

# Summer School in Geospatial Science And Technology (Level 2)

**Theme: Geospatial Technology for monitoring, assessment  
and prediction of Hydro-Meteorological Disasters**

**3 - 24 June 2024**



**Organized by**  
Symbiosis Institute of  
Geoinformatics,  
Symbiosis International  
(Deemed University)  
Pune, Maharashtra ,  
India



सत्यमेव जयते  
Department of Science & Technology  
Govt. of India

**Supported by**  
National Geospatial  
Program, Department of  
Science & Technology,  
Government of India,  
New Delhi



## **Principal Investigator**

Prof. (Dr.) T. P. Singh, Director, Symbiosis Institute of Geoinformatics, Symbiosis International (Deemed University), Pune, Maharashtra

## **Co-Principal Investigator**

Dr. Sandipan Das , Assistant Professor, Symbiosis Institute of Geoinformatics, Symbiosis International (Deemed University), Pune, Maharashtra

## **Co-Principal Investigator**

Dr. Rajesh Dhumal, Assistant Professor, Symbiosis Institute of Geoinformatics, Symbiosis International (Deemed University), Pune, Maharashtra

## **Summer/Winter School Capacity Building Program in Geospatial Science and Technology**

Recently knowledge has been identified as the most important driving factor for India's sustainable economic growth. India has adopted a new information regime for sustainable economic growth through its 'Digital India' program to support good governance, sustainable development goals and empowerment of its citizens. Over the last three decades, the widespread adoption of geospatial technologies into various sectors have proven to be an effective enabler to meet these challenges. The capacity building program initiatives of the National Geospatial Program (NGP) erstwhile Natural Resource Data Management System (NRDMS) Department of Science and Technology, Government of India to develop national capacity for geospatial science and technology development through diverse programs in collaboration with various partner organizations. The three week program is being conducted at three levels, Level 1 (Standard), Level 1 (Spatial thinking) and Level 2. In addition there is a three day Geo Innovation Challenge Program. The objective of the program is to build knowledge and various levels of governance in collaboration with academia and user agencies and foster innovation.

### **Level 2 Summer / Winter School In Geospatial Science and Technology**

This three week program is a theme specific advanced training being implemented by eight institutions across the country. A one week online refresher session will be held prior to the commencement of the three week program. The 21-day summer/winter school in Geospatial Science and Technology (Level 2) supported by the National Geospatial Program (NGP) of the Department of Science and Technology, Government of India focuses on developing knowledge and capacity building in geospatial technologies through the use of geospatial software.

## About the National Geospatial Program of the Department of Science and Technology, Government of India

In the heart of India's technological advancement lies the National Geospatial Programme (NGP) of the Department of Science and Technology, Government of India. The Geospatial Capacity Building Program initiated in 2010 has over the years flourished, fostering capacities in geospatial science, technology, solutions, and entrepreneurship. Its transformative journey initiated with a modest ambition has evolved into a robust program, igniting minds and expanding horizons.

For a decade, the Geospatial Capacity Building Program under DST has been a cornerstone, conducting 166 comprehensive three-week programs conducted as Summer and Winter Schools in Geospatial Technologies at a basic (Level 1) and advanced level (Level 2). The 2024 cycle includes a 11 three week Level 1-(Standard) programs, 4 three week Level 1-(Spatial Thinking) programs, 8 Level 2-(Advanced) three week programs and 7 Geo Innovation Challenge Programs being conducted by various Universities across India selected through a stringent process by the DST.

The sessions at these programs comprise classroom, lab, fieldwork, and mini-projects. Central to this success is a structured curriculum and the advocacy of open-source software. The dedicated portal, <https://dst-iget.in>, is a reservoir of learning materials, connecting educators, professionals, and scientists, and catalyzing India's geospatial domain. The NGP-DST's geospatial capacity building program is coordinated nationally by the Bharati Vidyapeeth Deemed University, Department of Geoinformatics, Institute of Environment Education and Research, Pune.

The Symbiosis International (Deemed University), Pune is one of the selected institutions for conducting the Level 2 Program.

## **Symbiosis International (Deemed University), Pune**

Symbiosis International Deemed University is a Category-I University of India declared by University Grant Commission India and is ranked under top 50 universities in India. The University has MOU's of collaboration with several renowned universities of the world and encourages students and faculty to participate in its programmes. Visit us on: <https://siu.edu.in/>

## **Symbiosis Institute of Geoinformatics, SIU**

Symbiosis Institute of Geoinformatics (SIG) is the constituent of Symbiosis International Deemed University. SIG was launched in 2004, with a vision to create a trained human resource to meet future industry and society demands of this developing technology and the welfare of the society at large.

