Regional Centre for Space Science and Technology Education
in Asia and the Pacific (China) (Affiliated to the United Nations)
联合国附属空间科技教育亚太区域中心(中国)

MASTA 2018

Master Program
on Space Technology Applications

晨兴音乐厅
Chenxing Concert Hall

Overview

Space technology and its applications, the most fascinating technical achievement of the human race in the last six decades, has undoubtedly advanced with great stride. The various practical benefits of space technology play a central role in international development efforts.

In order to transform the recommendations of the United Nations Programme on Space Applications (UN-PSA) into a practical and operable program, Beihang University has initiated the Master program on Space Technology Applications (MASTA) since 2006, and the program has been held 10 times with success till now. This program has enrolled totally 215 postgraduate students from 19 countries, among which 128 students have graduated and obtained the Master's Degree on Space Technology Applications.

MASTA is an elaborately designed and intensive Master program for students who are interested in exploring the mysterious universe. This application-oriented program focuses on both knowledge acquisition and operational training. It aims to deliver "International, Interdisciplinary, Intercultural, Innovative, Identical (5I)" education and provide a powerful platform for scholars and professionals to obtain more opportunities for communicating and experiencing the space technology practice in China.

MASTA is designed to give participants a competitive edge by:

- Broadening their knowledge on space-related issues and activities and encouraging participants to use acquired knowledge and skills through practical, hands-on experience;
- Providing a variety practice opportunities (include watching satellite launching on site, attending international conferences/workshops, etc.) ;
- Internationally qualified professors and experts from a diversity of academic backgrounds;
- Modularized curricula design and flexible study modes;
- Developing the cross-cultural communication skills with an internationalized atmosphere.

The main educational fields of MASTA Program include Remote Sensing and Geographic Information Systems (RS&GIS), Satellite Communications, Global Navigation Satellite System (GNSS), Micro-satellite Technology, Space Law and Policy, etc.

Training Program

This program is carried out according to the regulations and requirements of Beihang University. Referring to the Education Curricula of UN-PSA, the study period is divided into two phases:

(a) 9-month Course Study

(b) 6-12 months Thesis Research (at Beihang University or in applicant's homeland)

The training procedures are as follows.

Phase Ⅰ **Course Study in China: 9 months (at Beihang University)** (Leading to Course completion Certificate)			
	Module Ⅰ	**Module Ⅱ**	**Module Ⅲ**
Formulation of an Individual Training Plan	Common Platform Courses	• Major courses • Academic Lectures	• Team Pilot Project • Practice Courses • Professional Visits
Phase Ⅱ **Thesis Research: 12 months (in China or home country)** (Leading to Master's Degree in Engineering)			
Literature Survey and Thesis Proposal	Mid-term Assessment	Academic Activities	Thesis Research

Lectures are conducted in English. The thesis for project practice is required to be written in English. Courses are organized into three modules as given above.

Participants will be awarded with the Graduation Certificate of Beihang University and Master's Degree Certificate of the People's Republic of China when fulfilling the required credits and passing the thesis defense.

The faculty for this program consist of professors, experts and senior engineers from Beihang University and some other institutes or academies of China and abroad. The core faculty members have long and varied experience in the field of space science and technology. In addition, they have accumulated considerable teaching experience over the years and are skilled in teaching and advising international students.

Introduction to RCSSTEAP (China)

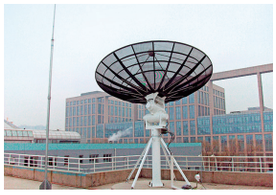
Regional Centre for Space Science and Technology Education in Asia and the Pacific (China) (affiliated to the United Nations) (RCSSTEAP for short) was established on November 17, 2014. The Centre is located on the main campus of Beihang University (http://ev.buaa.edu.cn/), Beijing, China.

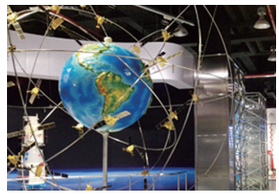
The Centre, as an education and training entity supported by the Committee on the Peaceful Uses of Outer Space (COPUOS), was established with the missions to promote the peaceful use of space technologies for the benefit of humanity and to sensitize the countries within the region about space science and technology activities by educating and creating awareness through training, workshops, short courses and outreaches. It seeks to contribute to the implementation of "Programme on Space Applications" promoted by COPUOS and to the enhancement of the education and training level as well as application capacity of space science and technology in the Member States of the Centre through capacity building, information communication, training programmes and professional visits.

