

Summer School In Geospatial Science & Technology (Level 2)

**Theme: Geospatial Solutions for the Sustainable Development Goals
with a Focus on Efficient Management of
Water Resources and Environmental Protection**

14 June to 04 July 2024



Organized by
Indian Institute of Technology
(Indian School of Mines),
Dhanbad, Jharkhand, India



Department of Science & Technology
Government of India

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



Principal Investigator

Prof. Srinivas Pasupuleti, Associate Professor, Department of Civil Engineering & Coordinator, WST of Centre for Water Resource Management
Indian Institute of Technology (Indian School of Mines),
Dhanbad, Jharkhand

Co-Principal Investigator

Prof. Sukha Ranjan Samadder, Professor, Associate Dean (Research & Development),
Head of Centre for Water Resource Management,
Department of Environmental Science and Engineering,
Indian Institute of Technology (Indian School of Mines), Dhanbad, Jharkhand

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 Geoinnovation 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 Indian Institute of Technology (Indian School of Mines), Dhanbad, Jharkhand is one of the selected institutions for conducting the Level 2 Program.

Indian Institute of Technology (Indian School of Mines), Dhanbad, Jharkhand

Established in 1926, as Indian School of Mines, an Engineering college with emphasis to train young professionals in the field of Mining and allied disciplines in line with the Royal School of Mining, under Imperial College London, the institute has catered to the needs of the coal and mineral mining industry by providing well trained professionals who have shepherded some of the Navarathna companies in the field. Since then the institute has produced many Pioneering Engineers and professionals who have excelled in various arenas in their profession. It was officially converted to Indian Institute of Technology, Dhanbad on 6th September 2016 by a Gazette notification after the nod of the Parliament. Now officially known as Indian Institute of Technology (Indian School of Mines), Dhanbad has 18 full-fledged departments offering undergraduate, postgraduate and doctoral level courses in various branches of Engineering, Pure and Applied Sciences, Management and Humanities & Social Sciences. It has built research collaborations with various Universities and Technical Institutions across the globe and thus contributed to the development of cutting-edge technologies in relevant areas.

Department of Civil Engineering

Department of Civil Engineering started its first batch of 4-year B.Tech course in Civil Engineering from July 2013. The Department is currently offering 4-year B.Tech program in Civil Engineering, M.Tech Program in Civil Engineering as well as Ph.D program. The fundamental objective of the Department is to provide state-of-the-art teaching and research facilities for the students to inculcate innovative and new ideas and contribute significantly in the field of construction and infrastructure development.

The principal long-range goal of the Department is to establish itself as A Centre of Excellence in Civil Engineering with special reference to Water Resources Engineering, Geotechnical Engineering, Structural Engineering and Transportation Engineering.

Dept. of Environmental Science and Engineering

The Department of Environmental Science and Engineering was created out of existing Centre of Mining Environment (established in 1987) at Institute in 2007 with the commencement of a regular B.Tech. Degree in Environmental Engineering under IIT-JEE (first of its kind offered by any national institute). The Department also offers M.Tech. and Ph.D. program in Environmental Science and Engineering. The graduates are well accepted by Industries and research organizations. This department is also accredited with ISO 9001 and OHSAS 18001 Certificate.

Centre for Water Resource Management (CWRM)

The main objective of the "Centre for Water Resource Management" (CWRM) at IIT (ISM) Dhanbad is the conservation and restoration of both surface water and groundwater resources in terms of quantity and quality through research and planning initiatives. This Centre is comprised of a team of scientists from various disciplines at IIT (ISM) Dhanbad such as geology, geophysics, civil engineering, mining and mineralogy, and environmental engineering to conduct research and development in specific areas of water resources management. The centre aims to serve as a Centre of Excellence for enhancing knowledge and capabilities in water resource management.



IIT (ISM), Dhanbad, Jharkhand



Academic Complex of IIT (ISM), Dhanbad, Jharkhand

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@bharatividyaapeeth.edu or call on 7559288803
- Address all queries regarding the program **once selected** to the PI, *Prof. Srinivas Pasupuleti*, srinivas@iitism.ac.in , +91-7377725777

Theme of the Level 2 program: Geospatial solutions for the sustainable development goals with a focus on efficient management of Water Resources and Environmental protection

Geospatial solutions for the sustainable development goals with a focus on efficient management of Water Resources and Environmental Protection.

