CENTRE FOR SPACE SCIENCE AND TECHNOLOGY EDUCATION IN ASIA AND THE PACIFIC

(Affiliated to the United Nations)

Background document for
27th meeting of the Governing Board

Date: December 14, 2022

New Delhi

Centre for Space Science and Technology Education in Asia and the Pacific

Indian Institute of Remote Sensing Campus
4, Kalidas Road
Dehradun-248001, India

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Agenda – 2

Confirmation of Chairman CSSTEAP Governing Board

Shri A.S. Kiran Kumar, Secretary Department of Space and Chairman, ISRO, superannuated on January 14, 2018. He was succeeded by Dr. K. Sivan as Chairman, ISRO and Secretary, Department of Space.

Further, Additional Secretary & FA, Dept. of Space, Govt. of India vide letter No. EOS/CSSTEAP/2018/02 dated March 16, 2018 informed to the honorable Governing Board Members that Dr. K. Sivan has taken over as Chairman, ISRO and Secretary, Department of Space from Shri A.S. Kiran Kumar and Dr. K. Sivan has been nominated as the Indian representative to the Governing Board of CSSTEAP.

In the 24th GB Meeting held at New Delhi on November 16, 2015 a resolution of electing Dr K Sivan, Chairman, ISRO (the Representative of Government of India on the Governing Board) be the Chairman of Governing Board, CSSTEAP was passed by GB unanimously for a period of four years, starting from January 15, 2018.

Dr. K Sivan, Secretary Department of Space and Chairman, ISRO, superannuated on January 1, 2022. He was succeeded by Shri S. Somanath, as Chairman, ISRO and Secretary, Department of Space.

Further, Additional Secretary, Dept. of Space, Govt. of India vide letter No. AS/DOS/12/2022 dated January 27, 2022 informed to the honorable Governing Board Members that Shri S. Somanath has taken over as Chairman, ISRO and Secretary, Department of Space from Dr K. Sivan and Shri S. Somanath has been nominated as the Indian representative to the Governing Board of CSSTEAP.

Governing Board is requested to confirm the appointment of Shri S. Somanath, Chairman, ISRO and Secretary, Department of Space, a representative of Government of India as the Chairman of the CSSTEAP Governing Board.

Agenda – 8

Action Taken Report by Director, CSSTEAP

Action Taken Report of 26th Meeting of CSSTEAP Governing Board

Action No.	Related Para No.	Action	Action taken
26/1	26.14	To explore possibility of organising joint training programme with LAPAN	Action in progress: A request to chairman, LAPAN sent on August 31, 2022. A reminder has been sent on 24.11.2022
26/2	26.29	To explore possibility of introduction of space economy and management in the syllabus as elective paper	Action in Progress: Discussion are in process for introduction of Short course on Space Law in association with UNOOSA. The topics on space economy and space management will be incorporated after the next AC meeting
26/3	26.29	To organise short courses for GNSS and SATCOM	Action Completed: Courses has been planned in 2023 since currently PG Courses on SATCOM and GNSS are ongoing
26/4	26.29	To organise more MOOC with UNOOSA	Action Completed: One day course on "Space-based Data for Climate Monitoring and Climate Change Impact" was organized with UNOOSA
26/5	26.29	To explore possibilities for organizing PG Diploma courses in hybrid mode	Action Completed: The matter has been discussed and based on feedback by the course participants, the in-campus course is the most preferred by the participants.
26/6	26.39	To organize more online courses in 2022	Action completed: 05 Online Short Training courses conducted on following topics: "Open Source GIS Technology & Geoweb service "during April 25 -May 26, 2022. (*53 Participants from 8 countries)* "Hyperspectral Remote Sensing and its Applications "during May 16 to June 03, 2022. (*43 Participants from 09 countries)* "Techniques and Application of Synthetic Aperture Radar (SAR) Remote Sensing" during October 10-21, 2022. (*32 participants from 14 countries*) "Advances in Remote Sensing Data Analysis Techniques for Geological Applications with emphasis on Asia-Pacific Region. (*To be*

			organized in December12-16, 2022) "Space based innovative solutions to improve water resources management in Asia-Pacific region (To be organized in December 12-16, 2022)
26/7	26.48	To further follow up on the collaboration with GISTDA	Action Completed: An MoU signed between CSSTEAP and GISTDA on August 3, 2022
26/8	26.49	To update the Advisory Committee and involve other organization in the region for joint capacity building in geospatial technology	Action in progress: Proposal for inclusion of DG and CEO, ACCIMT, Sri Lanka, has been put up as part of Advisory Committee. New AC will be formed before the next AC meeting.