For the purpose of facilitating the UN Space Applications Programme and satisfying demands of the Asia-Pacific countries regarding space science and technology education, the Centre offers degree and non-degree programmes with academic exchanges and consultation carrying out in the field of space technology applications.

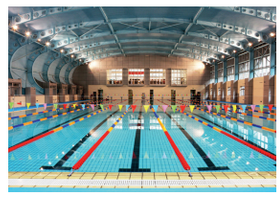
The Centre has established extensive cooperation with space industries. The Centre has internationally qualified academic and administrative staff with excellent facilities for education, accommodation and recreation.

Presently, the Centre has 10 member countries including Algeria, Argentina, Bangladesh, Bolivia, Brazil, China, Indonesia, Pakistan, Peru and Venezuela.





RCSSTEAP



Application Qualifications

- The applicant should be under the age of 35;
- The applicant should have some professional experiences of working in space technology industry or research institutes;
- The applicant should have Bachelor Degree of relevant discipline or the diploma equivalent to Bachelor Degree;
- The applicant is expected to have good command of English and the ability to take courses in English;
- The applicant is supposed to have research background in relevant areas.

Note: Please notice as a special requirement that selected applicants should come to study at Beihang University with their Private Passports only (not official/service/other types of passport).

Applicants of this program are mostly recommended by organizations. Students who are interested to do self-sponsor, please visit website (http://admission.buaa.edu.cn/) for further information.

Fees

- Tuition Fee: 35000 Yuan (RMB) per year;
- Insurance: 800 Yuan (RMB) per year;
- Accommodation: Double room, 750 Yuan (RMB) per month (not including costs like water, electricity, etc.).

Scholarship and Financial Support

1. The applicants are welcome to apply for the Chinese Government Scholarship (CSC Scholarship) at Beihang University.

The Full CSC scholarship will cover the following items:

- Tuition fee for 9 months course study at the University;
- Tuition fee for 1 year advanced research project;
- Free accommodation during study at the University (not including water and electricity, etc. costs);
- Living allowance during stay at the University (3000 RMB /per month or according to the standard of CSC);
- Medical Insurance only for accidents and hospitalization treatments, according to the standard of CSC;

2. The applicants who fail to get the CSC Scholarship will have chance to get Beijing Municipal/Beihang Scholarship. **Beijing Municipal/Beihang Scholarship will only cover tuition fee.**

Application Procedures and Required Documents

Step 1

Apply online

Make the online application for Chinese Government Scholarship on the website of CSC **(http://studyinchina.csc.edu.cn)**: fill up the Application Form, submit the completed Application Form and supporting documents online, and print the Application Form according to the requirements. Please note that the specialty should be chosen as **"Space Technology Applications"** and the language of instructions should be chosen as **"English"**. Please also note that the "**Program Category**" should be "**Type B**" and the "**Agency Number**" of Beihang University is **10006**.

Step 2

Prepare documents

1. Application Form for Chinese Government Scholarship;
2. Highest Education Diploma (notarized photocopy or original one) or Certificate of Expected Graduation Date from the university studying currently;
3. Notarized Transcripts or Original Ones;
4. Study or Research Plan (no less than 500 words);
5. Two Recommendation Letters from Professors or Academic Experts;
6. The Results of TOEFL, IELTS or English Proficiency Certificates;
7. Photocopy of Physical Examination Form and the Report on Blood Examination;

Attachment 1-FOREIGNER PHYSICAL EXAMINATION FORM.pdf

8. Photocopy of First Page of Passport (the information page);
9. The List of Application Documents and Post Address confirmed.

Attachment 2-List of Application Documents.doc

Note: All the documents should be in duplicate. And the language of documents should be in English or Chinese or attached with translations in English or Chinese.

Step 3

Submit documents

Mail all required documents to the following address before 15th March, 2018.

Ms. Guo Yuanyuan

Address: International School of Beihang University, No. 37 Xueyuan Road, Haidian District, Beijing 100191, P.R. China.

Tel: +86-10-82339734, +86-13581523872

Note: In order to speed up your application process, scanned copies can be emailed to the **Contact Person**: **gyy@buaa.edu.cn** so that we can get your information in advance. And **mail all the required documents to the Contact Person at RCSSTEAP (China)** by the already set deadline **(March 15, 2018)**. RCSSTEAP (China) and Beihang University will acknowledge the receipt of your application after evaluation. No application documents will be returned after submission.