In the past ten years, a number of mile stones have been achieved, with a warm-hearted response of the industry and national and international collaborations in areas of national importance. With multiple disciplines, research and development, SIG has the potential to become a Centre of Excellence for Geo-spatial technology and also train manpower, provide technical knowledge and nurture entrepreneurship to assist the younger generation in the application of GIS in national and international projects. Symbiosis Institute of Geoinformatics is the first education institute from India to become a Data analysis node (DAN) member of Sentinel Asia. Visit us on: <https://sig.ac.in/>



*Symbiosis International (Deemed University), Pune, Maharashtra*

## Who can apply?

- Faculty members, scientists, technologists, researchers from academia, national institutions of research, smart city cells, municipal corporations and other government departments are eligible to apply.
- Personnel from non government organizations (NGO)
- School Teachers
- Only 2-3 seats are reserved for research scholars. Only candidates who have a high degree of experience with geospatial technologies should apply for these advanced programs.

No basics will be covered in the Level 2 program. Candidates who have no knowledge of geospatial technologies should apply for the Level 1 program.

## How to apply?

- Interested candidates should fill the online application form through the web link available on <http://dst-iget.in>. Kindly keep a digital copy of your photograph, LinkedIn Id / ORCID Id / Researchgate Id / Google Scholar Id (atleast one is needed) and deputation letter (format available on <http://dst-iget.in> website) handy while filling in the form.
- For any further queries write to [dst-iget@bharativedyapeeth.edu](mailto:dst-iget@bharativedyapeeth.edu) or call on 7559288803
- Address all queries regarding the program **once selected** to the PI, *Prof. (Dr.) T. P. Singh*, [tpsingh@sig.ac.in](mailto:tpsingh@sig.ac.in) , 9890294412

## **Theme of the Level 2 program: Geospatial Technology for monitoring, assessment and prediction of Hydro-Meteorological Disasters**

The frequency and intensity of natural disasters are on the rise globally. To enhance resilience against the growing hazards, exposure, and vulnerability, there is a need to utilize advanced geospatial technologies for improved disaster mitigation and management. The course titled 'Geospatial Technology for monitoring, assessment, and prediction of Hydro-Meteorological Disasters' aims to provide insights into advanced earth observation data and modeling approaches. The primary goal of this course is to raise awareness about the significance of remote sensing data, process-based modeling, and citizen science in evaluating hydro-meteorological hazards like floods, droughts, and landslides.

The training program outcomes include participants gaining a deeper understanding of advanced applications in monitoring and predicting hydro-meteorological disasters. Participants develop practical skills in using geospatial tools and software for data collection, analysis, and visualization related to hydro-meteorological disasters. Participants become more aware of the importance of early warning systems and risk assessment in mitigating the impacts of hydro-meteorological disasters. The training program contributes to building the capacity of individuals and organizations to effectively use geospatial technology for disaster management. Participants have the opportunity to network with experts and peers in the field, facilitating knowledge exchange and collaboration.

The training may lead to the development of new projects or initiatives aimed at improving disaster monitoring, assessment, and prediction using geospatial technology.



## Important Information

**Last date for registration: 30 April 2024**

**Date of intimation of selection: 3 May 2024**

**Date of online orientation: 24 May 2024**

**Dates of the program: 03 to 24 June 2024**

**Mode of conduct:** Offline

**No. of seats:** 25

**Registration Fees:** Nil

**Principal Investigator:** Prof. (Dr.) T. P. Singh, Director, Symbiosis Institute of Geoinformatics, Symbiosis International (Deemed University), Pune, Maharashtra

**Co-Principal Investigator:** Dr. Sandipan Das , Assistant Professor, Symbiosis Institute of Geoinformatics, Symbiosis International (Deemed University), Pune, Maharashtra

**Co-Principal Investigator:** Dr. Rajesh Dhumal, Assistant Professor, Symbiosis Institute of Geoinformatics, Symbiosis International (Deemed University), Pune, Maharashtra

## For any queries contact

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## **Address**

Symbiosis Institute of Geoinformatics, Symbiosis International (Deemed) University, 5th and 6th Floor, Atur Centre, Gokhale Cross Road, Model Colony, Pune – 411016, Maharashtra

## **Certificate**

Certificate of participation will be awarded to each participant only after attending the full course.

## **Travel and Lodging**

Each participant will be reimbursed with 3 AC train fare. Lodging and boarding on a double sharing basis will be provided by the host institution.

