



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/.....936

Dated 21-01-2017

Sub: Announcement of Nineteenth IIRS Outreach Programme on "Remote Sensing and GIS application in carbon forestry", schedule to be conducted during Feb 16 – March 10, 2017.

Dear Sir/Madam,

I am happy to announce that EDUSAT based Nineteenth IIRS Outreach Programme on "Remote Sensing and GIS application in carbon forestry ", schedule to be conducted during Feb 16 – March 10, 2017 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. The training will be conducted during 4.00-5.30 pm on the scheduled dates only. The course is open to PG students/researchers/scientific & technical staff 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 programme. 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 Feb 10, 2017 and all the nominated participants are requested to register through **online mode only** and print out of filled up application forwarded by the Head of the Division should be submitted to the Course coordinator within the time period. There is no course fee. Interested participants may register online through IIRS website: http://elearning.iirs.gov.in/edusat_lms/student_registration.php and updates on this program will be available at: <http://iirs.gov.in/Edusat-News>.

All the nominated participants are requested to report at 4.00 pm, February 16, 2017 in the C. Dakshinamurthy Seminar Hall of the Division of Agricultural Physics. The details of the program and class schedule are enclosed here with.

Thanking You.

Yours sincerely,

(P. Krishnan)



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

सं.: आई.आई.आर.एस. /एडुसेट/2017
दिनांक: 04 जनवरी 2017
No.: IIRS/EDUSAT/2017
Date: 04 January 2017

विषय: 16 फरवरी 2017 से "सुदूर संवेदन, भौगोलिक सूचना प्रणाली का कार्बन वानिकी में अनुप्रयोग" पर प्रारम्भ होने वाले 19^{वें} आई.आई.आर.एस. आउटरीच कार्यक्रम की घोषणा के संबंध में।

Sub: Announcement of Nineteenth IIRS Outreach Program on "Remote Sensing and GIS Applications in Carbon Forestry" commencing from February 16, 2017

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 18 उपग्रह एवं इंटरनेट आधारित आउटरीच पाठ्यक्रम संचालित किए जा चुके हैं। इन पाठ्यक्रमों से लगभग 470 भारतीय विश्वविद्यालयों/ संस्थानों के करीब 33,000 से अधिक प्रतिभागी लाभान्वित हुए हैं। इसी कार्यक्रम को आगे बढ़ाते हुए हम सहर्ष 19^{वें} आई.आई.आर.एस. आउटरीच कार्यक्रम को प्रारंभ करने की घोषणा करते हैं। 16 फरवरी, 2017 से प्रारम्भ होने वाला यह कार्यक्रम "सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली के कार्बन वानिकी में 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 अन्ूठा 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 18 Satellite and Internet based Outreach Programmes, benefitting more than 33,000 participants from 470 Indian universities/ institutions/user Departments/user ministries in India. We have now the pleasure of announcing the nineteenth IIRS Outreach Programme targeted to working professionals and students on "Remote Sensing and GIS Applications in Carbon Forestry" commencing from February 16 to March 10, 2017. This online programme will provide a unique opportunity to the learners to enhance their knowledge by attending the course at their respective working places.

वन आवरण समस्त पृथ्वी का लगभग एक तिहाई क्षेत्र है जिसमें वन क्षेत्रों में वातावरणीय कार्बन को इकठ्ठा तथा परिक्रमण करने की जबरदस्त क्षमता है जिसके कारण जलवायु परिवर्तन को कम करने में सहायता मिलती है। कार्बन वानिकी संबंधित गतिविधियों की मापन एवं निगरानी आवश्यकताओं को पूरा करने के लिए पुनरावर्तनीय, उद्देश्य आधारित एवं सटीक तरीकों को स्थापित करने की आवश्यकता है जिसके द्वारा बड़े क्षेत्रों में वन कार्बन पूल तथा अपशिष्टों का आकलन किया जा सके। सुदूर संवेदन प्रौद्योगिकी विशेष रूप से वन आवरण, वनों की कटाई, ह्रास, पुनर्विकास, कार्बन स्टॉक और कार्बन ज्वती के मानचित्रण और निगरानी के लिए अनुकूल हैं। यह पाठ्यक्रम कार्बन वानिकी के समर्थन हेतु उपग्रह और स्थलीय आधारित सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली प्रौद्योगिकी में नवीनतम प्रगति का एक सिंहावलोकन प्रदान करेगा। वन कार्बन निगरानी के संदर्भ में इन आधुनिक तकनीकों की उपयोगिता को सीखने हेतु इच्छुक फोरेस्टर/पेशेवर/शोधकर्ता/एवं छात्रों हेतु यह पाठ्यक्रम अत्यधिक रुचिकर होगा। इस पाठ्यक्रम में कार्बन चक्र, वन आधारित रणनीति, सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली का वन अवक्रमण की निगरानी हेतु उपयोग, वन बायोमास / कार्बन अनुमान जैसे विषय शामिल हैं।

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foresters/professionals/researchers and students interested in learning utility of these modern technologies in the context of forest carbon monitoring (e.g. REDD+). The course will include topics based on carbon cycle, forest based strategies, application of remote sensing and GIS for monitoring forest degradation, forest biomass/carbon estimation etc.

