Introduction to
Indian Institute of Remote Sensing (IIRS)

and

Centre for Space Science & Technology in Asia and the Pacific (CSSTEAP)
(Affil. to the United Nations)

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Indian Institute of Remote Sensing
Now an unit of Indian Space Research Organization
Department of Space, Government of India

Established in 1966 as Indian Photo-interpretation Institute (IPI), part of Survey of India, DST, GoI
Indian Space Research Organisation

- Earth Observation Satellites – since 1988 IRS Series of satellites WiFS, AWiFS, LISS, Resourcesat, Cartosat, RiSAT + Small Satellites
- Communication, - INSAT series, Navigation- GAGAN, IRNSS
- Meteorological Satellites: Meghatropiques, Kalpana
- Moon Mission
- Mars Mission
- Develop, Design, Fabricate, Launch, Control and dissemination of data

- Commitment to users to provide satellite data
- Long-term programme to provide data
- Currently has highest number of EO satellite operating
- AWiFS, LISS III, CARTO DEM (Indian Region)
- OCM Geophysical products (Global)
- Web Service access of thematic data, disaster event-based data inventory
- Project specific portals for various application including Disaster Management
About IIRS

• The basic mandate was to train in-service officials and resource managers in interpretation of Aerial Photos for mapping and natural resource management with four divisions and now it has 8 departments.

• In its journey of 46 years, est. 1966 as Indian Photointerpretation Institute (IPI) - it became part of National Remote Sensing Agency in 1976 and in April 2010 it became an independent unit of ISRO.

• During this period it has undergone several changes, imbibed the latest technological developments and transfer to users, kept pace with the technology development and user requirements.

• Emerged as the leader in imparting training in RS and GIS in the world, particularly Asia Pacific Region

About IIRS

• Training and education programmes:
  • Master’s Programme : M. Tech./M. Sc.
  • Post Graduate Courses
  • Certificate
  • Specialized Courses – On demand

• Research programmes
  • All major fields of resource management and disaster mgmt

• Outreach programmes – Distant Education programme through EDUSAT, 84 universities spread across the country have also benefited through EDUSAT

• Faculty 65 faculty members - expertise under one umbrella in almost all disciplines.
Training and Education

• Main objective is in Capacity Building at all levels (Secretary to working/execution level)

• M. Tech. in RS & GIS - 24 months in 8 disciplines
• M.Sc. (Geoinformatics) : 18 Months (ITC, Twente University, the Netherlands
• M.Sc. (Natural Hazard and Disaster Risk Management): 18 Months
• P.G. Diploma - 10 months
• NNRMS – Professors, teachers, etc.
• Decision Makers Course
• User on demand – tailor made courses

Academics - Departments

• Photogrammetry and Remote Sensing
• Geoinformatics
• Agriculture and Soils
• Forestry & Ecology
• Geosciences and Geohazards
• Marine and Atmospheric Science
• Urban and Regional Analysis
• Water Resources Department
• Trained more than 8884 so far, including 852 professionals from abroad representing 91 countries mainly from the Asia, Africa and South America.

• Research is one of the most important agenda of the institute and several significant research project, user projects at local, national and international level have been accomplished.

SAARC Disaster Management Centre, Delhi
BIMSTEC countries
UN Office on Drugs and Crime, Afghanistan
PA Managers from Bangladesh
GISTDA, Thailand
International Organization of Migration, Sudan
Centre for Space Science and Technology Education in Asia and the Pacific

UN General Assembly endorsed on Dec 1, 1990 the recommendation of UN Committee on Peaceful Uses of Outer Space (UNCOPUOS) that
   “... effort to establish Regional Centres for Space Science and Technology Education in existing national/ regional educational institutions in the developing countries”

- Agreement to establish CSSTEAP signed by 10 countries on Nov 1, 1995 at New Delhi. Six more countries have joined subsequently.

