

19<sup>th</sup> Outreach Certificate Course on “Remote Sensing and GIS Applications in Carbon Forestry ” sponsored by NNRMS and organized by IIRS/ ISRO Dept. of Space, Govt. of India,  
Dehradun 16/02/2017 to 10/02/2017

RAJA SHRIPATRAO BHAGWANTRAO MAHAVIDYALAYA, AUNDH, SATARA

Indian Institute of Remote Sensing, ISRO, Dehradun  
Department of Space, Government of India

SUMMARY REPORT OF PROGRAM

Date: 10/04/2017

To,  
The Principal,  
R.S.B. Mahavidyalaya, Aundh  
Tal. Khatav, Dist. Satara

I am submitting summary report of Outreach Programme. Please accept it.

1. Name of Programme: Remote Sensing and GIS Applications in Carbon Forestry  
2. Duration: 16.02.2017 to 10.03.2017 Total Days: 25  
3. Number of enrolled students: 9  
4. Name of Coordinator: Dr. Telore Namdev Vasant  
5. Name of Resource Persons: i) Dr. Hina Pande ii) Dr. Harish Karnataka  
iii) Dr. Poonam Sethi Tiwari

6. Objectives of the Programme:  
i. To know basic concepts of Remote Sensing.  
ii. To know basic concepts of GIS.  
iii. To study applications of geospatial technologies in Carbon Forestry.

7. Outcome of the Programme:  
i. Participants become aware of basic concepts of Remote Sensing.  
ii. Participants become aware of GIS.  
iii. Participants become aware of applications of geospatial technologies in Carbon Forestry.

Centre Coordinator  
(Dr. Namdev V. Telore)  
Co-ordinator  
IIRS Outreach Programme, Dehradun  
Govt. of India, ISRO, Dept. of Space, Govt. of India

Principal  
Raja Shripatrao Bhagwantrao  
Mahavidyalaya, Aundh (Satara)



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19- IISG Outreach Programme on Remote Sensing and GIS Applications in Carbon Forestry

View Student  
  Attendance  
  Attendance status  
  Study Material

S.No.	RegNo.	Name	DOB	Mobile No.	Email	ID_Proof	Date	Status
1	2017199528	Umesh Potekar	7-29-1988	8300088570	potekarumesh@gmail.com	View	2017-02-01 12:38:26	Approved
2	2017199537	Salim Mulla	2-27-1990	9561485333	salimmulla203@gmail.com	View	2017-02-01 12:55:20	Approved
3	2017199539	Barkade Dagaolu	6-1-1969	9822636527	barkadeji@gmail.com	View	2017-02-01 14:02:06	Approved
4	2017199547	Tushar Sawant	9-9-1989	9166503090	parakajumar.sawant@gmail.com	View	2017-02-01 14:10:06	Approved
5	2017191367	Ramrakesh Chetani	5-8-1971	9502931276	pkramrakesh@gmail.com	View	2017-02-09 12:57:58	Approved
6	20171912403	Bhagyasree Phadare	3-4-1994	9519136628	bphadare777@gmail.com	View	2017-02-10 14:38:44	Approved
7	2017191394	Parushottam Ramrakesh	5-6-1971	9502931276	p.kramrakesh@gmail.com	View	2017-02-09 14:19:02	Approved
8	20171911415	Shubhang Pul	6-1-1971	9990410003	pulshubhangh@gmail.com	View	2017-02-09 14:34:46	Approved
9	20171910999	Sanjay Shinde	8-21-1971	7675780749	smshinde.gang@gmail.com	View	2017-02-07 11:12:23	Approved

  
**Dr. Namdev V. Telore**  
 Co-ordinator  
 IISG Outreach Programme, Dahanu  
 Central S. S. Kulkarni College, Khandri, Dist. Satara

  
**PRINCIPAL**  
 Raja Shripatrao Bhogwantrao  
 Mahavidyalaya, Aunch(Satara)



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19- IIRG Outreach Programme on Remote Sensing and GIS Applications in Carbon Forestry

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2	2017199537	Salm Mulla	2-27-1990	9561485333	salmulla503@gmail.com	View	2017-02-01 13:05:20	Approved
3	2017199539	Barakade Dagedu	6-1-1968	9822836327	barakadejd@gmail.com	View	2017-02-01 14:02:06	Approved
4	2017199547	Tuhar Sawant	9-9-1969	916800390	pankajumar.sawant@gmail.com	View	2017-02-01 14:10:06	Approved
5	20171911367	Rantake Khairi	5-6-1971	9552301276	prantake@gmail.com	View	2017-02-01 13:57:38	Approved
6	20171912403	Bhagshree Phudare	3-4-1994	9619136626	bphadare777@gmail.com	View	2017-02-10 14:38:44	Approved
7	20171911394	Purushottam Rantake	5-6-1971	9552301276	p.rantake@gmail.com	View	2017-02-01 14:19:02	Approved
8	20171911415	Shubhangi Pol	6-1-1971	9890410003	polshubhanghi@gmail.com	View	2017-02-01 14:34:46	Approved
9	20171910399	Sanjay Shinde	8-21-1971	7875780749	smshinde.geog@gmail.com	View	2017-02-07 11:17:23	Approved

