）**

As the Mother of Chinese Gardens, the Humble Administrator's Garden covering about 52,000 sq. meters (12.85 acres) is the largest and most renowned garden with 500 years history. The Master-of-Nets Garden, carefully planned and thoughtfully laid out, is indeed a good example of how the small garden exceeds the large and how the few surpasses the many in the Chinese garden.

#### **Visit: Oriental TV Tower and Shanghai Museum**

Being the worlds’ 3<sup>rd</sup> tallest TV tower, the Oriental TV Tower is with a giddy height of 468 meters. With a unique design composed of balls and columns, the tower has become Shanghai's newest landmark. Right across the Huangpu River, the Shanghai Museum echoes the modern financial zone in Pudong with rich collection of ancient Chinese art pieces, including cultural relics in twelve categories.

#### **Visit: Zhouzhuang Village**

Situated in Kunshan City which is 30 kilometers (18 miles) southeast of Suzhou, Zhouzhuang is one of the most famous water townships in China. It is noted for its profound cultural background, the well preserved ancient residential houses, the elegant watery views and the strong local colored traditions and customs.

#### **Cultural Lecture and DIY: Tea Appreciation**

Tea was first found in China in 28th Century BC, 5000 years ago. It was used as a kind of medicine to detoxify people. Now it is proved that drinking tea is good for health. For thousands of years, China has not only accumulated experience of tea cultivation and production but also rich culture of making and drinking tea. Join us learn how to appreciate Chinese tea.

#### **Cultural Lecture and DIY: Chinese Calligraphy**

With long history, Chinese calligraphy is considered as the art of writing Chinese characters. It serves as a way to convey one’s thoughts and also shows the beauty of lines. Being taught how to use brush, ink, paper and ink stone, you can be the artist.