- Governing Board of 16 member countries + UN + ITC (Netherlands)

Linkages

- On behalf of Government of India Indian Space Research Organization (ISRO) signed an agreement to establish the Regional Centre in India and also agreed to provide access to its infrastructure and human resources.
- Initially main focus was on RS and GIS and IIRS has infrastructure and expertise therefore it was selected to host First UN regional Centre in India with its headquarters in Dehradun in IIRS Campus
- Thus In 1995 the Centre for Space Science & Technology Education in Asia & the Pacific (CSSTEAP) came into existence.
Regional Centres

Regional Centres for Space Science and Technology Education
(Affiliated to the United Nations)

Central America
Mexico (CRECETALC) (1997)

South America
Brazil (CRECETALC)

Africa
Morocco (CRASTE-LF)
India (CSSTEAP) (1995)
Jordan (2012)

GOVERNING BOARD
§ Representative from Member Countries
§ UN-OOSA & ITC are Observers

ADVISORY COMMITTEE
§ Chaired by UN-OOSA
§ Subject matter experts of Satellite Communication, Satellite Meteorology & Global Climate, Space & Atmospheric Science, Remote sensing and GIS.

Countries in Asia Pacific Region

I EAST ASIA
1. China
2. Hong Kong
3. Japan
4. Korea
5. DPR of Korea
6. Macao
7. Mongolia
8. Taiwan Province of China

II SOUTH-EAST ASIA
9. Brunei
10. Cambodia
11. Indonesia
12. Lao PDR
13. Malaysia
14. Myanmar
15. Philippines
16. Singapore
17. Thailand
18. Vietnam

III SOUTH ASIA
19. Afghanistan
20. Bangladesh
21. Bhutan
22. India
23. Islamic Rep. of Iran
24. Maldives
25. Nepal
26. Pakistan
27. Sri Lanka

IV CENTRAL ASIA
28. Armenia
29. Azerbaijan
30. Kazakhstan
31. Kyrgyzstan
32. Tajikistan
33. Turkmenistan
34. Uzbekistan

V PACIFIC
35. Australia
36. Comm. of the N. Mariana
37. Cook Islands
38. Fed. States of Micronesia
39. Fiji
40. French Polynesia
41. Guam
42. Kiribati
43. Marshall Islands
44. Nauru
45. New Caledonia
46. New Zealand
47. Niue
48. Papua New Guinea
49. Rep. of Palau
50. Samoa
51. American Samoa
52. Solomon Islands
53. Tonga
54. Tuvalu
55. Vanuatu

GOVERNING BOARD
§ GB Member Countries
§ Non-GB Member Countries
§ So far no Participation
Centre Campuses, Host Institutes and Courses

Indian Institute of Remote Sensing, Dehradun
- RS & GIS
- Disaster Risk Reduction
- Small Satellite Missions

Space Applications Centre, Ahmedabad
- SATCOM, SATMET & SATNAV

Physical Research Laboratory, Ahmedabad
- Space & Atmospheric Science

ISRO Satellite Centre, Bengaluru
- Small Satellite Missions

Post Graduate Courses and their Structure

Remote Sensing & GIS

Satellite Communications

Satellite Meteorology & Global Climate

Space and Atmospheric Science

Award of PG Diploma by CSSTEAP

1 year follow-up project in home country

CSSTEAP 1 Yr Fellowship in India

Award of Master degree (M. Tech.) by Andhra University
Training Programmes - Short

<table>
<thead>
<tr>
<th>Disaster Risk Reduction</th>
<th>Satellite Navigation &amp; Positioning</th>
<th>Small Satellite Missions</th>
<th>Open Source Geospatial Tools</th>
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</thead>
<tbody>
<tr>
<td>4 weeks</td>
<td>4 weeks</td>
<td>15 days</td>
<td>4 days</td>
</tr>
<tr>
<td>(IIRS, Dehradun)</td>
<td>(SAC, Ahmedabad)</td>
<td>(IIRS, Dehradun/ISAC, Bengaluru)</td>
<td>(IIRS, Dehradun)</td>
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4 days to 4 weeks duration

For middle level managers & professionals having 5-10 years experience in relevant field

Special Training Programmes - Short

UN Agencies

UNSPIDER, Beijing July 2013
UNESCAP, Bangkok July, August 2013
IWMI, Colombo, India July 2013
Courses conducted and Beneficiaries (1996-2012)

No. of PG Courses conducted:
- RS & GIS – 17 (18th going on)
- SATCOM – 08 (9th going on)
- SATMET – 06
- Space Science – 08

