
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

66th IIRS Outreach Programme

on

“Global Navigation Satellite System”

By Dr. Ashutosh Bhardwaj, Shri Ashish Joshi, Shri Kamal Pandey, Shri Suresh Kannaujiya, Scientists, Indian Institute of Remote Sensing, Dehradun

14 – 25 September, 2020

The Department of Electronics and Communication Engineering has organized a 8-Day Outreach Programme conducted by Indian Institute of Remote Sensing, Dehradun during 14 – 25 September, 2020. The target audience are the faculty and students of various disciplines of Sree Vidyanikethan Educational Trust, Tirupati.

GPS is now the most widely used GNSS in the world, and provides continuous positioning and timing information globally, under any weather conditions. GNSS is used in collaboration with GPS systems to provide precise location positioning anywhere on earth. IRNSS is an autonomous regional satellite navigation system being developed by ISRO (Indian Space Research Organization). The government of India approved the project in May 2006, with the intention of the system to be completed and implemented in the timeframe 2016. A Differential Global Positioning System (DGPS) is an enhancement to the Global Positioning System (GPS) which provides improved location accuracy, in the range of operations of each system, from the 15-meter nominal GPS accuracy to about 1–3 cm in case of the best implementations. This outreach programme covered the following topics:

- Introduction to GPS and GNSS
- GPS receivers, processing methods, errors and accuracy
- Satellites based Augmentation systems & GPS Aided and GEO Augmented Navigation (GAGAN)
- GPS signal characteristics, Data formats (broadcast, precise ephemeris)
- Indian Regional Navigation Satellite System (IRNSS)
- DGPS demonstration (Pre-recorded followed by live query session)
- Advance GNSS processing.

Finally, a panel discussion is held on 25-09-2020 with the expert members. All the participants actively participated in the panel discussion. A total of 7 members from different disciplines have participated in this programme.

Dr. V. V. Satyanarayana Tallapragada, Associate Professor has coordinated this event under the guidance of Dr. P. V. Ramana, Professor and Head, Department of Electronics and Communication Engineering.


Convener

Last Update on 14 September 2020

Course Name: Global Navigation Satellite System
Module/ Course Coordinator: Dr. Ashutosh Bhardwaj

Date	Day	Time	Topic	Speaker
14/09/2020	Monday	1600-1700 hrs	Introduction to GPS and GNSS	Dr. Ashutosh Bhardwaj
		1700-1730 hrs	Interactive Session	
15/09/2020	Tuesday	1600-1700 hrs	GPS receivers, processing methods, errors and accuracy	Dr. Ashutosh Bhardwaj
		1700-1730 hrs	Interactive Session	
17/09/2020	Thursdays	1600-1700 hrs	Satellites based Augmentation systems & GPS Aided and GEO Augmented Navigation (GAGAN)	Dr. Ashutosh Bhardwaj
		1700-1730 hrs	Interactive Session	
18/09/2020	Friday	1600-1700 hrs	GPS signal characteristics, Data formats (broadcast, precise ephemeris)	Dr. Ashutosh Bhardwaj & Shri Ashish Joshi
		1700-1730 hrs	Interactive Session	
21/09/2020	Monday	1600-1700 hrs	Indian Regional Navigation Satellite System (IRNSS)	Dr. Ashutosh Bhardwaj & Shri Kamal Pandey
		1700-1730 hrs	Interactive Session	
22/09/2020	Tuesday	1600-1700 hrs	DGPS demonstration (Pre-recorded followed by live query session)	Offline
		1700-1730 hrs	Interactive Session	
24/09/2020	Thursdays	1600-1700 hrs	Advance GNSS processing	Dr. Ashutosh Bhardwaj & Shri Suresh Kannaujiya
		1700-1730 hrs	Interactive Session	
25/09/2020	Friday	Panel Discussion		



Dr. V. V. Satyanarayana T

66- IIRS Outreach Programme on Global Navigation Satellite System

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Attendance Record For Course On Geospatial Technology For Disaster Risk Reduction-One Day Online Workshop

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entries

Search:

