



कृषि भौतिकी संभाग

भा.कृ.अनु.प.-भारतीय कृषि अनुसंधान संस्थान, नई दिल्ली-110012

DIVISION OF AGRICULTURAL PHYSICS

ICAR-Indian Agricultural Research Institute, New Delhi - 110 012



डा० प्र. कृष्णन

अध्यक्ष

Dr. P. Krishnan

Head

Ref. No. AP / 29

Dated 7-2-2018

Sub: Announcement of 29th IIRS Outreach Program on "Hyperspectral Remote Sensing and its Applications", schedule to be conducted during February 19–March 14, 2018.

Dear Sir/Madam,

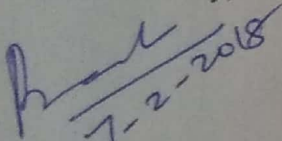
I am happy to announce that EDUSAT based 29th IIRS Outreach Programme on "Hyperspectral Remote Sensing and its Applications ", schedule to be conducted during February 19 – March 14, 2018 in this Division. The training will be offered by Indian Institute of Remote Sensing (IIRS), ISRO, Department of Space, Dehradun which will be received by our end through internet by utilizing A-VIEW software facility available with us. The training will be conducted during 4.00-5.30 pm on the scheduled dates only. The course is open to UG & PG students/researchers/scientific & technical staff/working professionals and interested individuals. The successfully completed participants will be awarded with certificate from IIRS, ISRO. I would request you to send the nominations of scientists, MSc and Ph.D. students from your Division for the participation in this program. The nomination of the candidates may be sent to **Dr. Nilimesh Mridha, Course Co-ordinator**, Division of Agricultural Physics, IARI, New Delhi – 110 012 (Email: nilimesh.mridha@gmail.com) latest by 16th Feb, 2018. There is no course fee. Interested participants may register online through IIRS website as the registration will be done through online mode only:

Link for participant's registration: http://elearning.iirs.gov.in/edusat_lms/student_registration.php
Updates on this program will be available at: <http://dlp.iirs.gov.in>

All the registered participants are requested to report at 4.00 pm, Feb 19, 2018 in the C. Dakshinamurthy Seminar Hall of the Division of Agricultural Physics.

Thanking You.

Yours sincerely,


7-2-2018

(P Krishnan)

डा. प्र. कृष्णन
Dr. P. KRISHNAN
अध्यक्ष / HEAD

कृषि भौतिकी संभाग/Divn. of Agricultural Physics
भा.कृ.अनु.प.- भारतीय कृषि अनुसंधान संस्थान, नई दिल्ली-12
ICAR-Indian Agricultural Research Institute, New Delhi-12

Tel. : +91 (11) 2584 1178
+91 (11) 2584 2321

Fax : +91(11) 2584 3014
Mobile : 09873532369

E-mail : pkrishnan@iari.res.in
prameelakrishnan@yahoo.com

भारत सरकार
अंतरिक्ष विभाग
भारतीय सुदूर संवेदन संस्थान
4, कालीदास मार्ग, पो. बाक्स सं. 135
देहरादून- 248 001, भारत
दूरभाष : +91-135-2524399
फैक्स : +91-135-2741987, 2748041



Government of India
Department of Space
Indian Institute of Remote Sensing
4, Kalidas Road, P.B. No. 135,
Dehradun - 248 001, India
Telephone : +91-135-2524399
Fax : +91-135-2741987, 2748041

डॉ. ए. सेंथिल कुमार/ Dr. A. Senthil Kumar
निदेशक/Director

सं.: आई.आई.आर.एस. /एडुसेट/२०१८
दिनांक: २५ जनवरी, २०१८
No.: IIRS/EDUSAT/2018
Date: 25th January, 2018

विषय: 19th फरवरी, 2018 से हाइपरस्पेक्ट्रल सुदूर संवेदन, और उसके अनुप्रयोग पर प्रारम्भ होने वाले 29th आई.आई.आर.एस. आउटरीच कार्यक्रम की घोषणा के संबंध में।

Sub: Announcement of 29th IIRS Outreach Program on "Hyper Spectral Remote Sensing and its Applications" commencing from February 19th, 2018