## **Infrastructure and Facilities**

### **Laboratory**

SIG has state of the art infrastructure for Remote Sensing, Geographical Information Systems (GIS), Photogrammetry and GNSS. The laboratories are equipped with the latest version of GIS and image processing software. The Institute is equipped with high speed internet connectivity, servers to cater to the requirement of researchers. SIG is working on different national level projects on disaster management, climate change and infrastructure development.

### **Lodging and Boarding**

SIG campus has well-furnished guest house facility to provide accommodation to the guests and delegates visiting SIG



*Class Room*



*GIS & RS Lab*



*Photogrammetry Lab*



*Guest House Room*

**Deputation Letter (Format) for DST Summer/Winter School/ Geoinnovation Program 2024-25 (Prospective participant must submit this on the letterhead of the respective institution where they are working)**

This is to state that Dr./Mr./Ms. \_\_\_\_\_ working at \_\_\_\_\_ ( name of the institute) as \_\_\_\_\_ (Designation), since \_\_\_\_\_ ( year ) is being deputed/nominated to \_\_\_\_\_ (program name in detail) from -----( date, month, year) to----- ( date, month, year) . He/she will be relieved from his/her duties during this period.

**Signature and Seal (Head of the Institute)**

**Program Schedule for 21 Days Summer School in Geospatial Science and Technology (Level 2)**  
**Conducted by Symbiosis Institute of Geoinformatics, Symbiosis International (Deemed University)**  
**Pune, Maharashtra**

**Theme: Geospatial Technology for Monitoring, Assessment, and Prediction of Hydro-Meteorological Disasters**  
**3 - 24 June 2024**

Date and Day	Sessions	Time	Topic
03/06/2024, Monday	Morning Session	10.00-13.00 hrs	Registration INAUGURATION Special. Lecture <i>Speaker: Dr. Prakash Chauhan, NRSC</i>
		13:00 - 14:00 hr	<b>LUNCH BREAK</b>
	Afternoon Session	14.00-17.00 hrs	Special. Lecture <i>Speaker: Dr. Prakash Chauhan, NRSC</i>
04/06/2024, Tuesday	Morning Session	10.00-13.00 hrs	Drought assessment & monitoring Agriculture & impact on socioeconomic development <i>Speaker: Dr. T.P.Singh, SIG</i>
		13:00 - 14:00 hr	<b>LUNCH BREAK</b>
	Afternoon Session	14.00-17.00 hrs	Development of drought monitoring system to understand economic loss. <i>Speaker: Dr. T.P.Singh, SIG</i>
05/06/2024, Wednesday	Morning Session	10.00-13.00 hrs	Response of Climate Change on Fluvial Flooding <i>Speaker: Dr. Dharmveer Singh, SIG</i>
		13:00 - 14:00 hr	<b>LUNCH BREAK</b>

06/06/2024, Thursday	Afternoon Session	14.00-17.00 hrs	Flood modelling using HEC HMS and HEC RAS models <i>Speaker: Dr. Dharmveer Singh, SIG</i>
	Morning Session	10.00-13.00 hrs	Response of Climate Change on Fluvial Flooding <i>Speaker: Dr. Dharmveer Singh, SIG</i>
		13:00 - 14:00 hr	<b>LUNCH BREAK</b>
07/06/2024, Friday	Afternoon Session	14.00-17.00 hrs	Flood modelling using HEC HMS and HEC RAS models <i>Speaker: Dr. Dharmveer Singh, SIG</i>
	Morning Session	10.00-13.00 hrs	Landslides: Causes and Consequences <i>Speaker: Dr Navendu Chaudhary, SIG</i>
		13:00 - 14:00 hr	<b>LUNCH BREAK</b>
08/06/2024, Saturday		14.00-17.00 hrs	Geospatial techniques for landslide susceptibility mapping and assessment <i>Speaker: Dr Navendu Chaudhary, SIG</i>
	Morning Session	10.00-13.00 hrs	GIS and RS techniques for Landslide prediction and assessment <i>Speaker: Dr Navendu Chaudhary, SIG</i>
		13:00 - 14:00 hr	<b>LUNCH BREAK</b>
09/06/2024, Sunday	Afternoon Session	14.00-17.00 hrs	Geospatial techniques for landslide susceptibility mapping and assessment GIS mapping of groundwater development <i>Speaker: Dr Navendu Chaudhary, SIG</i>
			<b>Holiday/Practice session</b>
10/06/2024, Monday	Morning Session	10.00-13.00 hrs	Citizen Science framework for Disaster Management <i>Speaker: Dr. Rajesh Dhumal, SIG</i>
		13:00 - 14:00 hr	<b>LUNCH BREAK</b>

