

National Chiao Tung University, Taiwan

2012 Summer Program
NCTU

July 1 - August 10

Multiple Culture, Different Experience

International Service Center
Office of International Affairs
National Chiao Tung University
1001 University Rd., Hsinchu, Taiwan 30010, R.O.C.



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About NCTU

- 47th in Engineering & 36th in Computer Science by Shanghai Jiaotong University's Academic Ranking of World Universities 2010
- 26th in Computer Science by ESI for publications
- 10 depts/institutes accredited by institute of Engineering Education Taiwan (IEET)
- Best engineering program in Taiwan
- College of Management accredited by AACSB (July 2007)
- 5th best MBA program in Asia (Asia Inc.)
- Strong Academy-Industrial Collaboration
- Two-thirds of the CEOs & general managers in the Hsinchu Science Park are NCTU alumni
- Started as Nanyang College in Shanghai in 1896
- Re-establish as NCTU in 1958 in Hsinchu, Taiwan, focusing on electrical & computer engineering
- Situated in Hsinchu, the "Silicon Valley" of Taiwan



Introduction for the 2012 Summer Program

NCTU will host a 6-week intensive summer program in 2012. It starts from July 1, 2012 to August 10, 2012. There are three modules in the program: Basic Professional Courses, Mandarin Course, and Culture and Management Course. Each module is 3 credits / 54hours. All credits are transferable among partner universities. NCTU will also provide the course certificate for students. The Basic Professional Courses are covered in the fields of electrical and computer engineering, computer science, engineering, and science. A special designed Mandarin Course will be offered. The Culture and Management Course will be provided for students who are interested in Chinese culture and the knowledge of business management.

In addition, NCTU will arrange a culture trip on Wednesday and a field trip on Saturday biweekly. Students will experience the beauty and the hospitality of Taiwan. It is a good opportunity for international students to experience different culture as well as the beauty and the hospitality of Taiwan.

For further information, please refer to our website at www.ia.nctu.edu.tw/main.php and searching for "2012 summer program". Students can also contact the program coordinator, Ms. Avis Liu, either via phone or email.



Course Schedule

Course Schedule					
<i>Time</i>	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>
<i>Morning 9:00-12:00</i>	Mandarin (I)	Basic Professional	Culture Course	Mandarin (I) or Tutorial (2)	Management Course
<i>Afternoon 13:30-16:30</i>	Basic Professional	Mandarin (II) or Tutorial (1)	Culture Course	Basic Professional	Mandarin (II)

- Culture trips will be arranged on Wednesday biweekly
- Field trips will be arranged on Saturday biweekly



Fees

Basic Professional Courses	NTD 9,600
Mandarin Course	NTD 9,600
Culture and Management Course	NTD 9,600
Miscellaneous	NTD 5,000
Accommodation	NTD 6,000

Note: Tuition waiver for students of partner universities
Check with your Office of International Affairs for partnership
New Taiwan Dollar (NTD) Currency required as the payments

Bank Information

Please kindly scan the bank receipt and email it to Ms. Avis Liu after wiring the fee. Students who fail to make the payments by **April 16, 2012** will not complete the registration.



Bank Name: E.Sun Commercial Bank, Ltd., Hsinchu Branch

Bank Address: No.34, Minzu Rd., Hsinchu City 300-43, Taiwan (R.O.C.)

Bank Telephone No.: +886-3-523-1313

Bank Fax No.: +886 -3-526-2951

Swift Code: ESUNTWTP

Beneficiary: National Chiao Tung University

BENF A/C No: 0060-466-138899



Program Coordinator: Avis Liu

Email: avisliu@nctu.edu.tw

Tel: +886-3-513-1254

Fax: +886-3-573-1716



Three Modules Descriptions

■ Basic Professional Courses

In this module, there are four basic professional courses contributed by the following Colleges. Students have to select one of the courses listed below. The class will be scheduled on every Monday, Tuesday, and Thursday.

<i>Basic Professional Courses</i>	
College	Course Name
College of Electrical & Computer Engineering	Elements of Electrical Engineering
College of Computer Science	Practicing on Microprocessor System
College of Engineering	Nano-Bio Fabrication
College of Science	Decoding Basic Science

► Elements of Electrical Engineering

A 3-credit (54 hours) intensive EE overview course for undergraduates (juniors or seniors), it provides an introduction to the fundamental areas in electrical engineering.