महोदय/महोदया,
Sir/ Madam,

भारतीय सुदूर संवेदन संस्थान (भा.सु.सं.सं.) भूस्थानिक प्रौद्योगिकी के उपयोगार्थ शिक्षण, प्रशिक्षण तथा क्षमता संवर्धन को समर्पित इसरो का एक महत्वपूर्ण संस्थान है। इस संस्थान द्वारा अब तक २८ उपग्रह एवं इंटरनेट आधारित आउटरीच पाठ्यक्रम संचालित किए जा चुके हैं। इन पाठ्यक्रमों से लगभग 728 भारतीय विश्वविद्यालयों/ संस्थानों के करीब 62,000 से अधिक प्रतिभागी लाभान्वित हुए हैं। इसी कार्यक्रम को आगे बढ़ाते हुए हम सहर्ष 29th आई.आई.आर.एस. आउटरीच कार्यक्रम को प्रारंभ करने की घोषणा करते हैं। 19 फरवरी, 2018 से प्रारम्भ होने वाला यह कार्यक्रम हाइपरस्पेक्ट्रल सुदूर संवेदन और उसके अनुप्रयोग पर आधारित है। यह कार्यक्रम कार्यरत पेशेवर तथा छात्रों हेतु लक्षित है। यह कार्यक्रम प्रतिभागियों को अपने कार्यस्थल पर रहते हुये ज्ञान को समृद्ध करने का एक अनूठा अवसर प्रदान करेगा।

Indian Institute of Remote Sensing (IIRS) is a premier Institute of ISRO which is engaged in training, education and capacity building on use of geospatial technologies for natural resources monitoring and disaster management support services in the country since last five decades. The institute has so far conducted 28 Satellite and Internet based Outreach Programmes, benefitting more than 62,000 participants from 728 Indian universities/ institutions/user Departments/user ministries in India. We have now the pleasure of announcing the 29th IIRS Outreach Programme targeted to working professionals and students on "Hyper Spectral Remote Sensing and its Applications" commencing from February 19th, 2018. This online programme will provide a unique opportunity to the learners to enhance their knowledge by attending the course at their respective working places.

हाइपरस्पेक्ट्रल सुदूर संवेदन में अधिक संख्या के संकीर्ण वर्णक्रमीय बैंडों में माप किये जाते हैं। हाइपरस्पेक्ट्रल डेटा की संकीर्ण अवशोषण पहचान करने की क्षमता के कारण यह वनस्पति की भौतिक-रासायनिक विशेषताओं, मिट्टी के भौतिक और रासायनिक गुणों, खनिज संरचना और बर्फ की विशेषताओं को पहचानने और महत्वपूर्ण भूगर्भिक विशेषताओं की पहचान करने में सक्षम है। हालांकि, बड़ी संख्या में बैंड की उपस्थिति की वजह से, हाइपरस्पेक्ट्रल डेटा को अलग भिन्न प्रकार के विश्लेषण की आवश्यकता होती है जिसमें फीचर चयन, संकेत को हटाने, अवशोषण सुविधाओं का पता लगाने और अग्रिम वर्गीकरण तकनीक शामिल हैं। इस पाठ्यक्रम से प्रशिक्षुओं को हाइपरस्पेक्ट्रल सुदूर संवेदन, हाइपरस्पेक्ट्रल डेटा प्रसंस्करण और इसके अनुप्रयोगों के बारे में जानकारी होगी। इस पाठ्यक्रम में कुल तेरह सत्र होंगे। पहले से आठ सत्र मुख्य रूप से हाइपरस्पेक्ट्रल सुदूर संवेदन के सिद्धांत, हाइपरस्पेक्ट्रल संवेदक और प्रसंस्करण तकनीकों से संबंधित विषयों पर केंद्रित होगा; जबकि नौवें से तेरहवें सत्र हाइपरस्पेक्ट्रल डेटा के विभिन्न अनुप्रयोगों में केंद्रित करेंगे।

Hyperspectral remote sensing deals with measurements in a large number of narrow spectral bands over a contiguous spectral range. Because of its ability to detect narrow absorption features hyperspectral data are related to specific vegetation physio-chemical characteristics, soil physical and chemical properties, mineral composition and snow characteristics, mapping tree species, recognizing invasive plants, and identifying key geologic features.