Agenda – 9

Activities of CSSTEAP and Future Plans by Director, CSSTEAP

Activities of CSSTEAP

CSSTEAP has been actively conducting Post Graduate and Short Courses in various disciplines for the last 27 years. Presently Centre is conducting Post Graduate and short courses in the five disciplines, i.e. Remote Sensing and Geographic Information System (RS & GIS), Satellite Communications (SATCOM), Satellite Meterology and Global Climate (SATMET), Space and Atmospheric Science (SAS) and Global Navigation Satellite System (GNSS). Till date the Centre has conducted 64 PG courses 25 in RS & GIS, 12 in SATCOM, 12 in SATMET, 12 in SAS and 03 in GNSS. The Centre has also conducted several short courses and workshops in past 27 years. These programmes have benefitted around 3149 participants from a total of 37 countries in the Asia-Pacific region. In addition to this, 57 participants from 24 countries* outside Asia-Pacific regions have also been benefitted. PG Courses have benefitted 1054 participants (Figure 1a) while Short Courses have benefitted 2095 participants (Figure 1b).

Country-wise Output of PG and Short Courses

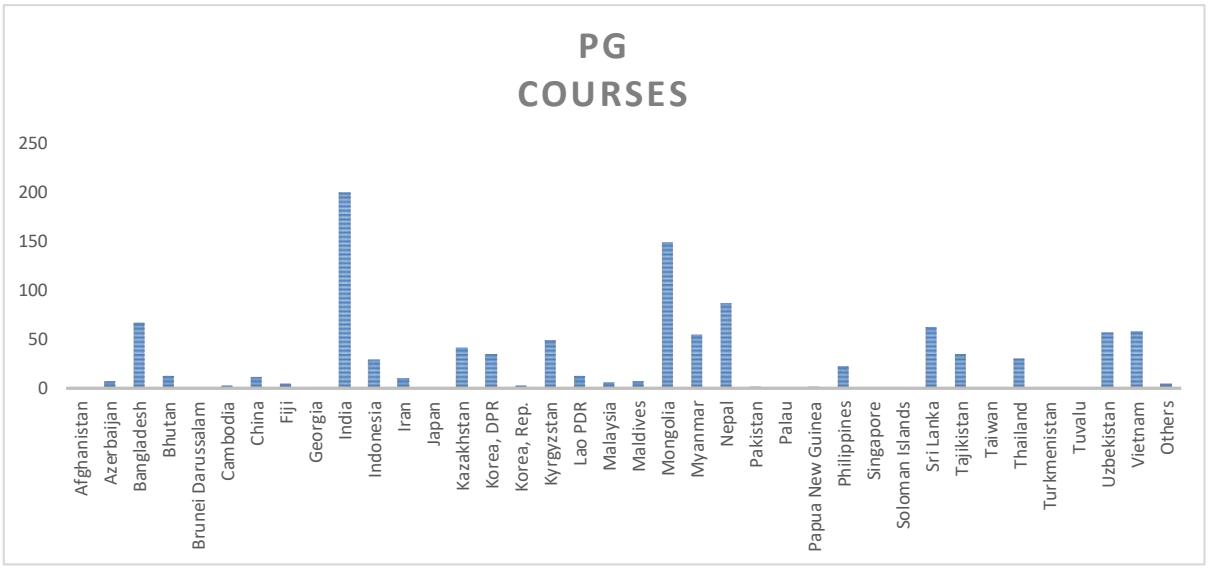

Figure 1a: Country-wise output of CSSTEAP academic programmes of PG

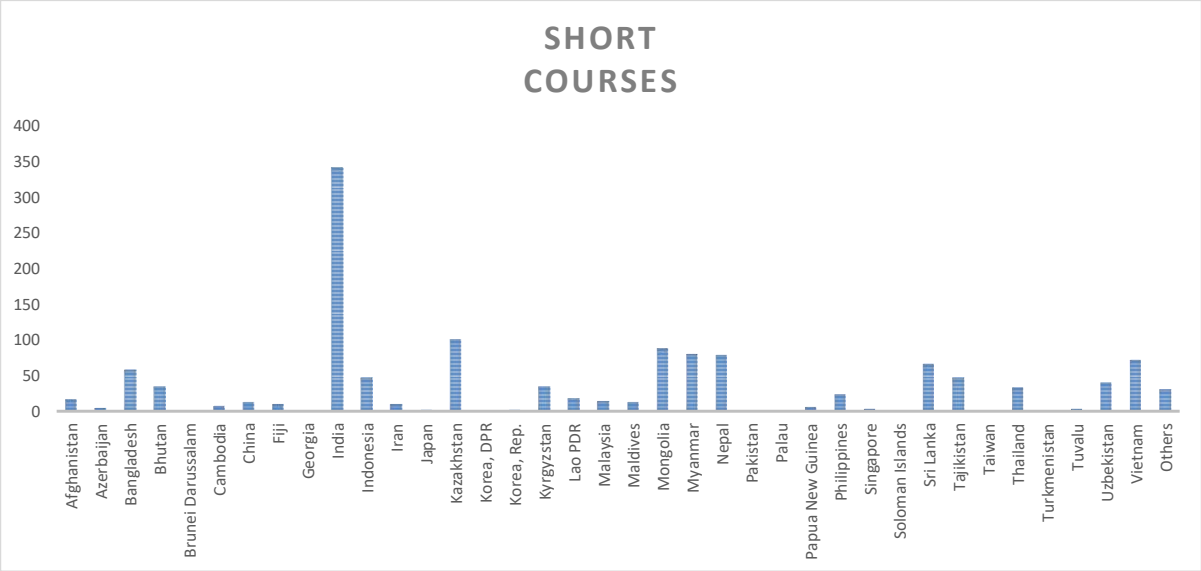

Figure 1b: Country-wise output of CSSTEAP academic programmes of Short/Online Courses

***Others include countries outside Asia-Pacific Region:** Algeria, Bahrain, Bolivia, Botswana, England, Egypt, Ghana, Iraq, Kenya, Madagascar, Mauritius, Mexico, Nigeria, Qatar, Romania, Rwanda, Saudi Arabia, South Africa, Syria, UAE, Yemen, and Zambia.

Academic Activities of Centre