Course outlines: each module contains lecture and laboratory, 6 hours in total.

1. Introduction to ECE College and introduction to EE(6) Lab visit and demo
2. Specific topics (6 hours each module)
 - Basic Electronics
 - Digital logic systems
 - VLSI design
 - Bio Electronics
 - DSP
 - Robotics
 - Multimedia
3. Company visits (ITRI, ...)

* Each week has 9 course-hours, totally 6 weeks (3 credits).

Objects

1. Get to know the overall picture of Electrical and Electronics Engineering, also the ECE College of NCTU.



2. Learn by doing: Course material is designed from the system viewpoint; each module introduces the basic concepts and important subjects and techniques in that area; it shows how the knowledge and mathematical tools are used in engineering practices.
3. Team work: 2-3 students as a team during the Lab sessions.

► Practicing on Microprocessor System

The course contains the lab-practicing on an 8051-cpu based microcomputer system, in which fundamentals of microprocessors, assembly programming, circuitry and operations of the memory and IO subsystems will be imparted via class lectures and hands-on practices.

Course outlines

1. General review and working environment
2. 8051 architecture and assembly programming
3. Operations of built-in and various external IOs
4. Interrupt mechanism
5. Operations with external memory subsystem

Learning Objectives

1. Skills required for a 8051 S/W engineer
 - ① 8051 architecture and control
 - ② assembly programming for various drivers
2. Skills required for a 8051 H/W engineer
 - ① timing sequence for various R/W bus cycle
 - ② timing sequence of instruction cycle and interrupts
 - ③ interconnection and running of memory and I/O subsystems
3. Skills for H/W and S/W integration



► Nano-Bio Fabrication

The course will focus on theories and applications of Nano-biotechnology and Nano-medicine followed by experiments. Students who are engineering or non-biology background will be suitable for this multidisciplinary training.

*Course outlines Nano-Bio fabrication
(18 hrs):*

1. Nano-Bio interface
2. Nano-materials and fabrication
3. Nano-measurement and observation
4. Introduction to Molecular Biology
5. Introduction to Biochemistry
6. Introduction to Cell Biology
7. Animal Model
8. Nano-Bio Fabrication



*Experiments in Nano-Bio Fabrication
(36 hrs):*

1. Experiment in Molecular Biology
2. Experiment in Biochemistry
3. Experiment in Cell Biology
4. Experiment in Nano-Bio fabrication
5. Experiment in Nano-medicine

Learning Objectives

1. Nano-biotechnology
2. Nano-medicine
3. Experimental skills
4. Students will be well trained for the future interdisciplinary applications in Engineering, Medical Sciences, and Electronics.

► **Decoding Basic Science**

The course aims at introducing students via conceptual and hand-on experience to a number of interesting topics selected from science. Students from non-science background are particularly welcomed. No prerequisite is required. While topics are selected from physics, chemistry, and mathematics, the course is self-contained and will be conducted in a tutorial mode that encourages exchanging of ideas and discussions. Come and learn while having fun.

Course Objectives

1. To establish a basic experience for data acquisition and analysis
2. To experience the fun of probing the microscopic physical world
3. To experience the fun of preparing nano-particles of precious metals
4. To experience the fun of connecting science to daily-life applications
5. To tour the wonderful world of number theory
6. To experience the fun of connecting mathematics to public security

