

Education and Training of the New Regional Centre in China

Prof. Dr. WENG Jingnong

Executive Director, Beihang International Space Education Centre

February 17, 2014
Vienna, Austria

1 Background

2 Education and Training

3 Facilities and Logistics

4 Summary

5 Program Schedule in 2014

Background

Statement by the head of Chinese Delegation on the establishment of the New Regional Centre for Space Science and Technology Education under the framework of the UN Programme on Space Applications at Beihang University, China



50th session of Scientific and
Technical Subcommittee of the
COPUOS,
Vienna, February 2013

Background

Terms of Reference for the Evaluation Mission to Assess the Capacity of Beihang University to Serve as a Host of a Regional Centre for Space Science and Technology Education



Committee on the Peaceful
Uses of Outer Space
Fifty-sixth session
Vienna, 12-21 June 2013

Background

Evaluation Mission of UNOOSA to
Beihang International Space
Education Centre in Sep. 28-30 2013



13 Evaluation Parameters with 33
observation points are all satisfactory



Background

With the support of the Chinese Government , the New Regional Centre was built upon on the Beihang International Space Education Centre (BUAA-ISCE) (<http://isce.buaa.edu.cn>) which located at Beihang campus.

Please see our brochure for more detail about the BUAA-ISCE

- 1 Background
- 2 Education and Training**
- 3 Facilities and Logistics
- 4 Summary
- 5 Program Schedule in 2014

Education and Training

- ✈ **Resources Available**
- ✈ **Education and Training Programs**

✈ Resources Available

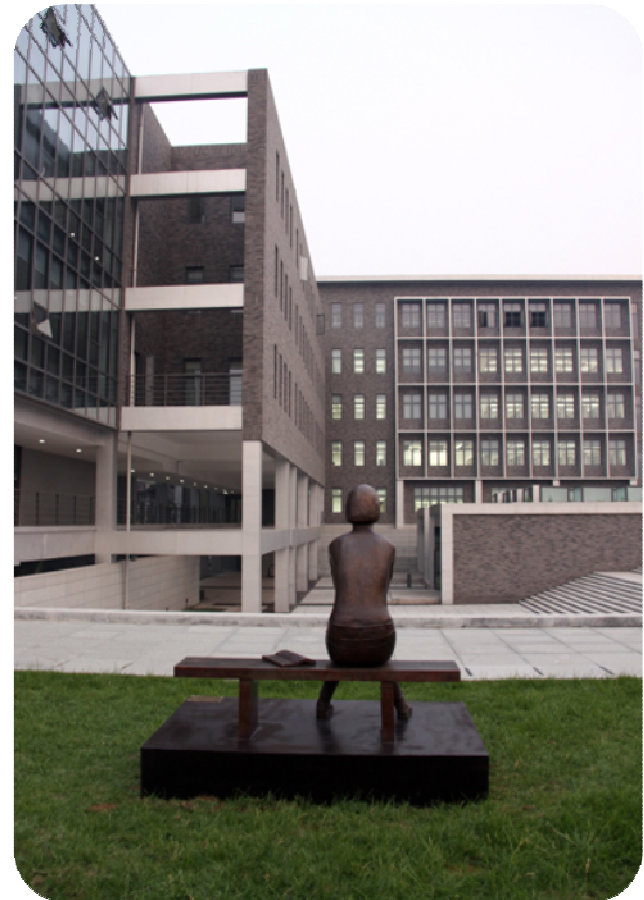
Laboratories and Library for Space Technology Applications

No.	Laboratory and Library
1	Ground Station of Remote Sensing Satellite Data Receiving
2	Remote Sensing and GIS Laboratory
3	BeiDou Satellite Navigation System Exhibition Hall
4	Micro-Satellite Technology Laboratory
5	Distance Education & Video Conference Laboratory
6	Library of Space Technology Applications

Other laboratories at Beihang University and University Library can be shared with the New Centre.

✈ Resources Available

Twenty-seven schools of Beihang University will provide the New Centre with the plentiful teaching and internship resources for space science and technology education.



✈ Resources Available

Partners

- ☑ The Institute of Remote Sensing and Digital Earth (RADI) of Chinese Academy of Sciences (CAS)
- ☑ The National Space Science Center (NSSC) of CAS
- ☑ China Institute of Space Law



✈ Resources Available

Partners

- ☑ The China Academy of Space Technology (CAST)
- ☑ The China Satellite Communications Group Co. Ltd.
- ☑ The China Centre for Resources Satellite Data and Application (CRESDA)

...