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://www.iirs.gov.in/EDUSAT-News> 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 निःशुल्क ऑनलाइन पाठ्यक्रम में एब्यू सॉफ्टवेयर के द्वारा तथा इंटरनेट का उपयोग करते हुए भाग लिया जा सकता है। पंजीकृत सहभागियों के उक्त ऑनलाइन कार्यक्रम से जोड़ने हेतु भारतीय सुदूर संवेदन संस्थान (इसरो) प्रत्यय पत्र/ प्रयोक्ता आईडी/ पासवर्ड उपलब्ध करवाएगा। पाठ्यक्रम के समापनोपरांत भारतीय सुदूर संवेदन संस्थान (इसरो) सफल प्रतिभागियों को प्रमाण पत्र भी प्रदान करेगा।

The course can be attended **without any cost** through **Internet** using A-View Software which is freely available (www.aview.in) for download. IIRS/ISRO will provide credentials to receive this programme online for registered participants. The Certificate of participation will be awarded to all the participants on successful completion of the programme.

उक्त प्रसंग में और जानकारी हेतु आप डॉ॰ सरनाम सिंह, पाठ्यक्रम निदेशक ([email:sarnam@iirs.gov.in](mailto:sarnam@iirs.gov.in)), डॉ॰ हितेन्द्र पडलिया, पाठ्यक्रम समन्वेता, [दूरभाष: 0135-2524176, मो: 9411193962, ईमेल: hitendra@iirs.gov.in], डॉ॰ पूनम एस॰ तिवारी, कार्यक्रम समन्वेता, आई॰आई॰आर॰एस॰ आउटरीच कार्यक्रम [दूरभाष: 0135-2524115 (कार्यालय), मो: +91 9410924417, ईमेल : poonam@iirs.gov.in], डॉ॰ हरीश कर्नाटक, प्रमुख, जियोवेब सेवाएँ, सूचना प्रौद्योगिकी एवं दूरस्थ अधिगम विभाग [दूरभाष: 0135-2524332 (कार्यालय), मो: +91 9456565523, ईमेल: harish@iirs.gov.in], एडुसेट स्टुडियो नियंत्रण कक्ष [श्री जनार्दन विश्वकर्मा एवं श्री अशोक घिल्डियाल] दूरभाष: 0135-2524130, ईमेल: edusat2004@gmail.com और dlp@iirs.gov.in] से संपर्क कर सकते हैं अथवा संस्थान की वेबसाइट <http://www.iirs.gov.in/EDUSAT-News> देख सकते हैं।

In case if you need any further information about the programme, please feel free to contact- **Dr. Sarnam Singh**, Course Director ([email:sarnam@iirs.gov.in](mailto:sarnam@iirs.gov.in)), **Dr. Hitendra Padalia**, Course Coordinator [Ph. 0135-2524176, M:9411193962 or email- hitendra@iirs.gov.in] or **Dr. Poonam S. Tiwari**, Programme Coordinator IIRS Outreach Programme [Ph. 0135-2524115 or email- poonam@iirs.gov.in] or **Dr. Harish Karnatak**, Head, Geoweb Services, IT & Distance Learning Department [Ph.: 0135-2524332 (off.), email: harish@iirs.gov.in, EDUSAT Studio/Control Room [Shri Janardan Vishwkarma & Shri Ashok Ghildiyal] Ph.: 0135-2524130, email: edusat2004@gmail.com or dlp@iirs.gov.in or visit IIRS website [http //www .iirs.gov in/Edusat-News](http://www.iirs.gov.in/Edusat-News) for further details.

With regards and best wishes,

Yours sincerely,

आ. सेंटिल कुमार

(A. Senthil Kumar)

Encl: Course Schedule

IIRS Outreach Programme

The IIRS outreach programme, which started in 2007 with 12 universities/ institutions has now grown substantially. Currently, 470 universities / institutions spread across India covering 30 States and 2 Union Territories are networked with IIRS. The beneficiaries of the programme may include:

- Forest Resource Professionals
- State Forest Departments/Forest 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.



Seventh outreach programme feedback session during IIRS User Interaction Meet (IUIM)-2016

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 Geoinformation Science (<http://elearning.iirs.gov.in>).