Registration Number	Name	Total Sessions	No. of sessions attended	%ge of Attendance	Eligibility for Examination/Certificate
2020660358754	MR. NADENDLA SREEHARSHA SREEHARSHA	8	3	37.50	Yes
2020660359957	MS. BOLLI PADMAPRIYA	8	1	12.50	No
2020660363953	MS. AMBATI SUCHITRA REDDY	8	6	75.00	Yes
2020660387753	MR. ANIL KUMAR AKKUPALLI	8	7	87.50	Yes
2020660389113	MR. NARALA TULASI REDDY	8	5	62.50	Yes
2020660389117	MR. NARREDDY TEJESWAR REDDY	8	6	75.00	Yes
2020660396833	MR. GADEKARA MADHUMOHAN	8	7	87.50	Yes

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USEFUL LINKS

IIRS e-Learning Brochure (https://elearning.iirs.gov.in/imgs/elearning_IRS-English_Version2018.pdf)

Annual Course Calendar IIRS Distance Learning Programme – 2020 ([https://elearning.iirs.gov.in/imgs/Annual%20Course%20Calendar%202020-revised%20\(4\).pdf](https://elearning.iirs.gov.in/imgs/Annual%20Course%20Calendar%202020-revised%20(4).pdf))

IIRS Application Form (https://elearning.iirs.gov.in/imgs/application_form.pdf)

ISRO (<https://www.isro.gov.in/>)

CSSTEAP (<https://www.cssteap.org/>)



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Announcement Brochure

IIRS Outreach Programme

**Basics of Remote Sensing, Geographical Information System and
Global Navigation Satellite System**

*There are limited number of seats. Registration will be done on first come first serve basis

August 17- November 20, 2020

Organised by

Indian Institute of Remote Sensing
Indian Space Research Organisation
Department of Space, Govt. of India
Dehradun



About IIRS

Indian Institute of Remote Sensing (IIRS), a unit under Indian Space Research Organization (ISRO), Department of Space, Government of India is a premier Training and Educational Institute set-up for developing trained professionals in the field of Remote Sensing, Geoinformatics and GNSS Technology for Natural Resources, Environmental and Disaster Management. Formerly known as Indian Photo-interpretation Institute (IPI), founded in 1966, the Institute boasts to be the first of its kind in entire South-East Asia. While nurturing its primary endeavor to build capacity among the user community by training mid-career professionals, the Institute has enhanced its capability and evolved many training and education programmes that are tuned to meet the requirements of various target user groups in the society, ranging from fresh graduates to policy makers including academia.

The training and education programmes at IIRS includes the short duration customized courses, PG Diploma, Master's Degree (M.Tech and M.Sc.) in various disciplines. IIRS also conducts distance learning programmes under IIRS Outreach Activity.

IIRS Outreach Programme

IIRS Outreach Programme focusses on strengthening the Academia and User Segments in Space Technology & Its Applications using Online Learning Platforms. IIRS distance learning program was initiated in 2007 with the participation of twelve universities in India. Till date, IIRS has successfully conducted 61th programs through live and interactive classrooms (also known as EDUSAT programme) and also launched five online courses under e-learning programme. Currently IIRS distance learning programme is being conducted through following modes:

1. Live and Interactive classroom sessions (<https://dlp.iirs.gov.in>)
2. E-learning based online courses (<https://elearning.iirs.gov.in>)

Live and Interactive classroom

The use of Remote Sensing, Geographical Information System, Global Navigation Satellite System and associated geospatial technologies is increasing rapidly, creating an urgent demand for trained manpower. The live and interactive mode of distance learning is enabled through Internet and A-view software platform developed by Amrita e-learning Lab in collaboration with Ministry of Human Resource Development (MHRD) Government of India. The programs are available **through Internet without any cost** to the user. The live and interactive sessions will be conducted by experts from IIRS-ISRO and other knowledge Institutions. IIRS has successfully conducted 63 such courses so far with participation of over **167000+ participants from 1900+ academic institutions, government departments and industry**. The beneficiaries of the programme may include:

- ❖ Central/State/Private Universities & Academic Institutions;
- ❖ Central & State Government Organisations/Departments;
- ❖ Research Institutes;
- ❖ Geospatial Industry;
- ❖ NGOs.