➔ Education and Training Programs

- ☑ Degree Program
- ☑ Non-Degree Program
- ☑ Academic Activities and Technology Consulting

☑ Degree Program

Training Procedures of Master's Program

1st stage: Course Study in China (9 months) (Leading to Course Completion Certificate of BUAA)	
Module I: 2 months for fundamental courses	Module II: 4 months for major courses
Module III: 3 months for pilot project (practice)	

2nd stage: Thesis Research (6-12 months) (Leading to Master's Degree in Engineering of China)	
I. Advanced Project	II. Thesis preparation and Defense
III. Graduation and Granting Master's Degree of China	

☑ Degree Program

Training Procedures of Doctoral Program

1st stage: Course Study (12 months)	
Module I: 6 months for fundamental courses	Module II: 6 months for major courses
2nd stage: Dissertation Research (24-36 months)	
Advanced Research	Dissertation preparation and Defense
Graduation and Granting Doctoral Degree of China	

☑ Degree Program

Certificate

- Graduation Certificate of Beihang University
- Degree Certificate of the People's Republic of China

☑ Degree Program

Majors

Ongoing

- Remote Sensing and Geographic Information Systems
- Satellite Communication
- Global Navigation Satellite System

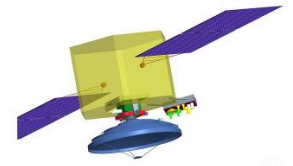
Coming Soon

- Space Law
- Basic Space Science and Technology

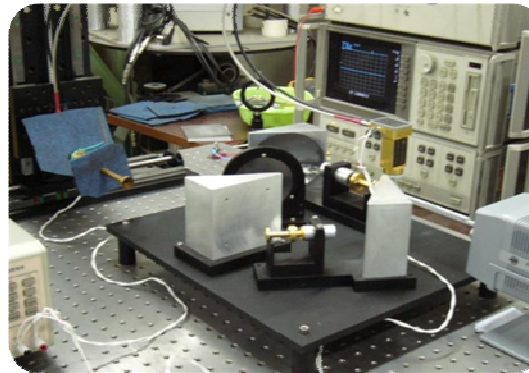
Preparing

- Meteorological Satellite Applications

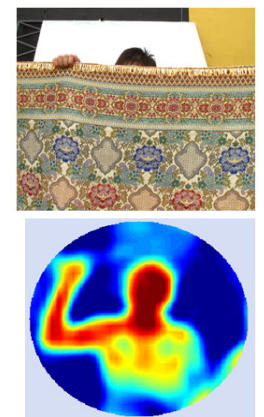
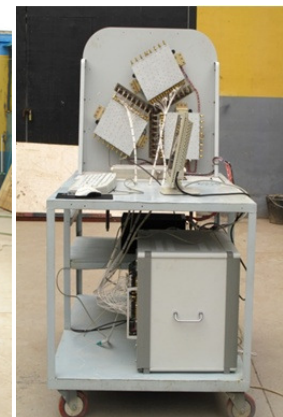
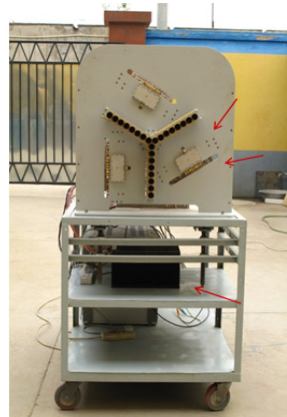
☑ Degree Program Major — RS and GIS



Remote sensing is to collect the information from the object without making direct physical contact with the object.