Course outlines

1. Basic data acquisition and analysis*
 - ① Newton's 2nd Law and one dimensional collisions
 - ② Ratio of molar specific heat of Air
2. Probing the microscopic physical world*
 - ① Seeing discrete electron charge (Milikan's oil droplet)
 - ② Seeing how nature memorizes (Hysteresis and magnetization)
 - ③ Seeing how nature "adds" (Interference and diffraction)
 - ④ Seeing how nature survives debt in kinetic energy
(Scanning tunneling microscope)
3. Nanoparticles*
 - ① Nanoparticles of gold and silver (preparation through simple chemical processes)
4. Daily-life applications of chemical science*
 - ① Liquid crystal for thermometer (Cholesteric liquid crystal)
 - ② Prussian blue for printing (Photochemical reaction, cyanotype technique)
 - ③ Proton exchange membrane for Fuel cell
 - ④ Solar Cell (Natural dyne from plants and titanium dioxide nanopowder for a simple solar cell)
5. Introduction to number theory and complexity theory**
 - ① Introduction to algorithmic number theory I & II
 - ② Introduction to complexity theory
6. Mathematics for public security**
 - ① The RCA-cryptosystem (one of the most famous and widely used public key cryptosystems)
 - ② Primality tests (finding a huge prime)
 - ③ Factorization algorithms (finding the prime factorization of a huge number)



*Every class will consist of one hour teaching and two hours experiment session.

**Every class will consist of two hours teaching and one hour problem session, where students are encouraged to solve problems and present their solutions to the other participants.

■ Mandarin Course

The summer courses are designed for foreign students to acquire the ability of daily communication in Chinese. There are 6 hours in lecture and 3 hours in tutorial. Students have to join the tutorial session either on Tuesday or Thursday.

Students, at the end of this course, are expected to be able to:

- use the Pinyin system in both spelling and pronunciation.
- communicate with Chinese native speakers at normal speed with familiar vocabulary.
- comprehend written passages with familiar vocabulary
- know the principles of writing traditional Chinese characters (including stroke orders, radicals, etc.)

■ Culture and Management

This module consists of culture and management courses. International students have a culture class every Wednesday and a Management class every Friday.

Three culture classes are offered; you can select one of them:

1. Music culture in Taiwan
2. Taiwan Society and Culture
3. Communication Technology for Smart Living Service Design in Tourism – More Than Biking

► Music culture in Taiwan

This course will briefly introduce and allow students to experience the sophisticated facts, extremes and attractiveness of Taiwan, where living, space and architecture are the core interests. This course also introduces the currently existent Han people's music traditions in Taiwan, involving lectures in various musical-dramatic genres and performance study. Students will have opportunities to learn how to play Beiguan gongs and drums and there will be an evaluation which is based on arranging a small concert (in 30-45 minutes) by students themselves at NCTU.

Course Outlines

1. A lecture and a refreshing guide for students to learn and explore Taiwan's architecture from different/curious perspectives.
2. Weekend trip to explore and experience a special place or specific topic.
3. A workshop to aggregate students' findings to form a collective panorama of Taiwan's space and environment. The end result will be published on the web.
4. Lectures and practice of Beiguan instruments in classroom.
5. Visits to the National Headquarters of Taiwan Traditional Arts in Yi-Lan City, and to the Beiguan ensemble which is associated with the City God Temple in Hsin-Chu City.

Learning Objectives

1. Buildup a comprehension of Taiwan and actually experience someplace or something special
2. Learn and explore different perspectives to "see" Taiwan, in terms of living, space and architecture
3. Participate in a crowdsourcing workshop in which a collective memory will be created and published
4. Enjoy Han people's music traditions in Taiwan
5. Learn how to play Beiguan gongs and drums
6. Experience local culture through visits to specific places

► Taiwan Society and Culture

The aim of this course is to introduce Taiwan society and culture through diverse aspects and topics. According to the aspects of anthropology, sociology, and literature, we will describe and discuss some significant social, cultural and historical experiences of Taiwan.

Item	Instructor	Topic	Remark
1	Prof. Mei-ling Chine, anthropologist	Constituting the Everydayness and Identity through the Hakka Women's Narration of Singing and Listening to Folk Songs	
2	Prof. Yen-ling Tsai anthropologist	Seeing Taiwan from the Countryside	Including field trip activity
3	Prof. Iris Hsin-chun Tuan Ph.D. in literature	Theatre: Cultural Performance.	Including field trip activity
4	Prof. Hsin-yi Lu anthropologist	Environmental Culture in Taiwan	
5	Prof. Shu-chen Chiang, Ph.D. in comparative literature	Decode Taiwanese Money	
6	Prof. Mei-Lin Pan sociologist	Manufacturing Taiwan's Economic Miracle	Including field trip activity

Course Outlines

In the first week of this course will discuss Hakka women's identity construction through singing and listening to san24go24 (mountain folk songs). By using life-history narratives, we will explore Hakka women's expressions of their local sentiments, gender and cultural identities through their engagement in folk song activities during work, leisure, rite and daily activities from the past to the present.