The in-campus courses of the Center i.e. for 2021-22 batch started in Hybrid mode with online classes for both theory and practical for the first 2 modules of the course. The students were called to the campuses at IIRS, SAC and PRL from 1st April 2022 for the third module to enable the students to have a hands on experience during their project work. The present ongoing batches are attending the courses in campus from 15th September 2022.

(i) Completed Courses (2022)

During year 2022, the center has conducted 03 post graduate diploma course and 10 online short courses, workshops, Special courses, webinar. The details of the courses conducted are mentioned below:

<u>Online Courses Completed</u>

- Online Short Training course on "Open Source GIS Technology & Geoweb service "during April 25 -May 26, 2022. (*53 Participants from 8 countries)*

- Online Short Training course on "Hyperspectral Remote Sensing and its Applications "during May 16 to June 03, 2022. (*43 Participants from 09 countries)*

- Online Short Training Course on “Techniques and Application of Synthetic Aperture Radar (SAR) Remote Sensing” during October 10-21, 2022. (*36 participants from 16 countries*).

- Online short course on Advances in Remote Sensing Data Analysis Techniques for Geological Applications with emphasis on Asia-Pacific Region to be organized during December 12-16, 2022.

- Online Short Course on "Space based innovative solutions to improve water resources management in Asia-Pacific region to be organized during December 12-16, 2022.