No. of Short Courses conducted:
- RS & GIS – 09
- SATCOM – 05
- SATMET – 02
- Space Science – 01

*Alternate Years

Highlights:
- 1254 from 31 countries of Asia-Pacific region and 29 participants from 18 countries outside Asia-Pacific region.
- 634 participants from PG courses

Remote Sensing and Geographic Information System Post Graduate Course

- Hosted by IIRS
- Senior faculty is involved teaching and Guest lectures by experts
- Every year it starts from 1st of July and this is 17th Course.
- The participants are from Asia and the Pacific Region
- 25 seats announced
- Received 41 applications from 15 countries, 25 applicants were screened in from 13 countries, 3 waitlist and 21 participants have joined and one more from Tajikistan will join on 5th July.
- 12 countries are represented.
Teaching and its modes

- Components of teaching
  - Classroom lectures
  - Practical exercise in lab and field
  - Assignments, presentations, seminars, etc.
- Lecture notes (digital and hardcopy)
- Video recording of the lecture will be on server so that participants can listen any number of times
- Organization of English tuitions in the evening for three months
- Assessment based on theory and practical examinations

Course Implementation

Phase I – P.G. Course

Duration 9 months

Semester I (4 months) (Common)

  Module IA – Three months
  Module IB -- Trends in RS and GIS and Environmental Monitoring

Semester II (5 months) (Elective themes)

  Module II – Two months
  Module III - Three months
Semester II (Module II and III) Electives

• Agriculture & Soils
• Forest Ecosystem Assessment and Management
• Geosciences and Geohazard
• Urban & Regional Studies
• Marine and Atmospheric Science
• Water Resources
• Satellite Image Analysis and Photogrammetry
• Geoinformatics

For both theory and practical examination, the pattern is of Andhra University, Visakhapatnam

General Information

• Head of the each Department is Focal Point
• Each Department has a Course Officer
• Course Syllabus is revised regularly
• Two new electives from 2012
  • Satellite Image Analysis and Photogrammetry
  • Geoinformatics

Meritorious participants get opportunity to attend national and international seminars
### Agriculture & Soils
- Land use & Soil Resource management
- Agri-Informatics
- Environmental Soil Science
- Satellite Agro-meteorology

### Forest Ecosystem Assessment and Management
- Forest Mapping and Monitoring
- Forest Inventory
- Forest Informatics
- Forest Ecosystem Analysis

### Geosciences & Geohazards
- Remote Sensing for Earth & Planetary Sciences
- Data Processing and Analysis for Geosciences
- Applied and Tectonic Geomorphology
- Engineering Geology and Ground Water

### Urban & Regional Studies
- Fundamentals of Urban and Regional Planning
- Geo-spatial Technologies in Urban Area Analysis
- Urban Resources, Services and Facilities Analysis
- Geo-spatial Technologies for Urban Environment Studies
### Marine and Atmospheric Science
- Coastal Processes and Marine Ecology
- Atmosphere and Ocean Dynamics
- Satellite Oceanography
- Satellite Meteorology

### Water Resources
- Water Resources Assessment
- Watershed Analysis and Planning
- Water Resources Development
- Water Resources Management

### Satellite Image Analysis and Photogrammetry
- Remote Sensing- I
- Image Processing II
- Digital Photogrammetry and Mapping
- Surface Generation techniques

### Geoinformatics
- Spatial Database Architectures & Modeling
- Programming in Geodata Modeling
- Web GIS and Geovisualisation
- Spatial Data Quality & Geostatistics
Phase II Course Implementation

Phase II – One year Research work leading to M. Tech. degree

   Semester III – Six months

   Semester IV – Six months

• CSSTEAP Awards fellowship to meritorious participants (fellowship + travel+ Contingency)

• One year research work for M. Tech. degree by Andhra University

• One guide from respective country

• One guide from IIRS

... have fun while you enhance your knowledge

CSSTEAP Campus, Dehradun

Bopal Campus, Ahmedabad

Field visit

International Hostel, IIRS

Student’s Library, IIRS

ISRO Satellite Launch Facility

Participants in Cultural Performance

Gymnasium Facility

Participants on Educational Tour
Thanx