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However, because of presence of a large number of bands, hyperspectral data needs different analysis approach including feature reduction, feature selection, removal of noise, detection of absorption features, advance classification techniques. This course will make the participants aware about hyperspectral remote sensing, hyperspectral data processing and its applications. This course will have thirteen sessions. First to eighth sessions will mainly be focused on topics related to hyperspectral remote sensing, ground spectro-radiometer and processing techniques; while ninth to thirteenth sessions will focus on application of hyperspectral data in five application areas.

उक्त पाठ्यक्रम की घोषणा सम्बन्धी विवरणिका अवलोकनार्थ तथा आपके मंत्रालय/विभाग/संगठन/संस्थान/ विश्वविद्यालय में प्रचार-प्रसार हेतु संलग्न है। इस पाठ्यक्रम में भारत सरकार तथा राज्य सरकार मंत्रालयों तथा विभागों में कार्यरत समस्त पेशेवर तथा शैक्षणिक समुदाय के शिक्षक/शोधकर्ता तथा अन्य पेशेवर भाग ले सकते हैं। कार्यक्रम में भाग लेने के इच्छुक प्रतिभागी संस्थान की वेबसाइट <http://dlp.iirs.gov.in> or <http://elearning.iirs.gov.in> के द्वारा पंजीकरण कर सकते हैं।

A copy of the course contents of this online programme is enclosed herewith for your kind perusal and wider circulation in your Ministry/ Department/ Organization/ University/ Institute. The course is open for all the professionals working in various Ministries and Department of Government of India (Central and State), University/Institutional Faculty/Professors, Researchers, other working professionals and students.

इस पाठ्यक्रम में **निशुल्क**: भाग लिया जा सकता है। ए-व्यू सॉफ्टवेयर (www.aview.in) का प्रयोग करके इंटरनेट के जरिए कार्यक्रम स्वतंत्र रूप से उपलब्ध हो सकता है। पंजीकृत सहभागियों के उक्त ऑनलाइन कार्यक्रम से जोड़ने हेतु भारतीय सुदूर संवेदन संस्थान (इसरो) प्रत्यय पत्र/ प्रयोक्ता आईडी/ पासवर्ड उपलब्ध करवाएगा। पाठ्यक्रम पूर्ण करने पर प्रतिभागियों को आईआईआरएस, इसरो से प्रमाण पत्र के साथ सम्मानित किया जाएगा।

The course can be attended with **no cost** to the participants. Programme can be received live through internet by utilizing A-VIEW software (www.aview.in) available **freely** or using live streaming from YouTube. IIRS/ISRO will provide credentials to receive this programme online for registered participants. The participants who successfully complete the course will be awarded a certificate from IIRS, ISRO.

उक्त प्रसंग में और जानकारी हेतु आप डॉ. अनिल कुमार, पाठ्यक्रम निदेशक [दूरभाष : ०१३५-२५२४११४ , मो : +९१ ९८९७४६०८७४, email: anil@iirs.gov.in], श्री विनय कुमार, पाठ्यक्रम समन्वेता, [दूरभाष: ०१३५-२५२४११२, मो:+९१ ९८९७८००६०९ ईमेल: vinaykumar@iirs.gov.in], डॉ. पूनम एस. तिवारी, कार्यक्रम समन्वेता, आई.आई.आर.एस. आउटरीच कार्यक्रम अथवा डॉ. हरीश कर्नाटक, प्रमुख, जियोवेब सेवाएँ, सूचना प्रौद्योगिकी एवं दूरस्थ अधिगम विभाग। किसी भी तकनीकी जानकारी के लिए आप एडुसेट स्टुडियो नियंत्रण कक्ष [श्री जनार्दन विश्वकर्मा एवं श्री अशोक घिल्डियाल] दूरभाष: ०१३५-२५२४१३०, ईमेल: edusat2004@gmail.com और dlp@iirs.gov.in] से संपर्क कर सकते हैं अथवा संस्थान की वेबसाइट <http://www.iirs.gov.in> देख सकते हैं।