Offline Short Courses -2022

- Short Training course on 11th Small Satellite Mission during November 07 - 18, 2022. (25 *Participants selected from 12 countries)*

- Short course on “Weather Forecasting using Numerical Weather Prediction models” during November 14 -25, 2022. (*24 participants from 09 countries*)

- Short Training course on “Application of Space Technology for Disaster Risk Management with Emphasis on Floods and Landslides for Asia Pacific Region” during November 21 – December 02, 2022. (*16 Participants selected from 10 countries)*
- Short Training course on “Space Weather” during December 01-15, 2022. (*21 Participants selected from 11 countries)*

* Country-wise participation of candidates in Online Courses is given in table below:

Table : Country-wise participation of candidates (Online Short Courses)

Countries	**RS&GIS**				**SATMET**	**SAS**	**Small Satellite Mission**
	On-line GW 2022	**On-line HRSA 2022**	**On-line SAR 2022**	**OFF-line DRM 2022**	**OFF-line NWP 2022**	**OFF-line SW 2022**	**OFF-line SSM 2022**
Bahrain			1				
Bangladesh	4	2	2	2	1	1	2
Colombia		3					
Ethiopia			1			1	
India	32	26	1		7	8	3

Indonesia			1				2
Iran							
Kazakhstan	1	1	1	2	4	2	4
Kyrgyzstan	1				2	1	
Lao PDR			1				
Malaysia	3	3	1				1
Mongolia	2	1	1	1	2	1	1
Myanmar	5	2	2	1	1	1	2
Nepal			1	2	4	1	
Nigeria							
Philippines	5	2	14				2
Rwanda							
Sri Lanka		3	3	4		1	3
Tajikistan			1	2	1	2	1
Thailand			2				2
Turkmenistan							
UAE							
Uzbekistan			1	1		2	2
Vietnam					2		1
Total	**53**	**43**	**36**	**13**	**24**	**21**	**25**

Special Courses

- Post Symposium Tutorial on "Space-based Data for Climate Monitoring and Climate Change Impact" as part of UN/Austria Symposium 2022 - Space for Climate Action Training on 19th September 2022 conducted with UNOOSA (*73 participants from 18 countries*)

M. Tech. degree awarded/Fellowships

Till date 189 participants from 17 countries have been awarded M. Tech. Degree in the 5 disciplines (85 participants in RS & GIS; 51 in SATCOM; 22 in SATMET; 27 participants in Space Science and 04 in GNSS).

During the year 2020-21, 11 participants (2 in RS&GIS, 2 in SATCOM, 1 in SATMET, 04 in SAS and 02 in GNSS) who had finished their PG diploma were awarded M.Tech. degree.

(a) Host Country Support

The host country is providing all necessary support and facilities to the Centre.

(b) Financial Support from Other Sources

In addition to the financial support from Department of Space, Govt. of India the following support has been received

- During the year 2021, UNOOSA has provided financial support of US$ 15000 for international travel of RS&GIS Course participants.
- During the year 2022, UNESCAP has provided travel grant to 6 participants of 25th RS & GIS course.
- During the year 2022-23, UNESCAP has provided travel grant to 4 participants of 26th RS & GIS course.

(c) Proposed Courses of CSSTEAP in 2023

The Center will be conducting the different courses in the different center of the ISRO i.e. IIRS, PRL, SAC and URSC. However, this year center is also proposing a new short course of 8 weeks' duration at NRSC on "Data acquisition and Data Processing of Earth Observation Satellites".

Ongoing PG Courses

- 26th Post Graduate course in RS & GIS at IIRS, Dehradun from September 15, 2022 – June 15, 2023.
- 13th Post Graduation Course in Satellite Communications at SAC, Ahmedabad from September 15, 2022 – June 15, 2023.
- 4th Post Graduate Course in Global Navigation Satellite System at SAC, Ahmedabad from September 15, 2022 – June 15, 2023.

Planned PG Courses

- 27th RS & GIS PG Course at IIRS, Dehradun, during August 01, 2023 to May 30, 2024.
- 13th Satellite Meteorology and Global Climate PG Course at SAC, Ahmedabad, during August 01, 2023 to May 30, 2024.
- 13th Post Graduate Course in Space & Atmospheric Science Course at SAC, PRL, during August 01, 2023 to May 30, 2024

Short/ in-campus - Proposed Courses

- Short Course on Geospatial Application in Disaster Risk Reduction for Environmental Disasters (Forest fire, Heat wave and Atmospheric Pollution) – IIRS (July 2023)
- Short course on Small Satellite Mission at IIRS/URSC (Nov 2023)
- Short Course on Introduction to GNSS – SAC (Oct 2023
- Short Course on "Data acquisition and Data Processing of Earth Observation Satellites" – NRSC (Sept-Oct 2023)

Short/ Online - Proposed Courses

- Online short course on "Use of Space Technology for Weather and Climate Studies" in May/June 2023.