11/06/2024, Tuesday	Afternoon Session	14.00-17.00 hrs	Case studies of Citizen science and Geospatial Technology for Disaster Management <b>Speaker:</b> <i>Dr. Rajesh Dhumal, SIG</i>
	Morning Session	10.00-13.00 hrs	Citizen Science framework for Disaster Management <b>Speaker:</b> <i>Dr. Yogesh Rajput, SIG</i>
		13:00 - 14:00 hr	<b>LUNCH BREAK</b>
12/06/2024, Wednesday	Afternoon Session	14.00-17.00 hrs	Case studies of Citizen science and Geospatial Technology for Disaster Management <b>Speaker:</b> <i>Dr. Yogesh Rajput, SIG</i>
	Morning Session	10.00-13.00 hrs	Remote Sensing and GIS for Flood Hazard mapping <b>Speaker:</b> <i>Dr. Murugesh Prabhu, CDAC</i>
		13:00 - 14:00 hr	<b>LUNCH BREAK</b>
13/06/2024, Thursday	Afternoon Session	14.00-17.00 hrs	Flood Inundation mapping & Damage Assessment <b>Speaker:</b> <i>Dr. Murugesh Prabhu, CDAC</i>
	Morning Session	10.00-13.00 hrs	Remote Sensing and GIS for Flood Hazard mapping <b>Speaker:</b> <i>Dr. Sandipan Das, SIG</i>
		13:00 - 14:00 hr	<b>LUNCH BREAK</b>
14/06/2024, Friday	Afternoon Session	14.00-17.00 hrs	Flood Inundation mapping & Damage Assessment <b>Speaker:</b> <i>Dr. Sandipan Das, SIG</i>
	Morning Session	10.00-13.00 hrs	Introduction to climate change and extreme events Implications of global climate change on water resources <b>Speaker:</b> <i>Dr. Dharmveer Singh, SIG</i>
		13:00 - 14:00 hr	<b>LUNCH BREAK</b>
	Afternoon Session	14.00-17.00 hrs	Quality check & Preparation of data for hydrological studies <b>Speaker:</b> <i>Dr. Dharmveer Singh, SIG</i>

<b>15/06/2024, Saturday</b>	<b>Morning Session</b>	10.00-13.00 hrs	Disaster risk reduction & SENDAI framework <i>Speaker: Dr. Shirish Ravan, Ex- UN-SPIDER</i>
		13:00 - 14:00 hr	<b>LUNCH BREAK</b>
		14.00-17.00 hrs	Geospatial & Disaster Management Program <i>Speaker: Dr. P.K.Joshi, JNU</i>
<b>16/06/2024, Sunday</b>			<b>Holiday</b>
<b>17/06/2024, Monday</b>	<b>Morning Session</b>	10.00-13.00 hrs	Drone Training
		13:00 - 14:00 hr	<b>LUNCH BREAK</b>
	<b>Afternoon Session</b>	14.00-17.00 hrs	Drone Training
<b>18/06/2024, Tuesday</b>	<b>Morning Session</b>	10.00-13.00 hrs	Mini Project Work
		13:00 - 14:00 hr	<b>LUNCH BREAK</b>
	<b>Afternoon Session</b>	14.00-17.00 hrs	Mini Project Work
<b>19/06/2024, Wednesday</b>	<b>Morning Session</b>	10.00-13.00 hrs	Mini Project Work
		13:00 - 14:00 hr	<b>LUNCH BREAK</b>
	<b>Afternoon Session</b>	14.00-17.00 hrs	Mini Project Work
<b>20/06/2024, Thursday</b>	<b>Morning Session</b>	10.00-13.00 hrs	Mini Project Work
		13:00 - 14:00 hr	<b>LUNCH BREAK</b>
	<b>Afternoon Session</b>	14.00-17.00 hrs	Mini Project Work



<b>21/06/2024, Friday</b>	<b>Morning Session</b>	10.00-13.00 hrs	Mini Project Work
		13:00 - 14:00 hr	<b>LUNCH BREAK</b>
	<b>Afternoon Session</b>	14.00-17.00 hrs	Mini Project Work
<b>22/06/2024, Saturday</b>	<b>Morning Session</b>	10.00-13.00 hrs	Mini Project Work
		13:00 - 14:00 hr	<b>LUNCH BREAK</b>
	<b>Afternoon Session</b>	14.00-17.00 hrs	Mini Project Work
<b>23/06/2024, Sunday</b>			<b>Holiday</b>
<b>24/06/2024, Monday</b>	<b>Morning Session</b>	10.00-13.00 hrs	Presentation and submission of mini project Feedback
		13:00 - 14:00 hr	<b>LUNCH BREAK</b>
	<b>Afternoon Session</b>	14.00-17.00 hrs	Valedictory Function