Contact Details

Dr. Sarnam Singh
Course Director
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Dr. Hitendra Padalia
Course Coordinator
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Email: hitendra@iirs.gov.in

IIRS DLP Team

Dr. Harish Karnatak
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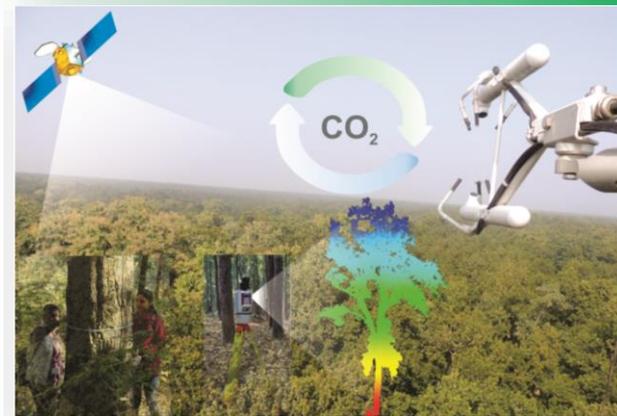
Dr. Poonam S Tiwari
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Mr. Janardan Vishwakarma
Tel: 0135-2524130; email: janardan@iirs.gov.in

Mr. Ashok Ghildiyal
Tel: 0135-2524130; email: ashok@iirs.gov.in

Indian Institute of Remote Sensing,
Indian Space Research Organisation
Department of Space, Govt. of India,
4-Kalidas Road, Dehradun
Email: dlp@iirs.gov.in / edusat2004@gmail.com

Nineteenth IIRS Outreach Programme



Remote Sensing and GIS Applications in Carbon Forestry

February 16 – March 10, 2017



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

Forests cover approximately one third of the Earth's land surface. These have a tremendous potential to store and cycle atmospheric carbon and therefore provide an effective way to mitigate climate change. To meet the measuring and monitoring (M&M) requirements of carbon forestry project activities, it is critical to establish repeatable, objective-based, and accurate methods for estimating forest carbon pools and fluxes over large areas. Remote sensing technologies are particularly suited for mapping and monitoring of forest cover, deforestation, degradation, regrowth, carbon stock and carbon sequestration. This course will provide an overview of the latest advances in satellite and terrestrial based remote sensing and GIS technologies to support carbon forestry. The course is therefore of special interest for the foresters/professionals/researchers and students interested in learning utility of these modern technologies in the context of forest carbon monitoring (e.g. REDD+).

IIRS has successfully conducted 18 outreach programme so far with participation of over 33,000 participants from 470 Institutions/ Universities spread across India.

Curriculum

- Global carbon cycle & climate change: An overview;
- Forest-based strategies for mitigating climate change;
- Global Earth observation initiatives for carbon forestry;
- Spectral signature of vegetation and factors affecting spectral response;
- Application of satellite remote sensing in mapping and monitoring of forest cover and land use;
- Application of satellite remote sensing in mapping and monitoring of forest carbon degradation ;
- Application of satellite data in forest sampling design for biomass/carbon quantification;
- Application of optical remote sensing in forest biomass/carbon estimation;
- Application of high resolution data for forest biomass/ carbon inventory;
- Application of LiDAR in mapping of forest structure and biomass/carbon estimation;
- Application of microwave remote sensing in forest biomass/carbon estimation;
- Application of eddy covariance technique in carbon flux measurement and modelling;

- Application of satellite remote sensing in near-real time forest fire assessment and monitoring;
- Application of satellite remote sensing in forest biomass burning and carbon emission monitoring;
- Application of Geoweb portals and services in forestry studies.

Target Participants

The course is designed for professionals engaged in forest and agro-forestry resource management, planning, REDD projects and students & researchers of Forestry, Ecology and Environmental studies.

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: Based on 70% attendance and submission of assignments.

Students: Based 70% attendance and online examination.



**Department of Space
Government of India
Indian Space Research Organisation (ISRO)
Indian Institute of Remote Sensing, Dehradun**



19th IIRS Outreach Programme

Course Name		Duration	
		From	To
1	Remote Sensing and GIS Applications in Carbon Forestry	16.02.2017	10.03.2017

Date	Time	Lecture Topic
16.02.2017	Lecture Session 1530-1630	Global carbon cycle & climate change: An overview
17.02.2017		Forest based strategies for mitigating climate change
18.02.2017		Break- Saturday
19.02.2017		Break- Sunday
20.02.2017		Global Earth observation initiatives for carbon forestry
21.02.2017		Spectral signature of vegetation and factors affecting spectral response
22.02.2017		Application of satellite remote sensing in mapping and monitoring of forest cover and land use
23.02.2017		Application of satellite remote sensing in mapping and monitoring of forest carbon degradation
24.02.2017		Break- MahaShivratri
25.02.2017		Break- Saturday
26.02.2017	Break- Sunday	
27.02.2017	Interactive Session 1630-1700	Application of satellite data in forest sampling design for biomass/carbon quantification
28.02.2017		Application of optical remote sensing in forest biomass/carbon estimation
01.03.2017		Application of high resolution data for biomass/carbon inventory
02.03.2017		Application of LiDAR in mapping of forest structure and biomass/carbon estimation
03.03.2017		Application of microwave remote sensing in forest biomass/carbon estimation
04.03.2017		Break- Saturday
05.03.2017		Break- Sunday
06.03.2017		Application of eddy covariance technique in carbon flux measurement and modelling
07.03.2017		Application of satellite remote sensing in near-real time forest fire assessment and monitoring
08.03.2017		Application of satellite remote sensing in forest biomass burning and carbon emission monitoring
09.03.2017	Application of Geoweb portals and services in forestry studies	
10.03.2017		Examination & Interactive discussion