- Online short course on “Open source GIS technology and its applications”
- Online short course on “Overview of Web GIS technology”
- Online Short Course on “SAR Data Processing and its applications”
- Online Short Course on “Fuzzy Machine Learning and Deep Learning for Remote Sensing Data Classification”
- Online Short Course on “Solar influence on Space Weather”

MoU between CSSTEAP and GISTDA

An MoU between CSSTEAP and GISTDA, Thailand was signed during the virtual signing ceremony on August 03 2022. A draft MoU between CSSTEAP and GISTDA was framed and subsequent to kind concurrence of CSSTEAP GB members, the MoU was formally signed during the virtual signing ceremony. Dr. Prakash Chauhan, Director, CSSTEAP and Dr. Pakorn Apaphant, Executive Director, GISTDA signed the MoU after the duly concurrence by the honourable GB members of CSSTEAP.

The salient features of MoU is as under:

Specific activities and programs implemented under authority of this MoU shall be subject to availability of funds and the approval of each Party's authorized representatives. The institutions contemplate implementation of programs or activities such as:

a) Teachers' training on Geo-spatial & Planetary Science technologies (School, college) for Sub-regional South Asia countries. Two part training – one part in Thailand and second in India. Training in India will be based on the accommodability with other CSSTEAP training programs.

b) Institutional Capacity building needs of GISTDA – facilities and projects review

c) Provide support to UNESCAP - UNOOSA proposed SDGs for regional projects

d) Provide training to operational staff and officials of Thailand and neighboring countries

e) Distance learning option for training teachers

f) Formulation of Working Group with CSSTEAP, GISTDA, UN Agencies

CSSTEAP Coordination Committee meeting

Coordination Committee meeting was held on June 28, 2022 through virtual mode. The main outcomes of the meeting were as follows:

- Enhancement of the CSSTEAP Fellowship from INR 16,000/- PM to INR 31,000/- PM
- Honorarium for faculty/Staff teaching in CSSTEAP.
- Cloud base Lab at IIRS, Dehradun for CSSTEAP Courses
- Requirement of one technical manpower for IT support activities of CSSTEAP at
- IIRS, Dehradun.
- Introduction of new Short-course on Data Reception and processing at NRSC, Hyderabad

Detailed minutes of Coordination Committee minutes are attached in **Annexure 3**

Organizing Alumni Meet in Philippines:

During the visit of Programme Coordinator to Philippines as part of UNSPIDER Technical Advisory Mission on DRR to Philippines, an alumni meet of the CSSTEAP Alumni was organized on 29th September 2022 at Manila and was attended by 13 Alumni along with DG PhilSA and Dy DG, PhilSA as special invited guest. The Alumni and the special guests had interaction and Director, CSSTEAP also joined through Video Conference and interacted with Director General PhilSA. Some of the major recommendations of the Aulmni were:

- More awareness of the courses at CSSTEAP especially for the long term courses.
- The Capacity building through CSSTEAP for Philippines can be coordinated locally and PhilSA can be the local coordinator for assessing the need for capacity building for Philippines for the use of space technology across all the departments.
- The alumni also showed keen interest to take part in the long term courses for the various courses.

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Agenda – 10

Ratification of GB decision to Revised Budget of 2022

Formal approval of budget of CSSTEAP for 2022:

The 26th Governing Board meeting of CSSTEAP was held virtually on December 22, 2021, where under one of the agenda items, the Budget Estimates for 2022 were presented to the members for approval. The Budget Estimate for 2022 was discussed and approved for INR 33.968 million subject to the revision by evaluating the expenditure pattern and savings in 2021 budget.

The RE: 2022 is prepared based on the actual expenditure incurred as on 31.10.2022 and the proposed expenditure on activities in the remaining part of the year 2022. From April 2022 all the courses were conducted in campus. The courses which were to commence in 2022 are all being held in person. The RE: 2022 for RS & GIS, SATCOM, SATMET, SAS, GNSS, short-term courses, Research Program and CSSTEAP Office is arrived at INR 22.858 million, which represents a decrease of INR 11.110 million with respect to BE: 2022.

