



## 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/ 07

Dated 11/5/17

**Sub:** Announcement of twenty first IIRS Outreach Programme on "**Remote Sensing and GIS Applications in Water Resources Management**", schedule to be conducted during May 22 – June 9, 2017.

Dear Sir/Madam,

I am happy to announce that EDUSAT based twenty first IIRS Outreach Programme on "**Remote Sensing and GIS Applications in Water Resources Management**" schedule to be conducted during May 22 – June 9, 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 21<sup>st</sup> May, 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](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, May 22, 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)

कृषि भौतिकी संभाग  
भा.कृ.अनु.प., नई दिल्ली-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

**Dr. A. Senthil Kumar**  
Director

No.: IIRS/EDUSAT/ 2017  
Date: 20 April 2017

**Sub: Announcement of 21<sup>st</sup> IIRS Outreach Program on "Remote Sensing and GIS Applications in Water Resources Management" commencing from May 22, 2017.**

Dear Sir/ Madam,

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 20 Satellite and Internet based Outreach Programmes, benefitting more than 44, 298 participants from 586 Indian universities/ institutions/user Departments/user ministries in India. We have now the pleasure of announcing the 21<sup>st</sup> IIRS Outreach Programme targeted to working professionals and students on "**Remote Sensing and GIS Applications in Water Resources Management**" commencing from **May 22 to June 09, 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.

About 71% of earth's surface is covered with water. Around 2.5% out of total water available on the earth is stored in the form of fresh water as Ice caps, Glaciers, Permanent Snow, Rivers and Lakes, Ground Water, Soil moisture, Atmospheric Water. All these sources of fresh water are important for survival of life on this planet and are vulnerable to adverse impacts of anthropogenic activities. Though abundant water is available in our country, however there is large spatial, temporal variations in its distribution. Hence, continuous monitoring of all the sources of water (components of Hydrological cycle) becomes necessary for Water Resources Management. Geospatial technologies are particularly suited for qualitative and quantitative; mapping and monitoring of dynamic components of hydrological cycle like rainfall, soil moisture, runoff, evapotranspiration, snow cover, etc. along with water related disasters. This course will provide an overview of the latest advances in satellite and terrestrial based remote sensing and GIS technologies for quantitative assessment and monitoring of components of hydrological cycle and their use in Water Resources Management. The course is therefore of special interest for the professionals, researchers and students interested in learning utility of these modern technologies in the context of Water Resources Management.

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.

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.



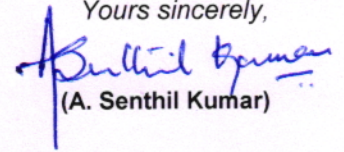
In case if you need any further information about the programme, please feel free to contact -

- **Dr. S. P. Aggarwal**, Course Director ([email:spa@iirs.gov.in](mailto:spa@iirs.gov.in))
- **Dr. Bhaskar R. Nikam**, Course Coordinator  
Ph. 0135-2524164 (Office), M: +91 9412158117, email- [bhaskarnikam@iirs.gov.in](mailto:bhaskarnikam@iirs.gov.in)
- **Dr. Poonam S. Tiwari**, Programme Coordinator, IIRS Outreach Programme  
Ph. 0135-2524115 (Office), M: +91 9410924417, email- [poonam@iirs.gov.in](mailto:poonam@iirs.gov.in)
- **Dr. Harish Karnatak**, Head, Geoweb Services, IT & Distance Learning Department  
Ph.: 0135-2524332 (Office), M: +91 9456565523, 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), [dlp@iirs.gov.in](mailto:dlp@iirs.gov.in)

You may also 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,

  
(A. Senthil Kumar)

Encl: Course Schedule





डॉ. ए. सैथिल कुमार  
निदेशक

सं.: आई.आई.आर.एस. / एडुसेट/ 2017  
दिनांक: 20 अप्रैल 2017

**विषय:** 22 मई 2017 से "सुदूर संवेदन, भौगोलिक सूचना प्रणाली का जल संसाधन प्रबंधन में अनुप्रयोग" पर प्रारम्भ होने वाले 21<sup>वाँ</sup> आई.आई.आर.एस. आउटरीच कार्यक्रम की घोषणा के संबंध में।

प्रिय महोदय/महोदया,

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 २० उपग्रह एवं इंटरनेट आधारित आउटरीच पाठ्यक्रम संचालित किए जा चुके हैं। इन पाठ्यक्रमों से लगभग 586 भारतीय विश्वविद्यालयों/संस्थानों के करीब 44,298 से अधिक प्रतिभागी लाभान्वित हुए हैं। इसी कार्यक्रम को आगे बढ़ाते हुए हम सहर्ष 21<sup>वाँ</sup> आई.आई.आर.एस. आउटरीच कार्यक्रम को प्रारंभ करने की घोषणा करते हैं। 22 मई, 2017 से प्रारम्भ होने वाला यह कार्यक्रम "सुदूर संवेदन, भौगोलिक सूचना प्रणाली का जल संसाधन प्रबंधन 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 अनूठा अवसर प्रदान करेगा।