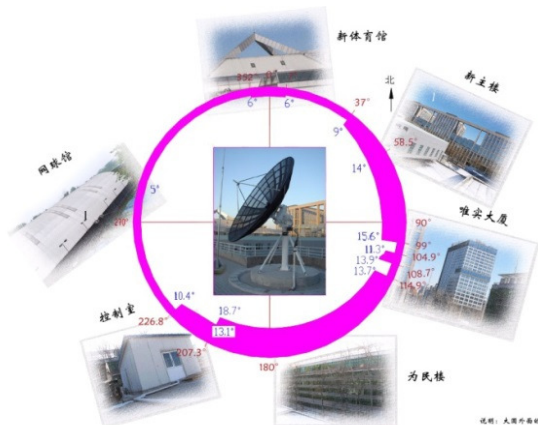
Technique Microwave Remote Sensing



Passive Microwave Imaging System

Education and Training

☑ Degree Program Major — RS and GIS



Ground Station for
Remote Sensing Satellite
Data Receiving



Remote Sensing
and GIS Laboratory

☑ Degree Program

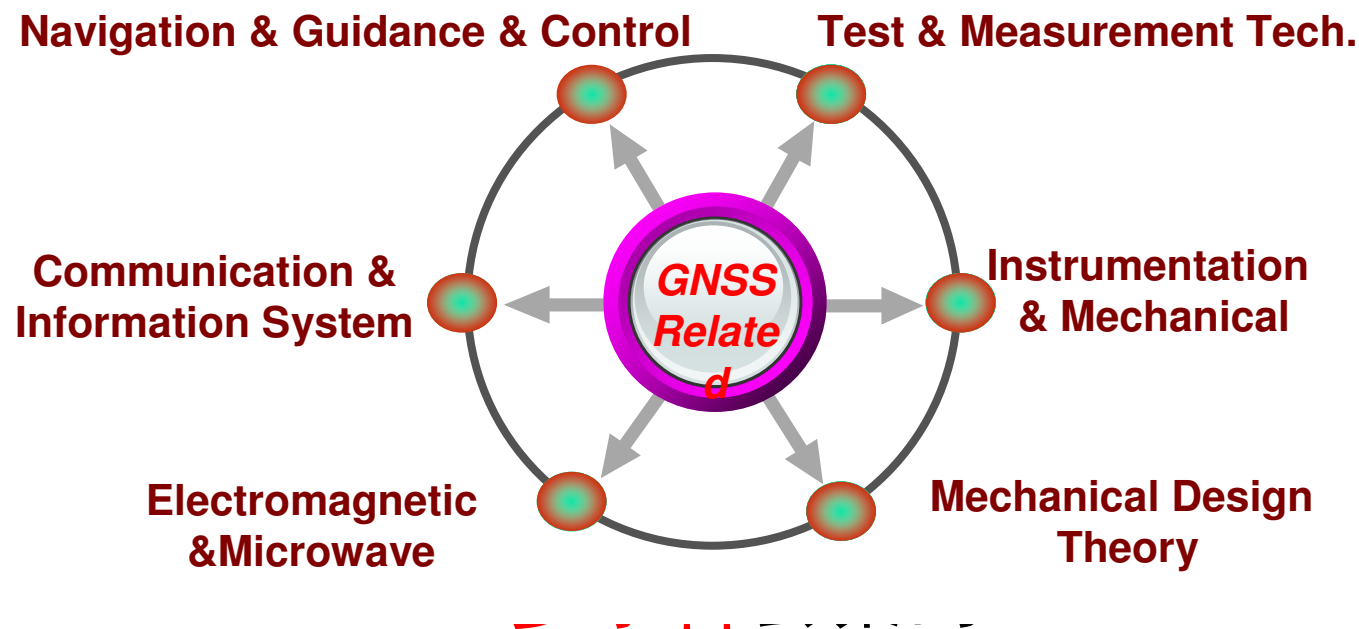
Major — RS and GIS

Course	Class Hrs
Physical Principles of Remote Sensing	48
Remote Sensing Image Processing and Software Applications	48
Visual Interpretation Method on RS-Image	24
Introduction to Digital Earth	18
Geographic Information System: Theory and Methods	48
Introduction to Photogrammetry	18
Mass Information Handling Techniques	18
GIS Spatial Database	24
Case Studies in the Applications of RS & GIS	32

☑ Degree Program

Major — GNSS

Global Navigation Satellite System (GNSS) provides positioning, navigation and timing services for the whole world.



The GNSS courses are supported by six national class disciplines.

Education and Training

☑ Degree Program Major — GNSS



BeiDou Satellite Navigation System
Exhibition Hall



GNSS Smart Classroom



☑ Degree Program

Major — GNSS

Course	Class Hrs
GNSS Reference System	18
Principle of Global Navigation Satellite Systems	32
GNSS Navigation Signal	18
GNSS Receiver Principles and Design	32
GNSS/INS Integration Navigation	32
Global Satellite Navigation System Applications	18
Satellite Navigation Data Processing	32
GNSS Experiment	18
GNSS New Technologies	18

Education and Training

☑ Degree Program Major — SATCOM

Satellite Communication is one of the most important technology from space programs, and has made a major contribution to the pattern of global communications.