In case if you need any further information about the programme, please feel free to contact- **Dr. Anil Kumar**, Course Director [Ph:0135-2524114,M:+91-9897460874, [email: anil@iirs.gov.in], **Shri, Vinay Kumar**, Course Coordinator [Ph. 0135-2524112, M:+91-9897800601 or email- vinaykumar@iirs.gov.in], **Dr. Poonam S. Tiwari**, Programme Coordinator IIRS Outreach Programme or **Dr. Harish Karnatak**, Head, Geoweb Services, IT & Distance Learning Department. For any technical clarification you may contact EDUSAT Studio/Control Room [Shri Janardan Vishwakarma & Shri Ashok Ghildiyal] Ph.: 0135-2524130, email: dlp@iirs.gov.in or visit IIRS website <http://www.iirs.gov.in> for further details.

With regards and best wishes,

Yours sincerely,


(A. Senthil Kumar)

Encl: Course Schedule

IRS Outreach Programme

The IIRS outreach programme, which started in 2007 with 12 universities/ institutions has now grown substantially. Currently, 580 universities / institutions spread across India are networked with IIRS. The beneficiaries of the programme may include:

- Water Resource Professionals
- State Water Resources/Irrigation Departments/Training Academies
- Central/State/Private Universities & Academic Institutions
- Central & State Government Departments
- Research Institutes
- Geospatial Industries
- NGOs

Feedback Mechanism

IIRS has conducted six workshops in 2007, 2009, 2010, 2013, 2014, 2015 and 2016 to take feedback from participating institutions to improve the quality of future courses.



18th outreach programme feedback session during IIRS User Interaction Meet (IUIM)-2017

Awards

IIRS has received national awards for excellence in training for outreach and e-learning programme during 1st National Symposium on Excellence in Training conducted during April 11-12, 2015 in New Delhi by Department of Personnel & Training (DoPT), Govt. of India in collaboration with United Nations Development Programme (UNDP).



About IIRS

Indian Institute of Remote Sensing (IIRS) under Indian Space Research Organisation (ISRO), Department of Space, Govt. 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 endeavour 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 groups, ranging from fresh graduates to policy makers including academia.

IIRS also conducts e-learning programme on Remote Sensing and Geo-information Science (<http://elearning.iirs.gov.in>).

Contact Details

Dr. Anil Kumar
Course Director

Tel: 0135-2524114/M-9897460874
Email: anil@iirs.gov.in

Shri. Vinay Kumar
Course Coordinator

Tel: 0135-2524112/M-9897800601
Email: vinaykumar@iirs.gov.in

IIRS DLP Team

Dr. Harish Karnatak
Head, GIT & DL Dept.
Tel: 0135-2524332

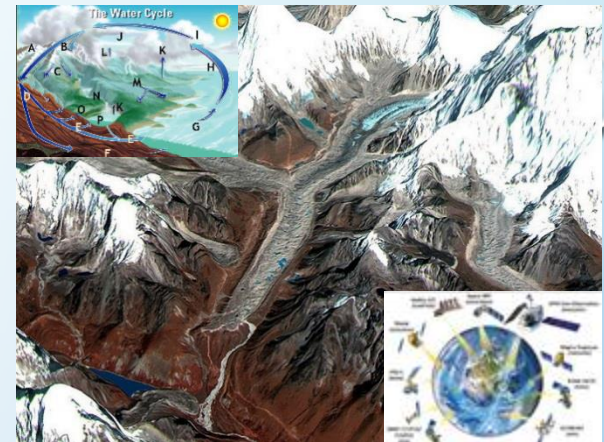
Dr. Poonam S Tiwari
Tel: 0135-2524334

Mr. Janardan Vishwakarma
Tel: 0135-2524130

Mr. Ashok Ghildiyal
Tel: 0135-2524130

Indian Institute of Remote Sensing,
Indian Space Research Organisation
Department of Space, Govt. of India,
4-Kalidas Road, Dehradun
Email: dlp@iirs.gov.in