पृथ्वी की सतह का लगभग 71% पानी से ढका है। पृथ्वी पर उपलब्ध कुल पानी का लगभग 2.5% ताजे पानी के रूप में संग्रहीत है जो की ग्लेशियर, स्थायी हिमपात, नदियों, झीलों, भूजल, मृदा नमी तथा वायुमंडलीय जल के रूप में पाया जाता है। ताजे पानी के ये सभी संसाधन पृथ्वी पर जीवन हेतु अत्यंत महत्वपूर्ण है और मानव जाति द्वारा किए जाने वाले विकास कार्यों के प्रतिकूल प्रभावों के प्रति अति संवेदनशील हैं। हालांकि भारतवर्ष में पानी प्रचुर मात्रा में उपलब्ध है, परंतु इसके वितरण में स्थानिक एवं अस्थायी विविधताएँ हैं। अतः जल संसाधन प्रबंधन हेतु सभी प्रकार के जल संसाधनों (हाईड्रोलोजिकल चक्र के घटक) की लगातार निगरानी आवश्यक है। भूस्थानिक प्रौद्योगिकी हाईड्रोलोजिकल चक्र के गतिशील घटकों जैसे वर्षा, मृदा नमी, अपवाह, बाष्पीकरण, बर्फ और पानी संबंधित आपदा के गुणात्मक और मात्रात्मक मानचित्रण एवं निगरानी हेतु अति उपयुक्त हैं। यह पाठ्यक्रम जल संसाधन प्रबंधन में हाईड्रोलोजिकल चक्र के गतिशील घटकों के मात्रात्मक मूल्यांकन एवं निगरानी हेतु उपग्रह और स्थलीय आधारित सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली प्रौद्योगिकी में नवीनतम प्रगति का एक सिंहावलोकन प्रदान करेगा। जल संसाधन प्रबंधन के संदर्भ में इन आधुनिक तकनीकों की उपयोगिता को सीखने हेतु इच्छुक पेशेवर/शोधकर्ता/एवं छात्रों के लिए यह पाठ्यक्रम अत्यधिक रुचिकर होगा।

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 वैबसाइट <http://www.iirs.gov.in/EDUSAT-News> के द्वारा पंजीकरण कर सकते हैं।



इस निःशुल्क ऑनलाइन पाठ्यक्रम में एच्यू 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।

उक्त प्रसंग में और जानकारी हेतु आप निम्नलिखित से संपर्क कर सकते हैं:

- डॉ. शिव प्रसाद अग्रवाल, पाठ्यक्रम निदेशक, ईमेल: [spa@iirs.gov.in](mailto:spa@iirs.gov.in)
- डॉ. भास्कर निकम, पाठ्यक्रम समन्वेता, दूरभाष: 0135-2524164 (कार्यालय), मो: +91 9412158117, ईमेल: [bhaskarnikam@iirs.gov.in](mailto:bhaskarnikam@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](mailto: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](mailto:harish@iirs.gov.in)
- एडुसेट स्टुडियो नियंत्रण कक्ष [श्री जनार्दन विश्वकर्मा एवं श्री अशोक चिल्डियाल] दूरभाष: 0135-2524130 ईमेल: [edusat2004@gmail.com](mailto:edusat2004@gmail.com) और [dlp@iirs.gov.in](mailto:dlp@iirs.gov.in)] से संपर्क कर सकते हैं।

आप संस्थान की वैबसाइट <http://www.iirs.gov.in/EDUSAT-News> भी देख सकते हैं।

शुभकामनाओं सहित,

सादर,  
आ. सैथिल कुमार  
(ए. सैथिल कुमार)