☑ Degree Program

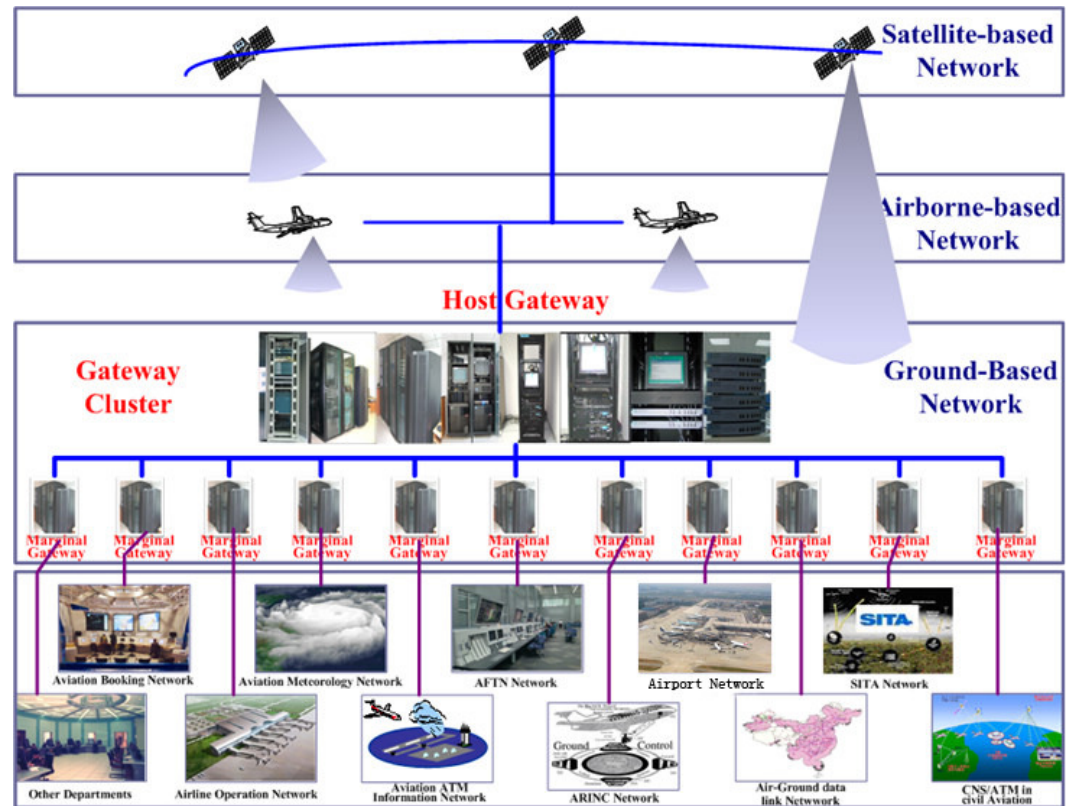
Major — SATCOM

Course	Class Hrs
Microwave Technology for Satellite Communications	48
Principles of Communications and Networking	48
Telemetry and Command System	32
Experiments of Satellite Communication	18
Electromagnetic Compatibility	18
Satellite Access and Satellite Networks	32
Fundamentals of Information Theory	32
Case Study of Satellite Communication	18

Education and Training

☑ Degree Program Major — SATCOM

- Integration of communication, navigation, and surveillance systems
- All-airspace, all-weather capability of coordinated air traffic control and air traffic service



