# ANNOUNCEMENT BROCHURE





## 5th INTERNATIONAL TRAINING COURSE ON
# SMALL SATELLITE MISSIONS

**21st November - 2nd December 2016**

*Jointly conducted by*
**ISRO Satellite Centre (ISAC)**
ISRO, Department of Space,
Government of India, Bengaluru, India
and
**Indian Institute of Remote Sensing (IIRS)**
ISRO, Department of Space,
Government of India, Dehradun, India

*Organized by*
**Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP)**
(Affiliated to the United Nations)
IIRS Campus, 4, Kalidas road, Dehradun, India
www.cssteap.org
E-mail : cssteap@iirs.gov.in

# CSSTEAP Governing Board

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**ITC (The Netherlands)**

## Secretary

Dr. A Senthil Kumar
**Director CSSTEAP**

Participants of 20th Governing Board meeting in New Delhi

## Introduction

Space technologies, especially satellites are important instruments for development and progress of humankind. Satellites are used for Earth observation, Communication, Navigation, Atmospheric studies, Astronomical observations and Military applications. Satellites provide uninterrupted services with less cost when compared with conventional methods for similar applications. It is evident from the increasing number of satellite launches in recent years. With an increase in the awareness of benefits of earth observation technology for societal applications many countries are integrating space capabilities into their national development programmes.

On one side satellites have become larger and heavier to meet increasing requirements with improved qualities, and payloads are expensive. On the other hand small satellite also have significant role in emergent societal appliances. The increase in cost, complex technology, new areas of applications and continuous service requirements restrict the satellite fabrication and launch to only a few countries or agencies in the world. On the other side the revolution in electronics miniaturization, invention of smart materials, have reduced the satellite size and mass. Further, the improvements in computation capability of processors, high capacity storage devices, imaging technology, control intelligence and onboard automation and associated performance capability have opened the opportunities to design and fabricate "Smaller, faster and cheaper" sophisticated 'small' satellites. The reduction in mass and volume reduces the launch cost also. The small satellite concept which provides less turnaround time, affordability and the potential to serve high end applications have attracted Industries and universities towards the small satellite fabrication and launch. The small satellites are launched as 'piggy-backs' of large satellites, resulting in inexpensive launch cost with more launch opportunities. More than 500 small satellites (nano, cube, micro and mini satellites) are expected to be launched in the next five years. U.S. is the most active country in small satellite deployment followed by Europe, Russia, Japan, China and India. Small satellites have attracted attention from both developed and nascent space countries in Asia for two main reasons: National security, and technology acquisition. Other Asia Pacific countries like Indonesia, Bangladesh, Vietnam, Thailand, Sri Lanka and Central Asian countries have also taken initiatives in this direction.

## Objectives

- To create an awareness about small satellites, space technology and opportunities.
- To disseminate knowledge required for small satellites technology
- To sensitize professionals in developing, launching and utilizing the benefits of small satellites
- Exposure to infrastructure required for small satellite development

## Who Should Attend ?

The course is aimed for decision makers, senior space technologists, managers, researchers and professionals in the fields of space technology.

Others who will find the course very useful include academic institutions, space agencies, and institutions responsible for regional capacity building in the use of space-based technology.

## Course Duration and Location

The course is organised by Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP) during November 21 to

December 02, 2016 at ISRO Satellite Centre (ISAC), ISRO Banglore and conducted, jointly by ISRO Satellite Centre (ISAC) and Indian Institute of Remote Sensing (IIRS).

## Language of Course

The language of the course is English. Proficiency in written and spoken English is most essential. Candidates with adequate working knowledge in English only need to apply.

## Course Structure

The structure of the course is a balance between technical presentations, animation and assignments.

The following course content will be covered :

- Benefits of space technology
- Remote sensing applications
- Technology involved in making small satellites
- Applications of small satellites and future trends
- Management of small satellites

## Course Implementation

The course will be conducted at ISAC, located in Bengaluru, India through lectures, assignments, quiz, demo, etc.