The GB may formally ratify the Revised Budget for 2022 as indicated in Annexure-4.

Revised Estimates 2022
(January to December)

Activities Planned for 2022

Background of the Centre

In response to the UN General Assembly Resolution (45/72 of 11th December, 1990) endorsing the recommendations of UNISPACE-82, the United Nations Office for Outer Space Affairs (UNOOSA) prepared a project document (A/AC.105/534) envisaging the establishment of Centres for Space Science and Technology Education in the developing countries. The objective of the Centres is to enhance the capabilities of the member states in different areas of space science and technology that can advance their social and economic development. The first of such centres, named as Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP) was established in India on November 1, 1995. Department of Space, Government of India has made available appropriate facilities and expertise to the Centre through the Indian Institute of Remote Sensing (IIRS), Space Applications Centre (SAC), Physical Research Laboratory (PRL) and UR Rao Satellite Centre (URSC). The Centre is an educational and research institution that already demonstrated high attainment in the development and transmission of knowledge in the fields of space science and technology. The initial emphasis of the Centre has been on in-depth education, research and application programmes, continuing education, awareness and appraisal programmes. The Centre offers Post Graduate level courses in the fields of (a) Remote Sensing and Geographic Information System, (b) Satellite Communications, (c) Global Navigation Satellite Systems, (d) Satellite Meteorology and Global Climate and (e) Space and Atmospheric Sciences. The Centre also conducts short-term regular course on Small Satellite Missions and theme-specific courses/workshop in various disciplines and also Navigation and Satellite Positioning System from time to time. A set of standard curricula developed by the Centre and endorsed by the United Nations is followed for the Post Graduate educational programmes. The Centre is affiliated to the United Nations and its long term educational programmes are recognized by Andhra University, India for award of M. Tech degree.

Role of the Centre

The Centre aims to be a nodal organization in the region responsible for comprehensive capacity building. Guiding principles of the Centre are as follows: -

- Developing indigenous capability at the local level: capacity building in the region through appropriate technology.
- Provision of technical advisory services in the region;

- Provision of information in space science and technology;
- Developing long-term fellowship programmes;
- Organization of technology transfer programmes;
- Promotion of greater co-operation in space science and technology between developed and amongst developing countries.
- Collaborating with UN and other international agencies in Capacity building in Asia Pacific Region.

Towards this, the Centre engages itself in educational and training programmes, application activities, research, data management, extension activities and awareness programmes.

Conduct of the Programmes and Host Country Contribution

The Department of Space, Government of India has provided comprehensive facilities to the Centre in terms of institutional support, expert teaching staff, buildings, laboratories and financial support. This has made it possible for the Centre to conduct its educational programmes in an efficient and state-of-the art mode. The Centre conducts its activities in one of the host institutions of Department of Space and enjoys access to all its physical and intellectual facilities. All the educational programmes are conducted in English medium requiring the participants to have proficiency in the language. The candidates aspiring to have admission must have a Master's degree in science or Bachelor's degree in engineering with 5 years' experience in relevant discipline. The courses are conducted with the use of modern teaching methods and the participants are taken to various national facilities on study tours.

Post Graduate Courses

Five Post Graduate Courses of 9-month each are organized. RS&GIS course is organized every year, whereas Satellite Communication and Global Navigation Satellite System is organized every odd year and Satellite Meteorology and Global Climate and Space and Atmospheric Sciences are organized every even year. List of programmes and host institutions are given in Table 1.

Table 1: List of PG and Short Courses conducted at host institutes

	Educational Programme	Host Institutional Facility
1.	Post Graduate Programme in Remote Sensing and Geographic Information System (1st Phase of 9 Months at the Centre followed by 2nd Phase of 1 Year at the Home Country)	Indian Institute of Remote Sensing (IIRS), Dehradun
2.	Post Graduate Programme in Satellite Communication (1st Phase of 9 Months at the	Space Applications Centre (SAC), Ahmedabad