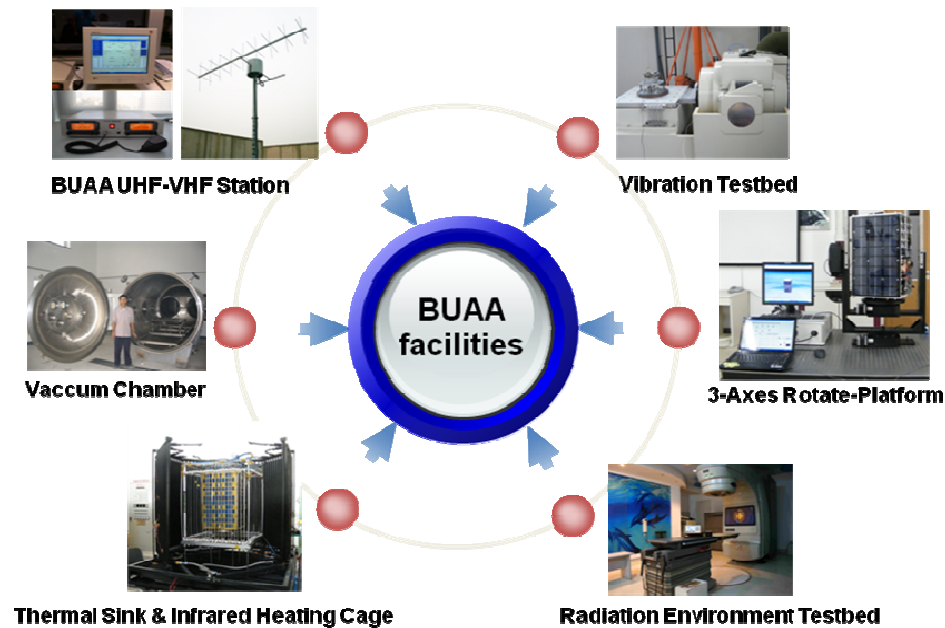
National Key Laboratory of CNS/ATM

CNS: Communications, Navigation, Surveillance **ATM:** Air Traffic Management

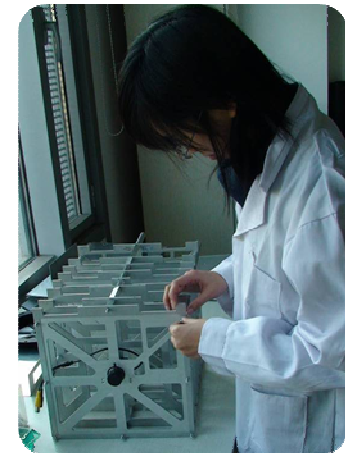
☑ Degree Program

Major —— Basic Space Science and Technology

Micro-satellite has become one of the key fields in the future space exploration.



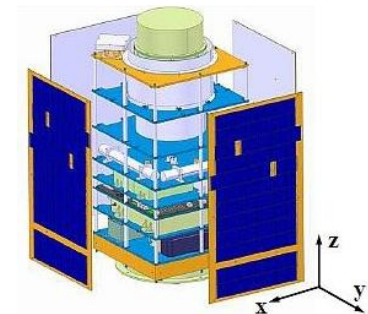
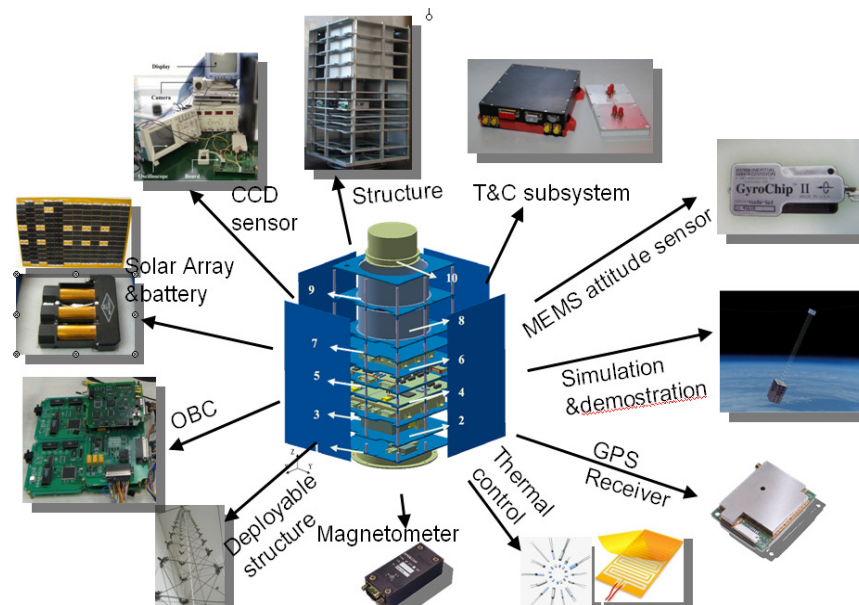
BUAA Micro-Satellite ground facilities



☑ Degree Program

Major — Basic Space Science and Technology

Beihang is the member of Chinese University Micro Satellite Consortium



BUAA SAT-1 (35kg) to be launched in 2014

BUAA SAT-1 2U-CubeSat to be launched in 2015.