Important Dates

- Applicants should mail the required applications documents **to the Contact Person at RCSSTEAP (China)** by **March 15, 2018**.
- The results of admission will be notified by stages **from May 20 to early August, 2018**.
- The Admission Notice and related documents will be mailed to the successful applicants before **August 15, 2018**.
- The program will start in **early September 2018**.

In 2018, MASTA Program provides four educational fields: Global Navigation Satellite Systems (GNSS), Remote Sensing and Geo-information System (RS&GIS), Micro-satellite Technology, Space Law and Policy. The followings are detailed information of each field.

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Global Navigation Satellite Systems (GNSS)

Global Navigation Satellite System (GNSS) provides positioning, navigation and timing services for the whole world. It is the most important spatial infrastructure in the social life and military affairs in modern times. The GNSS would serve people in many areas together with Remote Sensing, Geographical Information System such as disaster management, emergency response, land, aviation and maritime transportation, etc.

The objective of the program is to enable the students to master the GNSS space segment including the satellite constellation, orbit, payload, clock, signal structure and attitude control, the GNSS ground segment including the satellite communication, maintenance, telemetry, ephemeris and almanac, and the GNSS user segment including receiver and navigation applications. The program also provides opportunities for students to touch the frontier technologies on GNSS.

Professionals/Experts (partial)

Yang Yuanxi
Academician, Chinese Academy of Sciences

Renato Filjar
Professor, University of Jica, Croatia

Shen Jun
Chief Scientist, BeiJing UniStrong Science & Technology Co., Ltd.

Yang Dongkai
Professor, School of Electronics and Information Engineering, Beihang University

Jing Guifei
Professor, BeiDou Belt&Road School, Beihang University

Partners

北斗卫星导航系统 BeiDou(COMPASS)Navigation Satellite System

UniStrong 合众思壮

北斗星通 BDStar Navigation

CASC 中国航天

APSCO ASIA-PACIFIC SPACE COOPERATION ORGANIZATION

ENAC ECOLE NATIONALE DE L'AVIATION CIVILE

1804 OHIO UNIVERSITY

NRSCC

9-month Course List

No.	Item	Class Hrs	Credits	Remark
Module Ⅰ Platform Courses				
PC1-1	Probability and Statistics in Engineering	48	3	Select at least 3 compulsory credits
PC1-2	Theory of Matrix	48	3	
PC1-3	Numerical Analysis	48	3	
PC2-1	Matlab Programming	32	2	Compulsory/ Optional
PC3-1	Space Environment, Orbit and Spacecraft Systems	48	3	Compulsory
PC3-2	Introduction to Space Technology Applications	18	1	Compulsory
PC3-3	International Cooperation in the Peaceful Uses of Outer Space	16	1	Compulsory/ Optional
PC3-4	Introduction on Space Life Science and Astrobiology	18	1	Compulsory/ Optional
PC4-1	Introduction to China and Chinese Language	54	3	Compulsory
Module Ⅱ Major Basic Courses & Major Courses				
MC3-1	GNSS Reference System	18	1	Compulsory
MC3-2	Principle of GNSS	32	2	Compulsory
MC3-3	GNSS Receiver Principles and Design	32	2	Compulsory
MC3-4	GNSS/INS Integration Navigation	32	2	Compulsory
MC3-5	GNSS Applications	18	1	Compulsory
MC3-6	Satellite Navigation Data Processing	32	2	Compulsory
MC3-7	GNSS Experiment	18	1	Compulsory
MC3-8	GNSS New Technologies	18	1	Compulsory
Module Ⅲ Team Pilot Projects				
PPC	Team Pilot Project	12 Weeks	8	Compulsory

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Remote Sensing and Geo-information System (RS&GIS)

Remote sensing is the art and science of making measurements of the earth using sensors on airplanes or satellites. These sensors collect data in the form of images and provide specialized capabilities for manipulating, analyzing, and visualizing those images. A geographic information system (GIS) is a computer-based tool for mapping and analyzing feature events on earth. Remote sensed imagery is integrated within a GIS. The potential of remote sensing (RS) techniques, coupled with geographical information systems (GIS), are widely recognized as supporting tools for the planning, monitoring, and management of the appropriate utilization of resources at the country, regional and global levels.