	Centre followed by 2nd Phase of 1 Year at the Home Country)	
3.	Post Graduate Programme in Global Navigation Satellite Systems (1st Phase of 9 Months at the Centre followed by 2nd Phase of 1 Year at the Home Country)	Space Applications Centre (SAC), Ahmedabad
4.	Post Graduate Programme in Satellite Meteorology and Global Climate (1st Phase of 9 Months at the Centre followed by 2nd Phase of 1 Year at the Home Country)	Space Applications Centre (SAC), Ahmedabad
5.	Post Graduate Programme in Space and Atmospheric Sciences (1st Phase of 9 Months at the Centre followed by 2nd Phase of 1 Year at the Home Country)	Physical Research Laboratory (PRL), Ahmedabad
6.	Short course on Application of Remote Sensing and GIS applications in specific themes	Indian Institute of Remote Sensing (IIRS), Dehradun
7.	Short course on Global Navigation Satellite System	Space Application Center (SAC), Ahmedabad
	Short Course on Small Satellite Missions	Indian Institute of Remote Sensing (IIRS), Dehradun and UR Rao Satellite Centre (URSC), Bengaluru
8.	On request Short term courses and workshops in the above disciplines	At above Institutions in collaborative mode

Besides providing infrastructure and manpower support to the programmes of CSSTEAP, the host country has also been providing financial support for educational courses to the tune of around 34 million INR per year.

Short Courses

In addition to PG Courses, CSSTEAP conducts Short term courses & workshops in specific areas of RS & GIS (theme specific), SATCOM, SATMET, SAS, GNSS and Small Satellite Missions. In RS & GIS disciplines every year Short Courses on specific themes are organized. Till date 42 Short Courses in RS & GIS on specific themes of applications in Natural Resources and Environmental Management, Disaster Management, Biodiversity Management Sustainable Agriculture, Urban Studies, Agriculture Meteorology, Flood Risk Management, application to drought, High resolution aerospace Imagery for Environmental Management, Open Source Geo-spatial tools, Microwave Remote Sensing, Disaster Risk Reduction and Rapid Response, Hyperspectral Remote Sensing, SAR Remote Sensing, Flood Risk mapping, modeling and assessment using space technology and Geo-referenced disaster risk management information systems, Lidar and UAV remote sensing and its application have been conducted. Under SATCOM, 8 Short Courses/ Workshops have been conducted on Distance Education via Satellite, Digital Signal Processing, Satellite Communication for Development, Space Science & Technology for social scientists, Satellite Navigation and Location based Services and Navigation and Satellite Positioning System. In

SATMET, 7 Short Courses / Workshops has been conducted on emerging trends in Satellite Meteorology, Meteorological Application on MW Remote Sensing and Weather Forecasting using Numerical Weather Prediction Model. Under Space Science Stream 5 short course / workshop on data processing from Chandra & YMM Newton Space Mission and space weather are conducted. In GNSS 01 short course of NAVSAT was conducted and 11 short courses have been conducted in Small Satellite Missions (SSM).

Source of Funds to CSSTEAP

So far most of the funding for the running of the courses and the Centre has been provided by the Government of India. Besides this, Department of Space/ISRO has made available its facilities for the conduct of the programmes of CSSTEAP. UNOOSA, UN-ESCAP continue to provide limited funds for international travel support for a few participants of PG and Short Courses.

Research

The successful completion of the 9-month PG-Phase of the programme leads to the award of a Post Graduate diploma by the Centre. For the students who successfully finish their PG course and are interested in continuing for a Master of Technology (M. Tech.) degree, the Centre offers the opportunity to do so, in collaboration with Andhra University (AU) in Visakhapatnam, India. To this end, the student has to complete a 1-year research project in an application of space science or technology. This project has to be approved by CSSTEAP and AU, and the research is supervised by designated academic staff of CSSTEAP, AU and the institution where the research is carried out. In most cases the 1-year project is carried out at the home institution of the student concerned. Since 2004 onwards every year selected meritorious PG students are being given fellowships to complete their M.Tech. thesis work at CSSTEAP host institutions. Till date 189 participants from 17 countries have been awarded M. Tech. Degree in the 5 disciplines (85 participants in RS&GIS; 51 in SATCOM; 22 in SATMET; 27 participants in Space Science and 04 in GNSS).

Achievements:

So far, 64 PG courses and 75 short/online courses and including one webinar have been conducted. More than 3100 participants have benefitted from the programmes of CSSTEAP. Course-wise out-put of students for PG and Short Courses is given in Table 2.