Pilot Project – Student Micro-Satellite

☑ Degree Program

Major — Basic Space Science and Technology

Education training programs can be offered according to the requirements of participants.

- Micro-Satellite System Design and Project Management
- Micro-Satellite Structure/Mechanism and Thermal Control
- Micro-Satellite OBDH Subsystem and TT&C Technology
- Micro-Satellite Environment Testing and AIT Technology

Notes: OBDH: on-board data handling

TT&C: tracking telemetry and command

AIT: assembly integrated test

☑ **Degree Program** **Major — Space Law**

Space law is an area of the law that encompasses national and international law governing activities in outer space. The inception of the field of space law began with the launch of the world's first artificial satellite by the Soviet Union in October 1957. Since then, space law has evolved and assumed more importance because mankind has increasingly come to use and rely on space-based resources.

Education and Training

☑ Degree Program Major — Space Law

The first Institute of Space Law (ISL) in China, founded in 2000, which has been active in the process of space legislation.



The president of International Institute of Space Law, Professor Tania Masson-Swan visited BUAA in 2011



Seminar on Legal Issues regarding International Space Station in 2010

☑ Degree Program

Major —— Space Law

Since 2000, the faculty of the ISL have published more than 50 articles in law periodicals and in the proceedings of important conferences.

A series of academic books on space law have been published by Law Press, which is one of the most famous publishers in China.



☑ **Non-Degree Program**

- Short-term training programs
- Summer schools
- Summer/winter camps
- Popular science lectures
- Visiting scholar programs

...

☑ Academic Activities and Technology Consulting

Academic Activities

- Explore cutting-edge science and technology
- Promote international exchange and cooperation
- Popularize the knowledge of space science and technology

...

- 1 Background
- 2 Education and Training
- 3 Facilities and Logistics**
- 4 Summary
- 5 Program Schedule in 2014

☑ Academic Activities and Technology Consulting

Technology Consulting

- Data and information service
- Space technology based disaster assessment
- Policy suggestions
- ...

Facilities and Logistics

✈ **Personnel**

✈ **Facilities**

✈ **Logistics**

✈ **Location**

✈ Personnel

Administrative staff

- ☑ Globally recruited
- ☑ Rich experience
- ☑ A good command of English language

✈ Facilities

Specifically for the New Centre

- ☑ Offices
- ☑ Teaching venues
(over 2,000 m²)
- ☑ Experiment Equipment

...

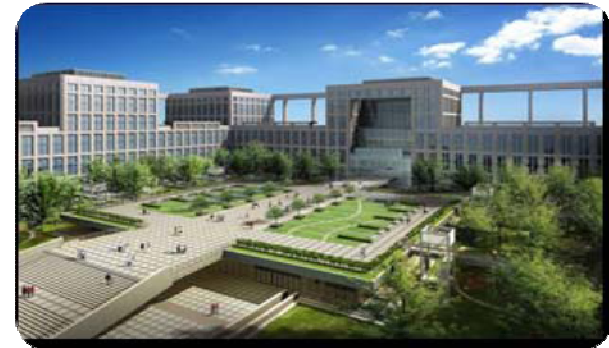


Inside the Centre

✈ Facilities

Shared with Beihang University

- ☑ Lecture halls
- ☑ Laboratories
- ☑ Internet and Wi-Fi services
- ☑ University library
- ☑ Online Education
- ☑ ...



