

# MASTA 2017

## Master Program on Space Technology Applications

### Micro-Satellite Technology

#### Overview

Space technology and its applications, the most fascinating technical achievement of the human race in the last four 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 an operational program, Beihang University has initiated the Master program on Space Technology Applications (MASTA) since 2006, and the program has been held nine times successfully till now. 100 students have graduated and got the Master's Degree on Space Technology Applications. 61 MASTA students from 18 countries are studying at Beihang in 2016.

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 (5Is) 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
- ✧ Developing the skills necessary for working effectively with colleagues from a diverse range of disciplines and cultures
- ✧ Placing the participants at the frontier of the industry through contact with space professionals
- ✧ Complying with international conventions
- ✧ Modularized curricula design
- ✧ Flexible study modes

This program is carried out according to the regulations and requirements of Beihang University. **The total duration of study is 1 year and 9 months in general.**

# Introduction to Beihang University

Beihang University (BUAA), formerly called Beijing University of Aeronautics and Astronautics, was founded in 1952 and has been one of the state key universities of China since 1950s. Through more than 60 years development Beihang has grown into one of the nation's foremost research universities, combining disciplines in science, engineering, humanity, law, economics, management, and education, while maintaining the leading role in technology.

Beihang has now a total enrolment of over 29,000 full-time students, including 13,000 postgraduates. Over 2,000 international students from more than 100 countries are studying at Beihang in 2016. Among them over 1,200 are studying for degree programs, including more than 700 master and doctoral students, and more than 300 are studying Chinese language in Chinese Language Training Center of Beihang.

The University has been reputed for its competitive edge in such disciplines as aeronautics and astronautics, instrument science and technology, computer science and technology, management science and engineering, etc. English or Chinese are used as instruction language for master and doctoral programs.

Beihang is one of the top universities in China equipped with advanced laboratories and teaching facilities. Xueyuan Road Campus is located in the heart of "China's Silicon Valley" – Zhongguancun Science Park. The campus of Beihang is notable for its beautiful environment, convenient transportation, and completed living services, including various sports facilities, bank, post office, supermarkets, canteens, etc..

## Application Qualifications

- ✧ The applicant should be under the age of 35 in general;
- ✧ 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 supposed to have research background in relevant areas;
- ✧ The applicant is expected to have good command of English and the ability to take courses in English;

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).

## 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 standard by 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 from 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**.

*Note: The online application will begin around the middle of December, 2016.*

### 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. Photocopy of Physical Examination Form and the Report on Blood Examination.  
[Attachment 1-FOREIGNER PHYSICAL EXAMINATION FORM.pdf](#)
7. Photocopy of the homepage of Passport (the information page);
8. 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 10th March, 2017.

**Ms.** Jessica Zhuang

**Address:** Building 13&14, Section 3, No.188, South West Fourth Ring, Fengtai District, Beijing 100070, China,

**Tel:** 86 10 6370 2677 Ext. 405, **Fax:** 86 10 63702286

Note: *In order to speed up your application process, scanned copies can be emailed to the **Contact Person:** [jessica@apsco.int](mailto:jessica@apsco.int) so that we can get your information in advance. And **mail all the required documents to the Contact Person** by the already set deadline (**March 10, 2017**). APSCO 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** by **March 10, 2017**.
- ✧ The results of admission will be notified by stages **from May 20 to early August 2017**.
- ✧ The Admission Notice and related documents will be mailed to the successful applicants around **August 15, 2017**.
- ✧ The program will begin at the middle of **September 2017**.

## Contact Information

- ✧ **Ms.** Jessica Zhuang, Department of Education and Training and Database Management, APSCO
  - ✧ **Address:** Building 13&14, Section 3, No.188, South West Fourth Ring, Fengtai District, Beijing 100070, China,
  - ✧ **Tel:** 86 10 6370 2677 Ext. 405, **Fax:** 86 10 63702286
  - ✧ **E-mail:** [jessica@apsco.int](mailto:jessica@apsco.int)
- Website: <http://www.apsco.int> & <http://is.buaa.edu.cn>

# 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 simple, 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. 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.

Referring to the Education Curricula of UN-PSA, Master programs on Space Application would be completed in two phases:

- (a) 9-month Course Study
- (b) 12 months for Advanced Research project (at Beihang University or in applicant's homeland)

## Training Program

<b>Phase I</b>			
<b>Course Study in China: 9 months (at Beihang University)</b>			
(Leading to Course completion Certificate)			
	<b>Module I</b>	<b>Module II</b>	<b>Module III</b>
Formulation of an Individual Training Plan	Common Platform Courses	<ul style="list-style-type: none"> <li>● Major courses</li> <li>● Academic Lectures</li> </ul>	<ul style="list-style-type: none"> <li>● Team Pilot Project</li> <li>● Practice Courses</li> <li>● Professional Visits</li> </ul>

<b>Phase II</b>				
<b>Thesis Research: 12 months (in China or home country)</b>				
(Leading to Master's Degree in Engineering)				
Literature Survey and Thesis Proposal	Midterm Assessment	Academic Activities	Thesis Research	Thesis Defense

## Degrees

After the 9-month course study at Beihang University, each participant is expected to complete a Master's Degree Thesis (1 year) at Beihang University/in Homeland.

Under the guidance of supervisors, participants are expected to select their research topics closely related to the practical space technology application projects in their home countries.

The evaluation will be mainly focused on the topic of the thesis, range of the writer's knowledge, value and prospect of the thesis, etc.

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.

## Faculty

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

## 9-month Course List

No.	Item	Class Hrs	Credits	Remark
<b>Module I Platform Courses</b>				
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
PC3-1	Space Environment, Orbit and Spacecraft Systems	48	3	Compulsory
PC3-3	Space Technology and Space Economy	18	1	Compulsory
PC4-1	Introduction to China and Chinese Language	54	3	Compulsory
<b>Module II Major Basic Courses &amp; Major Courses</b>				
MC4-1	Miniature Spacecraft System Design	32	2	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
<b>Module III Team Pilot Projects</b>				
PPC	Team Pilot Project	12 Weeks	8	Compulsory