## Course Fee and Accommodation

A course fee of ₹ 15,000 (equivalent to US$ 300) is applicable which includes course materials and local tours. Accommodation for the participants will be arranged at guest house, ISAC Bengaluru. In addition the participants will have to pay ₹ 50 per day towards accommodation charges.

Indian food will be available in the guest house on payment basis.

CSSTEAP hostel at IIRS

## Fellowships to Participants

The candidates are required to send their personal details/bio-data to the Course Coordinator, IIRS, Dehradun (cssteap@iirs.gov.in) in the prescribed Application Form, appended to this Announcement Brochure. The candidates are expected to make their own arrangements for all expenses. Preference in admission will be given to the candidates who are financially supported by their organizations. A few fellowships covering to and fro international air travel, domestic travel in India, course fee and living expenses (₹ 8,000 INR for two weeks) in India are available, however preference will be given to the fully self sponsored candidates and then to the candidates whose sponsoring organization will be bearing international to and fro travel.

## Health and Insurance

Medical, life and disability insurance should be undertaken before leaving for India by the participants themselves or on their behalf by their organization for covering entire health and disability risks. No medical expenses will be borne by CSSTEAP.

CSSTEAP HQ, Dehradun

## About CSSTEAP (Affiliated to the United Nations)

The Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP), was established in November 1995 in response to the UN General Assembly Resolution 45/72 of the 11th December 1990 endorsing the recommendations of UNISPACE-82, the United Nations Office for Outer Space Affairs (UN OOSA).

The centre is hosted by the Government of India with Department of Space (DOS) as the nodal agency and is guided by an International Governing Board from 16 countries and observers from UNOOSA and ITC The Netherlands. The goal of the Centre is to do capacity Building through in-depth education, indigenous capability in the Asia-Pacific countries for research and applications in the core disciplines of Remote Sensing & Geographic Information System, Satellite Communications, Satellite Meteorology & Global Climate, Space & Atmospheric Science and Global Navigation Satellite Systems. The Post Graduate educational programs, with course curricula developed by the United Nations, are recognized by Andhra University, Visakhapatnam India for award of M.Tech degree. About 11643 professionals from 52 countries within and outside the Asia-Pacific region have graduated so far from the centre. For further details you may please visit www.cssteap.org.

CSTTEAP is organizing a 2-week Course for technologists and researchers from Asia-Pacific to share their expertise in the area of small satellites.

## About Indian Space Research Organisation

Government of India had setup Space commission and Department of Space (DOS) in June 1972. Indian Space Research Organisation (ISRO) under DOS executes space, programs through its establishments located at different places in India. The prime objective of ISRO is to develop space technology and its applications for the societal benefits.

ISRO has established the following five major space systems with its satellites

- Space communication system: INSAT/GSAT Series
- Earth & Atmospheric observation system: Remote sensing satellites (Resourcesat, AWiFS, Oceansat, Metsat, Cartosat, etc)
- Regional navigation system: IRNSS satellites
- Planetary Studies system: Chandrayaan-1 and Mars Observatory Mission (MOM)
- Astronomical Research systems: Astrosat and Aditya-L1

Apart from the above, ISRO has also developed its own small satellites. Also, ISRO guides Indian University students in small satellite design, fabrication, testing and operation activities, and also launches their satellites.

Further, ISRO has developed two launch vehicles, the PSLV and GSLV to launch satellites to LEO and GEO orbits. For more details please visit www.isro.gov.in.

## About Host Institutes

### ISRO Satellite Centre

The ISRO Satellite Centre (ISAC) in Bengaluru is one of the centres of Indian Space Research Organisation, Department of Space and is engaged in developing satellite technology and implementation of satellite systems for scientific, technological and application

missions. ISAC is functionally organized into five major areas: Mechanical Systems Area (MSA) including structures, thermal systems and spacecraft mechanisms; Digital and Communications Area (DCA) including digital systems, computer and information, facilities, communication systems; Integration Power Area (IPA) comprising spacecraft checkout, systems integration and power systems; Controls and Mission Area (CMA) consisting of control system, mission development; Reliability and Components Area (RCA). Program Planning and Evaluation Group (PPEG) provides relevant support to the Centre. Project management teams co-ordinate the implementation of INSAT and IRS Projects. Space astronomy and instrumentation division is engaged in space science activities. ISRO Satellite Integration and Test Establishment (ISITE) including a comprehensive Assembly, Test and Thermovacuum Chamber (CATVAC) provides necessary support for qualification of sub-systems and systems to meet the requirements of space environment.