Dr. Namdev V. Telore  
Co-ordinator  
IIRG Outreach Programme, Dehradun  
Centre: S.B. Mahavidyalaya, Aundh (Satara)

PRINCIPAL  
Raja Shripatrao Bhagwantrao  
Mahavidyalaya, Aundh (Satara)



भारतीय सुदूर संवेदन संस्थान/ INDIAN INSTITUTE OF REMOTE SENSING  
 भारतीय अंतरिक्ष अनुसंधान संगठन/ INDIAN SPACE RESEARCH ORGANISATION  
 अंतरिक्ष विभाग, भारत सरकार/ DEPARTMENT OF SPACE, GOVERNMENT OF INDIA



बहिःपरिसर संपर्क/विस्तार कार्यक्रम प्रमाण पत्र  
 OFF - CAMPUS OUTREACH CERTIFICATE PROGRAMME



IIRS/DLP/1/19-DLP167

यह प्रमाणित किया जाता है कि राजा श्रीपतराव भगवंतराव महाविद्यालय, औंध, महाराष्ट्र ने 'सुदूर संवेदन तथा भौगोलिक सूचना प्रणाली का कार्बन बानिकी में अनुप्रयोग' पर आधारित ऑनलाइन पाठ्यक्रम में भाग लिया। उक्त पाठ्यक्रम इस संस्थान द्वारा 16 फरवरी से 10 मार्च, 2017 तक संचालित किया गया।

This is to certify that Raja Shripatrao Bhagawantrao Mahavidyalaya, Aundh, Maharashtra has participated in the online training course on "Remote Sensing and GIS Applications in Carbon Forestry" conducted by this institute during February 16 to March 10, 2017.

दिनांक/ Date: 24-05-2017  
 स्थान/ Dehradun

उपस्थ, विज्ञानिक सर्विसेस, सूचना प्रौद्योगिकी एवं दूरस्थ अधिगम विभाग  
 Geoweb Services, IT & Distance Learning Department, IIRS

Dr. Namdev V. Talore  
 Co-ordinator

Online Outreach Programme Division  
 C. - २, ३ & Mahavidyalaya, Aundh, Dist. Satara

समूह निदेशक,  
 भू-स्थानिक प्रौद्योगिकी एवं अंतरिक्ष कार्यक्रम समूह  
 Group Director, Geospatial Technologies & Outreach Programme Group, IIRS

Raja Shripatrao Bhagwantrao  
 Mahavidyalaya, Aundh (Satara)





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 अन्वीक्षकर्तृ तथा आपके मंत्रालय/विभाग/संस्थान/विश्वविद्यालय में प्रसार-प्रसार हेतु संलग्न है। इस पाठ्यक्रम में भारत सरकार तथा राज्य सरकार संस्थानों तथा विद्यालयों में कार्यरत सम्बन्धित तथा शैक्षणिक समुदाय के शिक्षक/शोधकर्तृ तथा अन्य वैशेषज्ञ ज्ञान ले सकते हैं। कार्यक्रम में भाग लेने के दृष्टिकोण 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 नि:शुल्क ऑनलाइन पाठ्यक्रम में एम्बु सीधेवेयर के द्वारा तथा इंटरनेट का उपयोग करते हुए भाग लिया जा सकता है। पंजीकृत प्रतिभागियों के उक्त ऑनलाइन कार्यक्रम में जोड़ने हेतु भारतीय सुदूर भंडारण संस्थान (इसरो) द्वारा पत्र/ प्रत्येका आईटी/ गानवर्क उपलब्ध कराया जाएगा। पाठ्यक्रम के सफलतापूर्वक भारतीय सुदूर भंडारण संस्थान (इसरो) प्रचार प्रतिभागियों को प्रस्ताव एवं भी प्रदान होगा।