IIRS also conducts various theme oriented online courses and monthly webinars on recent topics on geospatial technologies and its applications. Users are encouraged to actively participate on these programs. For more detail please visit IIRS official website- www.iirs.gov.in

Programme Reception

Programme can be received through E-CLASS platform of IIRS-ISRO Using internet connectivity. No specific hardware /software required. However it is recommended good internet connectivity at user end. To run the programme in class room following computer hardware will be required

- Desktop computer with web camera microphone & output speaker or laptop with microphone camera and output speaker
- Large display screen /projector/TV

*Note: Participating Institutions have to bear total expenses for establishment of the classroom facility.

Important Links

Course updates, and other details will be available on URL- <https://www.iirs.gov.in/EDUSAT-News>
To participate in this programme the interested organisations/ universities/ departments/ Institutes have to identify the Coordinator at their end. The identified coordinator will register online his/her Institute as nodal centre in IIRS website (<https://elearning.iirs.gov.in/edusatregistration/coordinator>).

All the participants have to register online through registration page (<https://elearning.iirs.gov.in/edusatregistration/student>) by selecting his/her organisation as nodal centre.

Award of Certificate

Working Professional and Students: Based 70% attendance and 40% marks in the online examination

Feedback Mechanism

The participants are required to submit their feedback online through IIRS e-Learning portal. Feedbacks are critically analyzed and implemented in further courses. Selected participants and participating organization will be invited to attend annual IIRS Academia Meet (IAM) at IIRS Dehradun.



Outreach Programme Feedback Session during
IIRS Academia Meet (IAM)-2020



IIRS received two national awards for excellence in training for outreach and e-learning programme by Department of Personnel & Training (DoPT), Govt. of India in collaboration with United Nations Development Programme (UNDP).

Contact Details

IIRS Distance Learning Centre

Indian Institute of Remote Sensing, Indian Space Research Organization
Department of Space, Govt. of India, 4-Kalidas Road, Dehradun-248001

Email: dlp@iirs.gov.in; Tel: 0135-2524354/4130/4334

Monday to Friday (9:30 AM to 05:00 PM)



Course Announcement

IIRS announces four courses commencing from August 17th, 2020

- ❖ **Remote Sensing and Digital Image Analysis (17/08/2020 to 11/09/2020):** Basic Principles of Remote Sensing, Earth Observation Sensors and Platforms, Spectral Signature of different land cover features, Image interpretation, Thermal & Microwave Remote Sensing, Digital Image Processing: Basic Concepts of Rectification and Registration, Enhancement, Classification and accuracy assessment techniques.
- ❖ **Global Navigation Satellite System (14/09/2019 to 25/09/2020):** Introduction to GPS and GNSS, receivers, processing methods, errors and accuracy,
- ❖ **Geographical Information System (28/09/2020 to 15/10/2020):** GIS, databases, topology, spatial analysis and open source software.
- ❖ **Basics of Geocomputation and Geoweb Services (19/10/2020 to 29/10/2020):** Geocomputation and Geoweb Services

- ❖ **RS and GIS Applications (28/10/2020 to 20/11/2020):** Agriculture and Soil, Forestry and Ecology, Geoscience and Geo-hazards, Marine and Atmospheric Sciences, Urban and Regional Studies and Water Resources.
- ❖ **Basics of Remote Sensing, GIS and GNSS (17/08/2020 to 20/11/2020):** Comprehensive course consisting of above five courses.

The participants can register for **individual course** of their choice or the **entire Programme**.

Target Participants

- ❖ Undergraduate and Postgraduate (any year)
- ❖ Technical/ Scientific Staff of Central/ State Government/Faculty/researchers at university/institutions

Course Study Material

Course study materials like lecture slides, video recorded lectures, open source software & handouts of demonstrations, etc. Will be made available through e-class. Video lectures will also be uploaded E-CLASS. <https://eclass.iirs.gov.in/login>

Course Fee

There is no course fee.

Course Registration

- ❖ Course updates and other details will be available on URL- <http://www.iirs.gov.in/Edusat-News/>.
- ❖ To participate in this programme the interested organizations/ universities/ departments/ Institutes has to identify a coordinator at their end. The identified coordinator will register online his/her Institute as nodal center in IIRS website.
- ❖ All the participants has to register online through registration page by selecting his/her organization as nodal center
- ❖ The Coordinator is required to approve the participants from his/her institute for each course.

Course Funding & Technical Support

The programme is sponsored by Indian Space Research Organization, Department of Space, Government of India.