The training program will aid the participants in understanding the applications of Geospatial Technologies in tackling the challenges related to water resource management and environmental protection as per the directives and principles of sustainable development goals. The program will specifically address five SDG sub-themes which includes (i) Clean Water & Sanitation, (ii) Sustainable Cities & Communities, (iii) Industry, Innovation & Infrastructure, (iv) Climate Action and (v) Life on Land, in which the potential role of integrated Geospatial Technologies and artificial intelligence through suitable real-world applications will be demonstrated.

This 21 days program will provide deep exposure to the participants in the advanced concepts related to remote sensing / GIS, climate change and soft computing applications in the field of geospatial techniques. The focus will be to equip the participants to solve complex environmental, agricultural, water resource management and climate change problems through their learning in the program. The classroom practical sessions are devoted towards making participants learn the cutting edge GIS software and other open source geospatial tools which is currently being used by industries, Government organizations, NGOs and other academic institutes.

Important Information

Last date for registration: 30 May 2024

Date of intimation of selection: 05 June 2024

Date of online orientation: 06 June 2024

Dates of the program: **14 June to 04 July 2024**

Mode of conduct: Offline

No. of seats: 25

Registration Fees: Nil

Principal Investigator: Prof. Srinivas Pasupuleti, Associate Professor, Department of Civil Engineering & Coordinator, WST of Centre for Water Resource Management, Indian Institute of Technology (Indian School of Mines), Dhanbad, Jharkhand **Email:** srinivas@iitism.ac.in |

Phone: +917377725777

Co-Principal Investigator

Prof. Sukha Ranjan Samadder, Associate Dean (Research & Development), Head of Centre for Water Resource Management, Professor, Department of Environmental Science and Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, Jharkhand

Email: samadder@iitism.ac.in | **Phone:** +91- 9471191823

For any queries contact

Prof. Srinivas Pasupuleti (PI), srinivas@iitism.ac.in | +91- 7377725777

Address

Indian Institute of Technology (Indian School of Mines), Govindpur Road, Dhanbad, Jharkhand
826004

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

The departments has a well-equipped computer laboratory with 40 computers, 2 handheld GPS, 1 total station, audiovisual equipment, and lecture halls.

Lodging and Boarding

The Institute has a guest house with AC/non-AC rooms and a 24x7 Wi-Fi facility across the campus. The number of the rooms are sufficient to accommodate 30 participants and resource persons at a time.



Smart Class Room



Smart Lab



Guest House Room



Guest House Suite

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 Indian Institute of Technology (Indian School of Mines), Dhanbad, Jharkhand

Theme: Geospatial Solutions for Sustainable Development Goals with a Focus on Efficient Management of Water Resources and Environmental Protection

14 June to 04 July 2024

Day and Date	Session	Time	Topic	
Day 1 14/06/2024	Morning Session	10:00 – 11:00 A.M	Inaugural Function	
		11:00 – 11:30 A.M.	Tea Break	
		11:30 A.M-12:30 P.M	<i>Online Registration</i>	
		12:30-3:00 P.M	LUNCH BREAK	
	Afternoon Session	3:00 – 4:00 P.M	Session: Techniques of spatial data collection in the field SDG Theme: Sustainable Cities & Communities Type: Lecture Resource Person: Prof. Dheeraj Kumar, IIT ISM Dhanbad	
		4:00 – 04:30 P.M	Tea Break	
4:30 – 5:30 P.M.		Session: Techniques of spatial data collection in the field (Continued from the last session)		
Day 2 15/06/2024	Morning Session	10:00 – 11:00 A.M	Session: Framework for protection of groundwater & surface water using Geospatial Technologies SDG Theme: Clean Water & Sanitation Type: Lecture Resource Person: Prof. S.R. Samadder, IIT ISM Dhanbad	
		11:00 – 11:30 A.M.	Tea Break	
		11:30 A.M-12:30 P.M	Session: Applications of GIS and Remote sensing in water resource planning and management SDG Theme: Clean Water & Sanitation Type: Lecture Resource Person: Prof. Srinivas Pasupuleti, IIT ISM Dhanbad	
		12:30-3:00 P.M	LUNCH BREAK	
	Afternoon Session	3:00 – 4:00 P.M	Session: Hands-on exercise in GIS & Remote Sensing Software to be used: QGIS and Google Earth Engine Type: Hands-On Resource Person: Prof. S.R. Samadder, IIT ISM Dhanbad	
		4:00 – 04:30 P.M	Tea Break	