Table 2: List of CSSTEAP Course participants of various PG & Short Courses participated during the year 1996 to 2022.

Year	No. of Course Participants in PG Courses					No. of Course Participants in Short Courses							Total
	RS& GIS	SAT-COM	GNSS	SAT-MET	SAS	RS& GIS	SAT-COM	SAT-MET	SAS	GNSS	SSM	Special Courses	
1996	25												**25**
1997	23	13					9						**45**
1998	21			17	10			8					**56**
1999	17	18				45	20						**100**
2000	19			21	9	14	18						**81**
2001	20	14				20	13						**67**
2002	23			19	11	12		17					**82**
2003	21	15				37			28				**101**
2004	20			15	9	20							**64**
2005	19	12				17							**48**
2006	22			18	13	12							**65**
2007	18	20				18							**56**
2008	15			16	7	16	18						**72**
2009	17	17											**34**
2010	15			14	12	32							**73**
2011	22	17				64							**103**
2012	21			14	14	58	20				20		**147**
2013	20	16				54	16				15		**121**
2014	21			17	12	57	19				19		**145**
2015	23	16	9			38					20		**106**
2016	19	0	0	13	12	67			13		37		**161**
2017	22	21	12	0	0	42		25			40	44	**206**
2018	24	0	0	13	13	36					46		**132**
2019	22	16	14			202		26	27		28		**335**
2020	0	0	0	0	0	68		63	61		27		**219**
2021	18			6	12	144		43		45	22		**290**
2022						145		24	21		25		**217**
TOTAL	**507**	**195**	**35**	**183**	**134**	**1218**	**133**	**206**	**150**	**45**	**299**	**44**	**3149**

REVISED ESTIMATES 2022
(JANUARY TO DECEMBER)

ACTIVITIES PLANNED FOR 2022

Educational Courses

The nine months PG courses were to be conducted in five different disciplines under the CSSTEAP academic programmes in 2020 were postponed to 2021 due to worldwide COVID-19 pandemic. The Academic courses and short courses which were conducted in 2021 and the courses which has been Conducted / planned in 2022 are provided in the following table:

1.	26th RS & GIS PG Course at IIRS, Dehradun	January to June, 2023 (Course started on September 15, 2022)
2.	13th Satellite Communication PG Course at SAC, Ahmedabad	January to June, 2023 (Course started on September 15, 2022)
3.	04th Global Navigation Satellite System PG Course at SAC, Ahmedabad	January to June, 2023 (Course started on September 15, 2022)
4.	Short Training course on 11th Small Satellite Mission	November 07 - 18, 2022.
5.	Short Training course on "Application of Space Technology for Disaster Risk Management with Emphasis on Floods and Landslides for Asia Pacific Region	November 21 – December 02, 2022
6.	Short course on "Weather Forecasting using Numerical Weather Prediction models	November 14 -25, 2022
7.	Short Training course on "Space Weather"	December 20-30, 2022
8.	Online Courses: ❖ Online Short Training course on "Open Source GIS Technology & Geoweb service ❖ Online Short Training course on "Hyperspectral Remote Sensing and its Applications ❖ Online Short Training Course on "Techniques and Application of Synthetic Aperture Radar (SAR) Remote Sensing" during ❖ Online short course on Advances in Remote Sensing Data Analysis Techniques for Geological Applications with emphasis on Asia-Pacific Region. ❖ Online Short Course on "Space based innovative solutions to improve water resources management in Asia-Pacific region	 April 25 -May 26, 2022. May 16 to June 03, 2022 October 10-21, 2022 December 12-16, 2022 December 12-16, 2022

CSSTEAP Office Activities

As the Headquarters of CSSTEAP is located at Dehradun it is the main hub of activities. All the activities related with Director's office like Coordination with Member countries, Host Institutions, Programme coordination, Budget preparation, publication of Newsletters, various official documents & publications, bringing out CD-ROMs, Correspondence with different organizations in Asia and Pacific region, etc. are carried out here.

CSSTEAP is also exploring to conduct off campus course in the countries of Asia and Pacific region.

Research and Coordination Activities

Director, CSSTEAP in consultation with the host institutes identifies new research areas and facilitates research work at host institutions in India as well as in their home country.