MASTA Students specializing in Remote sensing & Geo-Information System will get training in both the underlying theory and the application of remote sensing, spatial analytical methods, digital cartography, and geographic information systems. Students will be provided with many professional visits to learn how remote sensing and GIS technologies are currently applied in various fields such as natural resource management, environmental monitoring, disaster assessments, and other related fields. Some leading national and international geoinformatics practitioners will be invited to lead training or seminars to highlight industrial, commercial and governmental applications.

Professionals/Experts (partial)

He Llinshu
Professor,
Beihang University

Liu Qinhuo
Professor, Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences

Liu Yalan
Professor, Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences

Tan Yumin
Associate Pprofessor,
Beihang University

Xu Liping
General Manger,
Beijing Space View Technology Co.,Ltd.

Partners

9-month Course List

No.	Item	Class Hrs	Credits	Remark
Module Ⅰ Platform Courses				
PC1-1	Probability and Statistics in Engineering	48	3	Select at least 3 compulsory credits
PC1-2	Theory of Matrix	48	3	
PC1-3	Numerical Analysis	48	3	
PC2-1	Matlab Programming	32	2	Compulsory/ Optional
PC3-1	Space Environment, Orbit and Spacecraft Systems	48	3	Compulsory
PC3-2	Introduction to Space Technology Applications	18	1	Compulsory
PC3-3	International Cooperation in the Peaceful Uses of Outer Space	16	1	Compulsory/ Optional
PC3-4	Introduction on Space Life Science and Astrobiology	18	1	Compulsory/ Optional
PC4-1	Introduction to China and Chinese Language	54	3	Compulsory
Module Ⅱ Major Basic Courses & Major Courses				
MC1-1	Principle of Remote Sensing	48	3	Compulsory
MC1-2	Physical Principles of Microwave Remote Sensing	26	1	Compulsory
MC1-3	Geographic Information System: Principle, Design and Practice	32	2	Compulsory
MC1-4	Remote Sensing Image Processing and Software Application	48	1	Compulsory
MC1-5	Geographic Information System: Design and Practice	32	3	Compulsory
MC1-6	Natural Disaster Remote Sensing	18	1	Compulsory
MC1-7	Case Studies in the Applications of RS & GIS	18	1	Compulsory
Module Ⅲ Team Pilot Projects				
PPC	Team Pilot Project	12 Weeks	8	Compulsory

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Micro-satellite Technology

During the past decades, the micro-satellites have been applied widely to perform space experiments, demonstrate new technology and operational missions. Micro-satellite has become one of the key fields in the future space exploration. Because of their simple functions, small sizes, light weight as well as low cost, micro-satellite technology is extremely suitable to be developed in universities. On the other hand, although small or micro-satellites seem function and system sample, such kinds of satellites still consist of subsystems that almost cover all the technology in design and manufacture for normal satellites, therefore it is an efficient way for students to study and develop space technology through special micro-satellite projects. Many universities in the world are now endeavoring in various of micro-satellites, Surrey University in British and Delft University of Technology are examples.

In order to enhance student innovation and engineering abilities in spacecraft design, a student micro-Satellite (BUAA-SAT) program is sponsored by Beihang University. The Micro-Satellite Technology program of the Centre is the one branch of BUAA-SAT as the English-taught program for international students. After years work, BUAA-SAT has completed its preliminary design phase. All subsystems have been prototyped and demonstrated. Now the flight model and qualified tests of space environments are conducted. Meanwhile a training platform for microsatellite has been formed at Beihang University, which contains document materials for design, simulation as well as devices and facilities for test.

Professionals/Experts (partial)

Gustavo Alonso Rodrigo
Professor, Technical University of Madrid

Leonardo M. Reyneri
Professor, Politecnico di Torino

Zhang Xiaomin
Vice President, DFH Satellite Co., Ltd.

Huang Hai
Professor, School of Astronautics, Beihang University

Niu Jianwei
Professor, School of Computer Science, Beihang University

Chu Zhongyi
Professor, School of Instrument Science and Opto-Electronics, Beihang University