In the second week of this course, students will visit rural Taiwan via a class outing.

In the third week of this course aims to teach the foreign students of the international exchange program the Hakka musical adapted from Shakespeare's *The Taming of the Shrew*.

In the fourth week of this course will introduce students to the dramatic transformations of the environment in Taiwan since the 1970s.

In the fifth week of this course, we will find out the meanings of the images on Taiwanese bank notes and coins, which distinguish the natural treasures and historical stories of this island country.

In the sixth week of this course, we will discuss how did Taiwan's "economic miracle" happen? What kind of explanations and challenges on Taiwan's economic development in the global capitalism? We will also provide a field trip to the renowned Hsinchu Science-based park to learn how Taiwan has tried to follow the model of Silicon Valley.

Learning Objectives

In the first week, the purpose is to explore, from micro and local perspectives, the Hakka women's experiences of being colonized, of listening and singing mountain folk songs within the daily and extraordinary context of the local community in north Taiwan.

In the second week, the students will have the opportunity to work in the field, and to learn about the predicament and hope of peasant communities.

In the third week, we aim to teach the foreign students of the international exchange program the Hakka musical adapted from Shakespeare's *The Taming of the Shrew*.

In the fourth week, through film clips, historical photos, and the instructor's lecture, students will learn how unregulated industrialization changed Taiwan's rural landscape, and how various anti-pollution movements emerged to challenge the state's developmentalism.

In the fifth week, nicknames of the banknotes such as "Sun Yat-sen" and "Little Friends" will be deciphered. Students will also be encouraged to compare the currencies between their home countries and Taiwan.

In the sixth week, we will provide different theoretical debates on explaining Taiwan's economic development from sociological perspectives.

► **Communication Technology for Smart Living Service Design in Tourism – More Than Biking**

How to revitalize and increase the use of digitized cultural heritages to improve the quality of local tourism is now an emerging issue for cities all over the world. This course aims at the booming Cycling-tourism market and tries to endow "Mountain Biking, MTB" with a brand new meaning as "More Than Biking", an initiative to enrich biker's touring experience and social connections through ICTs.

Cooperating with Taiwan's leading industrial partners such as Giant/Pacific Bicycles, Gamin and Holux (GPS) and the local government of Hsin-Chu County, in this course, you will have the chance to experience the Hakka culture in the selected living-lab site "Xinpu Township", closely observe the social and economic transformation of Taiwan's agricultural small town, and also learn how to record and share your riding routes and filed study diaries in a robust internal/external social networking with virtual and local communities.

Through after-course sharing and group presentations, the course aims not only to improve participant's understanding of Taiwan's smart living service system design and strategy, but also try to involve international perspectives in the next-step development of the local tourism and cultural creative industry of Hakka counties in northern Taiwan.

Unit 1: GPS, GeoWeb2.0 and User-Centered Tourism Design
(2012/07/4 in class and 2012.07/11 workshop)

Purpose

1. to know the GPS and GeoWeb2.0 technologies and related applications
2. to learn how to operate the devices and the software middle wares
3. to share and to report your ideas of the User-Centered Tourism Design (based on the 4D Model: Discover, Define, Develop and Deliver)

Unit 2: Exploring the Historic Xinpu: Biking and Exploring
(2012/07/18 field trip and 2012/07/25 class sharing)

Purpose

1. to experience Hakka people's cultural and social lives in Xinpu
2. to understand the industries and economic conditions in contemporary Xinpu by observing industrial activities
3. to encourage students to think about possibilities of adding value in traditional industries, and the new ways of sustainable development in rural areas
4. to interact and communicate with local people

You will...