Facilities and Logistics

✈ Facilities

Accommodation for the participants



✈ Facilities

Hotel and guest house for visiting experts

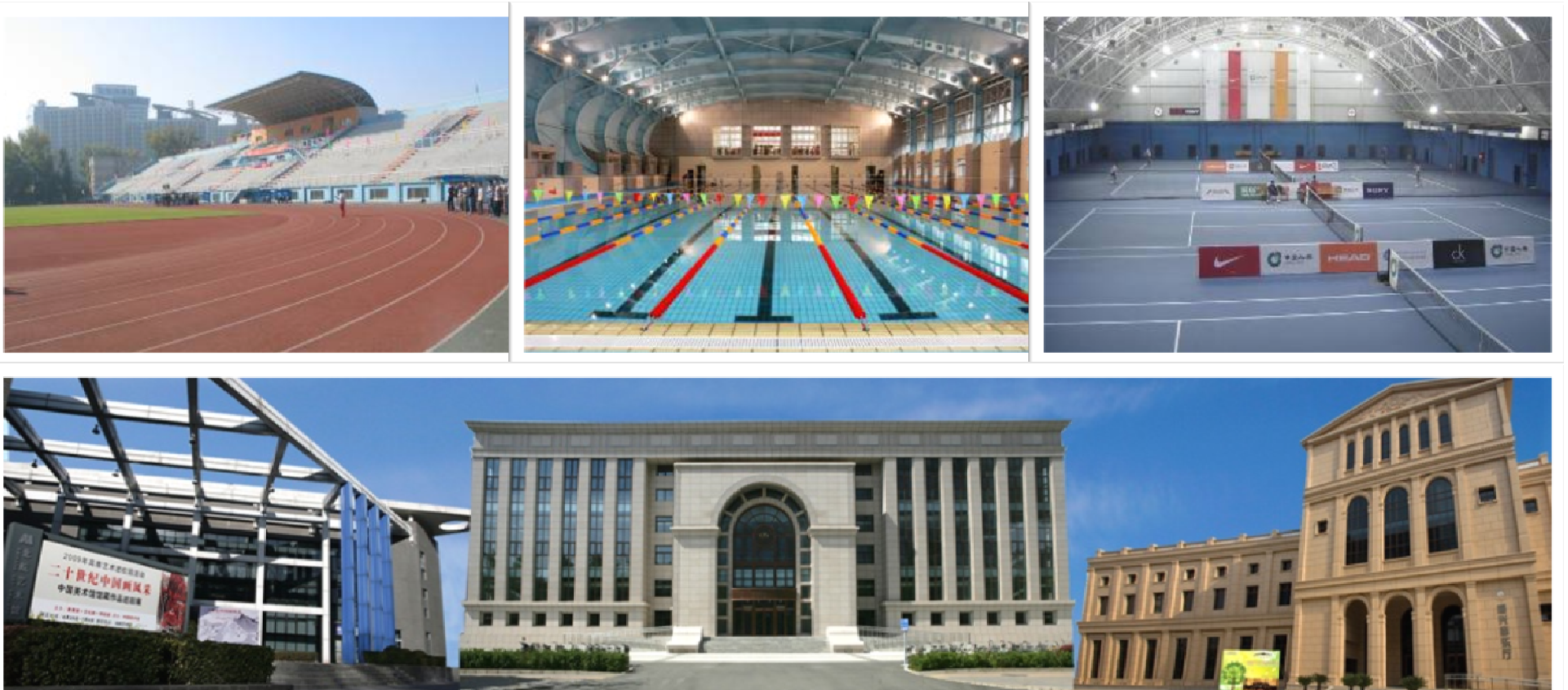


✂Beihang University will offer the housing for staff of the New Centre

Facilities and Logistics

✈ Facilities

Convenient facilities available on campus



Facilities and Logistics



Location

Located in Beijing, the capital of China

- ☒ Within the area of Zhongguancun Hi-tech Park
- ☒ Neighboring to the Chinese Academy of Sciences and other related research institutions

- 1 Background
- 2 Education and Training
- 3 Facilities and Logistics
- 4 Summary**
- 5 Program Schedule in 2014

Summary

The New Regional Centre is one part of the Regional Centre Networks and more cooperation we can do among the existing centres.

- ✈ **Innovative integrated mode**
- ✈ **Integrated disciplinary advantages**
- ✈ **Well qualified host institution**

Summary

Welcome interested Member States to contact with CNSA and join our New Centre.

We committed to facilitate the development of space education and training and make our life much easier and better.

Program Schedule in 2014

Degree Programs

- MASTA Program on GNSS 2014
- MASTA Program on SATCOM 2014
- MASTA Program on Micro-Satellite Technology 2014
- DOCSTA Program on Space Technology Applications 2014

Please visit <http://is.buaa.edu.cn> for more detail

Application Deadline: June 10, 2014 (regular)

Scholarship application Deadline: April 10, 2014



10 Chinese Government Scholarship will be offered to the member states of UNOOSA in 2014, please contact with us at gyy@buaa.edu.cn



Thanks for your Attention

Prof. Dr. WENG Jingnong

E-mail: wengjn@buaa.edu.cn

Address: No. 37, Xueyuan Road, Haidian District, Beijing 100191, China