## Indian Institute of Remote Sensing

The Indian Institute of Remote Sensing (IIRS) is a unit of Indian Space Research Organisation, Department of Space, Government of India which was established in 1966. It is the premier training and education institute dealing with Remote Sensing.


IIRS, Dehradun

GeoInformation Science & GNSS Technology and their applications in the region.

Institute has gained rich experience over the last 49 years in capacity building and implemented many innovative programs tuned to the needs of various target groups. The institute also offers satellite based distance learning programs for the benefit of university students.

Institute has 8 departments covering different aspects of natural resources management. Technology oriented department are (a) Remote Sensing & Photogrammetry (b) Geoinformatics and applications oriented departments are : (a) Agriculture & Soil Department (b) Forestry & Ecology Department (c) Geosciences Department (d) Marine and Atmospheric Sciences Department (e) Urban and Regional Studies Department (f) Water Resources Department and (g) Disaster Management

ISAC, Bengaluru

CENTRE FOR SPACE SCIENCE AND TECHNOLOGY EDUCATION
IN ASIA AND THE PACIFIC (CSSTEAP)

(AFFILIATED TO THE UNITED NATIONS)

## APPLICATION FORM FOR

## 5th INTERNATIONAL TRAINING COURSE ON SMALL SATELLITE MISSIONS

(21st November - 2nd December, 2016)

Venue: ISRO Satellite Centre, Bengaluru, India

Last date for receipt of application: September 30, 2016

AFFIX RECENT PASSPORT SIZE PHOTOGRAPH

SSM - 5
(For office use only)

Application No.: .....

Date received: .....

**Important:**
All the correspondence from CSSTEAP (issue of admission leter, e-tickets for travel, enquiries, etc) with prospective applicants will be on internet and sometimes on phone (Home/ Office), therefore kindly ensure that email-id, phone, fax, etc, are correctly and clearly mentioned.

(Please type or use CAPITAL LETTERS)

1. Name (Dr/Mr/Mrs/Miss): .....
(As mentioned in the Passport)

2. Father's Name: .....

3. Name of mother/husband/wife:.....

4. Date of Birth (DD/MM/YYYY): .....

5. Place of Birth: .....

6. Gender (Male/Female): .....

7. Nationality: .....

8. Contact Information: Present official Address (Valid until what date):

.....

.....

.....

Contact number: (Please give complete Phone No. with country, city codes)

Office (Tel): ..... Office (Fax): .....

Mobile: ..... E-mail: .....

9. Permanent home Address (in your country):

.....

.....

.....

Contact number: (Please give complete Phone No. with country, city codes)

Home (Tel): ..... Home (Fax): .....

E-Mail (alternate, preferably G-mail or Yahoo):.....

10. Nearest International airport (Specify the place/city):.....

**Important:**

a) Interested persons may detach last 4 pages from this brochure and use them as **Application Form.**
b) It is essential that full passport details are mentioned in the Application Form.
c) Application Forms without passport details may not be considered.
d) Providing alternate email-id would ensure timely communication with applicants.
e) For faster communication with the applicants CSSTEAP Secretariate will be using your email-id for all purposes (e.g. admission letter, air tickets and logistic arrangements).

11. ACADEMIC QUALIFICATIONS* (mandatory)

| Degree / (Bachelor/ Master) Diploma | Duration of Course (mention from which year to year) | University / Institution | Year of Passing | Grade / percentage/ CGPA | Major Subjects/specialization |
|---|---|---|---|---|---|
| | | | | | |
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| | | | | | |
| | | | | | |

*(Enclose copies of Degree/Diploma/Certificates/marks/grades obtained etc. and their certified transcription in English)

Major Subject in last examination: ..... Area of Specialization: .....