1. Visit a small town in Hsinchu County, where has the highest density of advanced technology industries and the largest population of Hakka people in Taiwan
2. Experience Hakka people's cultural and social lives in Xinpu
3. Visit historic heritages in Xinpu, such as hundred-year-old shops, traditional markets, and historical architects
4. Grasp inspirations from this experiential field trip and feedback them -Figure out a new future development of a rural community in modern time by observing everyday lives of Hakka people and experiencing certain cultural materials

Unit 3: "Crafting" Your Own Hakka Memory: Making the Traditional Fashionable: Persimmon Dye Craft (2012/08/01 field trip and 2012/08/08 group presentation)

Purpose

1. To understand the persimmon-cake making industry and its importance, meaning, relevance, and significance to central value of Hakka thrifty culture and characteristics
2. To rethink about the value of "traditional" by learning the persimmon-cake making
3. To learn dye making as a product of resource recycling of persimmon agricultural industry
4. To observe the development of persimmon industry and its impact to the economic circumstance in Xinpu
5. To rethink about the issue of re-employment
6. To observe the female images in the whole persimmon related industry

You will...

1. Learn the significance of persimmon-cake in Hakka culture of thrifty
2. "craft" your own cultural memory through experiencing persimmon dye-making
3. Have an opportunity to look closer to the ways of adding value from "something old," and the "new thoughts" of inventing new value from "rubbish"
4. Experience the ways to revive a tradition and a traditional industry within the dye-making processes

► **For Management course**

The course consists of a series of six speeches in the area of business and management. Each speech is 150-minute long and will be conducted on a lecture/case-discussion basis.

Course Outlines

The speech series focuses on the topics related to Taiwan or Asia as well as the issues of contemporary importance. The titles of the speeches include the following:

1. Management Issues under Globalization
2. Global Supply Chain Management
3. Emerging Competitiveness of Asian Companies
4. Governments and Business Organization across the Taiwan Strait
5. Business Ethics and Social Responsibility
6. Entrepreneurship and Innovation Management

Learning Objectives

1. Provide the non-business major students with some introductory management knowledge
 2. Motivate the non-business major students to explore the area of management
 3. Encourage the non-business major students to seek more extensive and formal training in management
-



How to apply for 2012 Summer Program



A. Register Online

Procedures:

Step 1: Go to www.ia.nctu.edu.tw/main.php and follow the link provided to register online

Step 2: After registered, you will receive a confirmation letter within 2 days

Step 3: Materials you need to email to Ms. Avis Liu (avisliu@nctu.edu.tw)

- ID photo in JPG file format (236 × 301 pixels) including your full name by **March 25, 2012**
- The scanned bank receipt by **April 16, 2012**
- Flight information by **June 1, 2012**

B. Register via email

Procedures:

Step 1: Please download the application form (2012 Summer Program Application Form)

Step 2: Fill out the application form and email to Ms. Avis (avisliu@nctu.edu.tw)

Step 3. Materials you need to email to Ms. Avis Liu (avisliu@nctu.edu.tw)

- ID photo in JPG file format (236 × 301 pixels) including your full name by **March 25, 2012**
- The scanned bank receipt by **April 16, 2012**
- Flight information by **June 1, 2012**

Note: NCTU will issue admission letter after received the payment


Students have NOT received the letter by **April 23, 2012**; please contact Ms. Avis Liu via email

 **Airport Pickup Service**

There is no individual airport pick up service. NCTU only provides three shuttles at Taiwan Taoyuan International Airport.

Pick-up Schedule	
Date	Leaving
June 29	07:00 PM
June 30	01:00 PM
June 30	08:00 PM

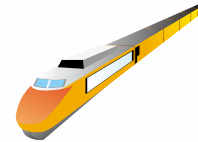
* or contact Ms. Avis Liu 0912-481-206 in Taiwan

 For other arrivals can take the Taiwan High Speed Rail (THSR)



Taoyuan International Airport

Free shuttle



Taiwan High Speed Rail

Taoyuan >>> Hsinchu Ticket NTD 130

Free shuttle



THSR Hsinchu >>> NCTU Bus Stop

10 ~ 15 min on foot



國立交通大學
National Chiao Tung University

NCTU North Gate

* Refer information Counters at airport & THSR stations

Contact Information

Office of International Affairs
National Chiao Tung University
1001 University Road, Hsinchu 30010, Taiwan, R.O.C
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Website: www.ia.nctu.edu.tw