The course can be attended without any cost through internet using A-View Software which is freely available ([www.aview.in](http://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 इमेल में और जानकारी हेतु आप डॉ. सरमाम सिंह, पाठ्यक्रम निदेशक ([email:saramam@iirs.gov.in](mailto:saramam@iirs.gov.in)), डॉ. हिन्दरा पदालिया, पाठ्यक्रम समन्वयक, (दूरभाष: 0135-2524176, मो: 9411193962, ईमेल: [hitendra@iirs.gov.in](mailto:hitendra@iirs.gov.in)), डॉ. पूनम एस. तिवारी, कार्यक्रम समन्वयक, आई-आई-आरएस-आउटरीच कार्यक्रम (दूरभाष: 0135-2524115 (कार्यालय), मो: +91 9410924417, ईमेल: [poonam@iirs.gov.in](mailto:poonam@iirs.gov.in)), डॉ. हरीश कर्माकर, प्रमुख, विशेषज्ञ सेवाएं, सुचना प्रौद्योगिकी एवं दूरस्थ अधिगम विभाग (दूरभाष: 0135-2524332 (कार्यालय), मो: +91 9456365523, ईमेल: [harish@iirs.gov.in](mailto:harish@iirs.gov.in)), एडुसैट स्टूडियो निदेशक तथा श्री जनार्दन विश्वकर्मा एवं श्री अशोक घिल्डियाल (दूरभाष: 0135-2524130, ईमेल: [edusat2004@gmail.com](mailto:edusat2004@gmail.com) और [dip@iirs.gov.in](mailto:dip@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. Saramam Singh**, Course Director ([email:saramam@iirs.gov.in](mailto:saramam@iirs.gov.in)), **Dr. Hitendra Padalia**, Course Coordinator (Ph. 0135-2524176, M-9411193962 or email- [hitendra@iirs.gov.in](mailto:hitendra@iirs.gov.in)) or **Dr. Poonam S. Tiwari**, Programme Coordinator IIRS Outreach Programme (Ph. 0135-2524115 or email- [poonam@iirs.gov.in](mailto:poonam@iirs.gov.in)) or **Dr. Harish Kamatak**, Head, Geoweb Services, IT & Distance Learning Department (Ph.. 0135-2524332 (off.)), email: [harish@iirs.gov.in](mailto:harish@iirs.gov.in), EDUSAT Studio/Control Room [Shri Janardan Vishwakarma & Shri Ashok Ghildiyal] Ph: 0135-2524130, email: [edusat2004@gmail.com](mailto:edusat2004@gmail.com) or [dip@iirs.gov.in](mailto:dip@iirs.gov.in) or visit IIRS website <http://www.iirs.gov.in/Edusat-News> for further details.

With regards and best wishes,

Yours sincerely,

*(A. Santhil Kumar)*  
(A. Santhil Kumar)

Encl: Course Schedule

*(Signature)*

**Dr. Namdev V. Telore**  
Co-ordinator  
IIRS Outreach Programme, Dehradun  
Campus: I.I.S. & Mahavidyalaya, Aundh, Dist. Satara

*(Signature)*

**PRINCIPAL**  
Raja Shripatrao Bhagwantrao  
Mahavidyalaya, Aundh(Satara)

## 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.



Sixth outreach programme feedback session during IIRS Dear Interaction Meet (DIDM)-2016

## Awards

IIRS has received national awards for excellence in training for outreach and e-learning programme during 1<sup>st</sup> 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).



*[Signature]*  
**Dr. Narndev V. Telere**  
 Co-ordinator  
 IIRS Outreach Programme Dehradun

## 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. Sansan Singh**  
 Course Director  
 Tel: 0135-2524170  
 Email: sansan@iirs.gov.in

**Dr. Himendra Prasad**  
 Course Coordinator  
 Tel: 0135-2524170/0411180962  
 Email: himendra@iirs.gov.in

### IIRS DLP Team

**Dr. Harsh Karmale**  
 Head, OITS DL Dept.  
 Tel: 0135-2524332  
 Email: harsh@iirs.gov.in

**Dr. Poojari S. Tiwari**  
 Tel: 0135-2524110, email: poojari@iirs.gov.in

**Mr. Jeyarajan Velupillai**  
 Tel: 0135-2524170, email: jeyarajan@iirs.gov.in

**Mr. Ashok Ghodiyal**  
 Tel: 0135-2524130, email: ashok@iirs.gov.in

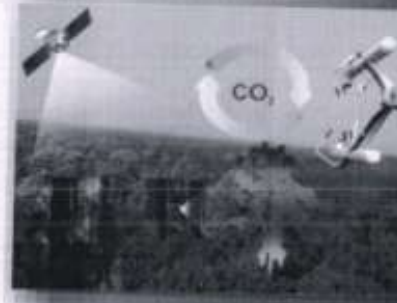
**Indian Institute of Remote Sensing,**  
 Indian Space Research Organisation  
 Department of Space, Govt. of India,  
 4-Kalidas Road, Dehradun  
 Email: dip@iirs.gov.in / adusar2004@gmail.com



*[Signature]*  
**PRINCIPAL**

**Raja Shripatrao Bhagwantrao**  
 Mahavidyalaya, Aundh (Satara)

## 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](http://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 (MM) 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;

*[Signature]*  
Dr. Namdev V. Telare  
Co-ordinator

Outreach Programme Director  
CAUERS, Bhopal



- Application of satellite remote sensing in large 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/School/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.

*[Signature]*  
PRINCIPAL

Raja Shripatrao Bhagwantrao  
Mahavidyalaya, Aundh (Satara)

## 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 Annata 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](http://www.aview.in) or IIRS ftp link: <ftp://ftp.iirs.gov.in/>)
- Online live access through <http://five.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.