Medium of Instruction/Language: ..... TOEFL Score (Proficiency in English): .....

Reading: Fair, Good, Very Good

Writing: Fair, Good, Very Good (Please tick the option)

Spoken: Fair, Good, Very Good

Please enclose certified copies of marks/grades of degree, diploma, TOEFL (validity period), etc. certificates and their certified translations in English.

12. DETAILS OF EXPERIENCE OF LAST FIVE YEARS

(a) Present Position ..... Present Responsibilities*: .....

.....

Organization and Complete Address

.....

.....

Date of joining this Organization (dd/mm/year) .....

* Attach additional sheets giving details of your technical activity during last one year.

(b) Experience during past 15 years:

| Name of Organization (s) | Position(s) / Post(s) held | Nature of work done | Duration |
|---|---|---|---|
| | | | |
| | | | |
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| | | | |
| | | | |

13. (a) Activities & Projects in which your present organization is engaged (mandatory) and nature of your duties *

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.....

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(b) Main Scientific/Technical facilities available in your organization *(Including approximate number and type of computers, type of software available etc.)

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* If required attach separate sheet.

14. Have you done any other course (short or PG) from CSSTEAP (if 'yes', please give details including theme & year)

.....

.....

15. How this short course on Small Satellite Mission will help you in your work/organization? Please describe below.

.....

.....

16. DETAILS OF PASSPORT : Passport details are essential for selection of candidates and send copy of the passport wherever available.

| Passport Number | Place of Issue (City and country) | Date of issue | Passport valid up to | Issuing Authority | Whether previously visited India if so place and date of last visit |
|---|---|---|---|---|---|
| | | | | | |

17. Physical Fitness

a) Are you suffering from any recurring/chronic/serious communicable disease which may affect your study program in India?

..... Yes / No

b) If yes, please specify nature of illness (Candidates are advised to attach medical fitness certificate from a government hospital or government recognised hospital on hospital letter head).

18. How do you propose to meet the international travel and stay expenses in India? (preference will be given to those who will make their own travel arrangement).

.....

.....

19. Stalking/smoking and drinking of alcohol in the office premise is not permitted. The participants are expected to wear proper and decent dress while in the campus and classroom as well as during field visits and educational tours.

20. The selected candidate need to abide by rules and regulation of the institute and maintain discipline harmony and will not indulge in unlawful activities in campus hostel or during educational and field visits.

21. DECLARATION BY THE CANDIDATE :

I have read the announcement brochure and will abide by the rules and regulations of the Centre. I have made / am making / have not made travel arrangements for attending the course and local expenses for the period of stay in India.

Date : .....

Place : ..... Signature of Candidate

22. SPONSORING / NOMINATING AGENCY CERTIFICATE

Dr/Mr./ Ms. .....working in this organisation is sponsored/ endorsed by .....(name of ministry, department, organisation etc.) to attend the International Training Course on "International Training Course on Small Satellite Missions" to be held at Indian Institute of Remote Sensing, Dehradun, India during 21st November, 2016 to 2nd December 2016. We envisage to utilize his/her experience in specific tasks of our organization / agency. Following statements are mandatory for certification by the sponsorer.

i. She will be/will not be provided international travel support. ☐
ii. She will be / will not be provided financial assistance for the period of stay in India. ☐
iii. She possesses adequate knowledge of English Language required for the course. ☐

(Mandatory: please tick appropriate option )

Date : .....
Place : .....

Signature:
Name in Capital Letters :
Designation:
Phone No. :
Fax No. :
E-mail:

***(Official seal of the sponsoring or nominating authority)***

**Note: Application without official seal of sponsoring or nominating authority and their details will not be considered.)**

23. FORWARDING NOTE BY THE RESPECTIVE INDIAN EMBASSY IN YOUR COUNTRY

This is to forward the application of Dr/Mr/ Ms..... of ..... ..... (Specify the Country Name here) for the "Small Satellite Missions" to be held at Indian Institute of Remote Sensing, Dehradun, India during (21st November - 2nd December, 2016)

Date : .....
Place : .....