Encl: Course Schedule

## Lecture Topics for Special course on “RS & GIS applications in Water Resources Management”

Lecture / Date	Title	Content	Faculty
L-1 22/05/2017	<b>Overview of RS &amp; GIS Application in Water Resources Management</b>	Introduction to RS & GIS with respect to Water Resources; All the applications of RS & GIS in Water Resources; <a href="#">Online Resources for Water Resources Data (IWRIS, Bhuvan, etc.)</a>	SPA
L-2 23/05/2017	<b>Hydrological Parameter Estimation using RS &amp; GIS</b>	Rainfall estimation (IR, Thermal, MW); Interpolation and limitations in interpolation; Interception, Soil moisture & $\Delta TWS$ ; Evapotranspiration; Water level and discharge <a href="#">Linkage to real world problems.</a>	PKT & BRN
L-3 24/05/2017	<b>Digital Elevation Model (DEM) hydro-processing, Watershed Characterization</b>	DEM and its data sources; DEM hydro- processing for watershed characterization (watershed and stream network delineation, morphometric analysis) and other DEM derivatives <a href="#">Linkage to real world problems.</a>	AC
L-4 25/05/2017	<b>Hydrological Modelling with Geospatial Inputs</b>	Type of models, model selection considering project objectives and geospatial inputs; Hydrological modeling (watershed to basin scale) <a href="#">Linkage to real world problems.</a>	VG
L-4 26/05/2017	<b>Snow/Glacier Mapping, Monitoring and Snow Melt Runoff Model</b>	Snow, glacier, glacier lakes mapping and monitoring; Estimation of snow physical properties, glacier ice volume and glacier velocity Snow and glacier melt runoff modelling <a href="#">Linkage to real world problems.</a>	PKT
L-6 29/05/2017	<b>Soil erosion and Sediment modeling, Watershed Prioritization and Conservation Planning</b>	Soil Erosion and sediment yield modeling using geo-spatial inputs; Water Prioritization; Conservation Planning; Site suitability analysis for Water harvesting structures; Monitoring & Impact assessment of watershed conservation using RS inputs; <a href="#">Linkage to real world problems.</a>	AC & BRN
L-7 30/05/2017	<b>Waterbody Mapping, Water Quality and Reservoir Sedimentation Assessment using Remote Sensing</b>	Waterbody mapping and monitoring; Water quality assessment; Reservoir sedimentation assessment; <a href="#">Linkage to real world problems.</a>	VG
L-8 31/05/2017	<b>Application of Geospatial Techniques in Irrigation Water Management</b>	Irrigation command area and infrastructure mapping; Irrigation potential assessment; Irrigation water requirement assessment; Conjunctive water use planning; Irrigation project performance assessment; Waterlogging and soil salinity mapping; <a href="#">Linkage to real world problems.</a>	BRN



<b>L-9</b> <b>01/06/2017</b>	<b>Mapping, Monitoring of Hydro-meteorological Disasters and Damage Assessment</b>	Flood mapping, monitoring using remote sensing inputs and damage assessment; Drought mapping, monitoring using remote sensing inputs and damage assessment; <a href="#">Operational flood and drought monitoring systems and initiatives.</a>	SPA & BRN
<b>L-10</b> <b>02/06/2017</b>	<b>Flood Modelling and Early Warning Systems</b>	Flood peak estimation; Integrated hydrological and hydrodynamic modeling for flood inundation assessment; Weather forecasting and flood early warning systems; Dam break and Glacier lake outburst flood (GLOF); <a href="#">Linkage to real world problems.</a>	PKT & PRD
<b>L-11</b> <b>05/06/2017</b>	<b>Ground Water Prospects Zonation</b>	Major Applications of RS & GIS in Hydrogeology; Remote Sensing Observations for Ground Water with examples; Methods of Ground Water Prospects Zoning; Rajiv Gandhi National Drinking Water Mission (RGNDWM) -Objectives and Methodology; <a href="#">How to Use Ground Water Prospects maps prepared under RGNDWM?</a>	SKS
<b>L-12</b> <b>06/06/2017</b>	<b>Site Suitability Analysis for Water Resources Projects and Environmental Impact Assessment (EIA)</b>	Site suitability using RS & GIS inputs for hydropower, drinking water, inter-basin transfer, irrigation canal network; RS & GIS inputs for EIA studies of water resources projects; <a href="#">Linkage to real world problems.</a>	PKT
<b>L-13</b> <b>07/06/2017</b>	<b>Urban Hydrological studies using Geospatial inputs</b>	Hi-resolution RS inputs for urban water infrastructure mapping; Potable water distribution network planning and modeling; Storm water modeling and planning; rainwater harvesting in urban areas; Impact of urbanization on water quality and quantity; <a href="#">Linkage to real world problems.</a>	PKT & VG
<b>L-14</b> <b>08/06/2017</b>	<b>Climate and Land Use Land Cover Change impact on Water Resources</b>	Land Use Land Cover change (LULCC) assessment using remote sensing; Climate change (CC); IPCC 5 scenarios, Downscaling of GCM data; Impact of CC and LULCC on river basin hydrology and water resources projects; <a href="#">Climate change adaptation and mitigation measures for water resources.</a>	GF (Dr. Subimal Ghosh or Dr. Vimal Mishra)
<b>L-15</b> <b>09/06/2017</b>	<b>Integrated Water Resources Management</b>	Concept of Integrated Water Resources Management (IWRM); Basin level water balance studies to identify the water potential (surplus and deficit area); Inter-linking of rivers for IWRM; Geo-spatial inputs for trans-boundary (state and country level) water resources studies; <a href="#">Linkage to real world problems.</a>	GF (Dr. A. K. Gosain or Dr. Sharad Kumar Jain)