Twenty Seventh IIRS Outreach Programme



Images sources : <http://swisseduc.ch/>; USGS; <https://pmm.nasa.gov/GPM>

Hyperspectral Remote Sensing and Its Applications

February 19 – 14 March, 2018



Organised by

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

www.iirs.gov.in

About the Course

Hyperspectral remote sensing deals with measurements in a large number of narrow spectral bands over a contiguous spectral range. Because of its ability to detect narrow absorption features hyperspectral data are related to specific vegetation physio-chemical characteristics, soil physical and chemical properties, mineral composition and snow characteristics, mapping tree species, recognizing invasive plants, and identifying key geologic features. However, because of presence of a large number of bands, hyperspectral data needs different analysis approach including feature reduction, feature selection, removal of noise, detection of absorption features, advance classification techniques. This course will make the participants aware about hyperspectral remote sensing, hyperspectral data processing and its applications. This course will have thirteen sessions. First to eighth sessions will mainly be focused on topics related to hyperspectral remote sensing, ground spectro-radiometer and processing techniques; while ninth to thirteenth sessions will focus on application of hyperspectral data in five application areas.

Curriculum

- **First Session: Hyperspectral Remote Sensing (HRS): An Overview and Applications;**
- **Second Session: Hyperspectral remote sensing: Platform and sensors;**
- **Third Session: Hyperspectral Image Pre-processing;**
- **Fourth Session: Demonstration on Hyperspectral Data Pre-processing;**
- **Fifth Session: Data dimensionality reduction;**
- **Sixth Session: Optical and Thermal Hyperspectral Image Classification;**
- **Seventh Session: Demonstration on spectro-radiometer and spectral library creation;**
- **Eighth Session: Demonstration on Hyperspectral data classification;**
- **Ninth Session: Hyperspectral Remote Sensing for Agriculture and soil Studies;**
- **Tenth Session: Hyperspectral Remote Sensing for Forestry Applications;**

- **Eleventh Session: Hyperspectral remote Sensing for Geological Applications;**
- **Twelfth Session: Hyperspectral Remote Sensing for Urban Studies;**
- **Thirteenth Session: Hyperspectral Remote Sensing for Water and snow cover Studies;**

Target Participants

- The course is designed for professionals from Central/ State Govt./Private Organizations/NGO engaged in remote sensing technology and its application in various fields like; forestry, agriculture, geology, mineral studies, water resources study.
- The course participants have to be duly sponsored by their university / institution and application should be forwarded through coordinators from respective Organisations/centres. Users attending programmes under CEC-UGC/ CIET / other networks can also participate. Institutions on high speed National Knowledge Network (NKN) can also participate using A-VIEW software.

Course Study Material

Course study materials like lecture slides, video recorded lectures, open source software & handouts of demonstrations, etc. will be made available through IIRS ftp link. Video lectures will also be uploaded on YouTube Channel (<http://www.youtube.com/user/edusat2004>).

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.

Course Funding & Technical Support

The programme is sponsored by National Natural Resources Management System – Standing Committee on Training and Education (SC-T), Indian Space Research Organisation, Department of Space, Government of India and is conducted with due technical support from Amrita Virtual Interactive E-Learning World (A-VIEW).

Programme Reception

Programme can be received through Internet connectivity of 2Mbps or better. Following hardware and software set-up is required at user end:

Hardware Requirements :

- High-end Computer/Laptop (Windows OS);
- Good quality web camera ;
- Headphone with Microphone;
- Speakers ;
- Large Display Screen (Projector or TV) .

Software and Internet Requirements

Desktop based: A-VIEW software (free to download from www.aview.in or IIRS ftp link: <ftp://ftp.iirs.gov.in>)
Online live access through <http://live.iirs.gov.in> with free registration.

Connectivity & Other configurations:

NKN or any other high speed internet facility (preferably without firewall, with minimum of 2 Mbps bandwidth)
Network requirements: Port 80 and RTMP (port 1935) protocol should be unblocked from user's computer and Firewall.

Note: Institutions/ universities have to bear total expenses for establishment of the classroom facility

Award of Certificate

Working Professionals and students: Based on 70% attendance and online examination.