Signature :
Name :
Designation :
Phone No. :
Fax No. :
E-mail :

***(Official seal of the Embassy / High Commission)***

**Note: Application without official seal of Embassy or High Commission will not be considered**

**N.B.** Please send an advance copy of the application form duly signed by the sponsoring agency to the Course Coordinator, CSSTEAP, IIRS Campus, 4, Kalidas road, Dehradun-248001, India by fax (+91-135-274-0785) for quick processing. Original copy needs to be sent through Embassy/High commission of respective country at New Delhi duly signed by the sponsoring or nominating authority.

## IMPORTANT

- The Application which is not complete in all respects is likely to be rejected.
- **Candidates must attach copies of certificates of:**
  a) Medical fitness to attend the course <u>including Chest X-ray (PA), Blood Test (including Random Blood Sugar, HIV, Pregnancy HBs, Ag, Urine complete</u> (in case any medical information requiring attention is hidden and if found during the course, the centre will be compelled to send the candidate back home at the cost of nominating agency or the candidate.
  b) Expecting mothers are advised not to apply for the course.
  c) Stalking/smoking and consuming alcoholic drinks in class room and office campus is prohibited.
  d) Proof of Proficiency in English needs to be provided or **certificate by the nominating agency is to be provided.**
  e) Attach copy of Highest degree obtained (Degree certificate and marks sheet/grade card)
  f) Attach copy of All Degree Certificates, if not in English, may please be translated in English and attested by the Head of the organization <u>or transcript in English can also be submitted</u> and authenticated appropriately.

## About Dehradun

Dehradun, the capital of Uttarakhand state, is located in one of the outer valleys of Himalaya in Northern India. The valley is surrounded by dense forest and provides pristine environment for academic pursuits. World famous Rajaji National Park, famous for Tigers, Elephants etc. is located adjacent to the city. Dehradun is well connected by air, train and road from Delhi, the national capital. IIRS campus is about 6 km from railway station and about 25 km from airport. Many important national organizations/institutions are located here. Mussoorie, the famous hill station, is about 30 km from Dehradun. Haridwar and Rishikesh, the two famous pilgrim centers, are about 55 km and 40 km, respectively from Dehradun. Weather of Dehradun during November is usually pleasant to moderately cold.

## Important Dates

- Last date for receipt of application : Sept. 30, 2016
- Information of selection: October 1st Week 2016
- Commencement of the course: November 21, 2016
- Completion of the course: December 02, 2016

List of selected participants will be hosted on CSSTEAP website (www.cssteap.org).

## Course Director

IRS & SSS Programme, ISRO Satellite Centre,
ISRO, Department of Space, Government of India,
Vimanapura Post, Bengaluru-560017, India.
Tel : +91-80-25082637, Fax: +91-80-25082444

## Mailing address

Course Coordinator (Small Satellite Missions), Indian Institute of Remote Sensing, ISRO,
Department of Space, Government of India, 4, Kalidas Road, Dehradun 248001, India
Tel: +91-135-2524110 /2744583, Fax: +91-135-2741987/2748041/2740785
Email: cssteap@iirs.gov.in, URL: http://www.iirs.gov.in

CSSTEAP participants during the demonstration session

Participants and faculty of 4th Small Satellite Mission Course - 2015


**IIRS Campus**
**Indian Institute of Remote Sensing,**
4, Kalidas Road,
Dehradun 248 001 (INDIA)
Tel. : +91-135-274 4583
Fax: +91-135-274 1987

**SAC Campus**
**Space Applications Centre,**
Ambavadi Vistar P.O. Jodhpur Tekra
Ahmedabad 380 015 (INDIA)
Tel. : +91-79-2691 3344
Fax: +91-79-2691 5843

**PRL Campus**
**Physical Research Laboratory**
Navrangpura,
Ahmedabad 380 009 (INDIA)
Tel. : +91-79-2630 8550
Fax: +91-79-2630 0374

**ISAC Campus**
**ISRO Satellite Centre**
Vimanpura Post
Bengaluru 560 017 (INDIA)
Tel. : +91-80-2520 5252
Fax: +91-80- 2520 5251

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