Partners

APSCO
ASIA-PACIFIC SPACE COOPERATION ORGANIZATION

中国航天

UNIVERSIDAD POLITECNICA MADRID

SHANGHAI JIAO TONG UNIVERSITY

No.	Item	Class Hrs	Credits	Remark
Module I Platform Courses				
PC1-1	Probability and Statistics in Engineering	48	3	Select at least 3 credits of them
PC1-2	Theory of Matrix	48	3	
PC1-3	Numerical Analysis	48	3	
PC2-1	Matlab Programming	32	2	Compulsory/ Optional
PC3-1	Space Environment, Orbit and Spacecraft Systems	48	3	Compulsory
PC3-2	Introduction to Space Technology Applications	18	1	Compulsory
PC3-3	International Cooperation in the Peaceful Uses of Outer Space	16	1	Compulsory/ Optional
PC3-4	Introduction on Space Life Science and Astrobiology	18	1	Compulsory/ Optional
PC4-1	Introduction to China and Chinese Language	54	3	Compulsory
Module II Major Basic Courses & Major Courses				
MC4-1	Orbital Mechanics	48	3	Compulsory
MC4-2	Spacecraft Structure and Mechanism Design	32	2	Compulsory
MC4-3	Practics of MSC Patran/Nastran	16	1	Compulsory
MC4-4	Satellite OBDH System Design and Test	32	2	Compulsory
MC4-5	Thermal Control Technology of Spacecraft	32	2	Compulsory
Module III Team Pilot Projects				
PPC	Team Pilot Project	12 Weeks	8	Compulsory

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Space Law and Policy

Space law plays a critical role in law governing space-related activities. Space law addresses a variety of issues, including the preservation of the space and Earth environment, liability for damages caused by space objects, the settlement of disputes, the rescue of astronauts, the information sharing of potential dangers in outer space, the use of space-related technologies, and international cooperation, a number of fundamental principles, including the notion of space as the province of all humankind, the freedom of exploration and the use of outer space by all countries without discrimination, and the principle of non-appropriation of outer space, and a series of legal systems, including liability system, registration system, etc.

In order to build up sound regulation of national space activities, some countries have promulgated domestic space laws, which is also their first step to participate the international space affairs. Capacity-building, training and education in the field of space law help to promote international development and cooperation in space activities, and provide methodologies for a deeper understanding of the interdependent roles of science, technology and law in this area.

Currently, the Centre is the first one to set up space law degree program and short training programs among all the 6 Regional Centres. In September, 2015, the Centre organized the 1st International Training on Space Law and Policy, and received high praise from participants. With the success of the short training program, the Centre opened a new education field ”Space Law and Policy” in MASTA Program since 2016, with an enrollment of 10 students from 7 countries, so as to promote the educational and training activities of space law at the regional and global level.

Professionals/Experts (partial)

Sergio Camacho
Former Director of UNOOSA

Joanne Gabrynowicz
Professor Emerita, University of Mississippi, USA

Zhao Yun
Professor, Hongkong University

Li Bin
Associate Professor, University of Newcastle, Australia

Li Juqian
Professor, China University of Political Science and Law

Xia Chunli
Associate Professor, Beihang University

Partners

9-month Course List

No.	Item	Class Hrs	Credits	Remark
Module Ⅰ Platform Courses				
PC3-1	Space Environment, Orbit and Spacecraft Systems	48	3	Compulsory
PC3-2	Introduction to Space Technology Applications	18	1	
PC3-3	International Cooperation in the Peaceful Uses of Outer Space	16	1	
PC3-4	Introduction on Space Life Science and Astrobiology	18	1	Compulsory/ Optional
PC3-5	International law	18	1	Compulsory
PC4-1	Introduction to China and Chinese Language	54	3	Compulsory
Module Ⅱ Major Basic Courses & Major Courses				
MC2-1	Basic concepts of international law and space law	32	2	Compulsory
MC2-2	Organization and supervision of national space activities	16	1	Compulsory
MC2-3	National Space Legislation and policy	32	2	Compulsory
MC2-4	Legal Issues related to RS&GIS	16	1	Compulsory
MC2-5	Legal Issues related to Satellite Communication	16	1	Compulsory
MC2-6	Legal Issues related to space environment protection	16	1	Compulsory
MC2-7	Space commercialization and the development of Space Law	16	1	Compulsory
AL2-1	Space governance and Peaceful Use of Outer Space	4	1	Compulsory
AL2-2	Long-term sustainability for outer space activities	4		
AL2-3	Hot Topics on Space Law I	4		
AL2-4	Hot Topics on Space Law II	4		
Module Ⅲ Team Pilot Projects				
PP	Legal practice	4 Weeks	8	

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Contact Information

WEBSITE WECHAT

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Website of International School, Beihang University: http//is.buaa.edu.cn
Website of Beihang University: http://ev.buaa.edu.cn/
Website of China Scholarship Council: http://studyinchina.csc.edu.cn

国家体育场（鸟巢）
National Stadium (Birds Nest)