		4:30 – 5:30 P.M.	Session: Remote Sensing, GIS & DEM for Flood Modelling SDG Theme: Clean Water & Sanitation Type: Lecture Resource Person: Prof. Nagesh Kumar, IISc Bengaluru
Day 3 16/06/2024	Morning Session	10:00 – 11:00 A.M	Session: Principles of digital elevation model for watershed delineation SDG Theme: Clean Water & Sanitation Type: Lecture Resource Person: Prof. Nagesh Kumar, IISc Bengaluru
		11:00 – 11:30 A.M.	Tea Break
		11:30 A.M-12:30 P.M	Session: AI/ML based water resource management for efficient irrigation in agriculture SDG Theme: Life on Land Type: Lecture Resource Person: Prof. D. Ramesh, IIT ISM Dhanbad
		12:30-3:00 P.M	LUNCH BREAK
	Afternoon Session	3:00 – 4:00 P.M	Session: Hands-on exercise in Image Classification - I Software to be used: QGIS and Google Earth Engine Type: Hands-On Resource Person: Prof. Srinivas Pasupuleti, IIT ISM Dhanbad
		4:00 – 04:30 P.M	Tea Break
4:30 – 5:30 P.M.		Session: Hands-on exercise in Image Classification - I (Continued from the last session)	
Day 4 17/06/2024	Morning Session	10:00 – 11:00 A.M	Session: Geospatial datasets and tools for watershed modelling management. SDG Theme: Clean Water and Sanitation Type: Lecture Resource Person: Prof. K. Venkata Reddy, NIT Warangal
		11:00 – 11:30 A.M.	Tea Break
		11:30 A.M-12:30 P.M	Session: Geospatial analysis with programming environment Software to be used: QGIS and Google Earth Engine Type: Hands-On Resource Person: Prof. K. Venkata Reddy, NIT Warangal
		12:30-3:00 P.M	LUNCH BREAK
	Afternoon Session	3:00 – 4:00 P.M	Session: Hands-on exercise in Image Classification - II Software to be used: QGIS and Google Earth Engine Type: Hands-On Resource Person: Prof. Srinivas Pasupuleti, IIT ISM Dhanbad
		4:00 – 04:30 P.M	Tea Break
		4:30 – 5:30 P.M.	Session: Hands-on exercise in Image Classification - II (Continued from the last session)
	Morning Session	10:00 – 11:00 A.M	Session: Advanced techniques of surveying and cartography and its applications in urban planning

Day 5 18/06/2024		SDG Theme: Sustainable Cities & Communities Type: Lecture Resource Person: Prof. V.G.K Villuri, IIT ISM Dhanbad
		11:00 – 11:30 A.M. Tea Break
		11:30 A.M-12:30 P.M Session: Unlocking the potential of AI and IOT integration SDG Theme: Industry, Innovation and Infrastructure Type: Lecture Resource Person: Prof. Tarachand. A., IIT ISM Dhanbad
		12:30-3:00 P.M LUNCH BREAK
	Afternoon Session	3:00 – 4:00 P.M Session: Hands-on exercise in Image Classification - III Software to be used: QGIS and Google Earth Engine Type: Hands-On Resource Person: Prof. Srinivas Pasupuleti, IIT ISM Dhanbad
		4:00 – 04:30 P.M Tea Break 4:30 – 5:30 P.M. Session: Hands-on exercise in Image Classification – III (Continued from the last session)
Day 6 19/06/2024	Morning Session	10:00 – 11:00 A.M Session: Overview on AI and soft computing techniques SDG Theme: Industry, Innovation and Infrastructure Type: Lecture Resource Person: Prof. A.C.S. Rao, IIT ISM Dhanbad
		11:00 – 11:30 A.M. Tea Break
		11:30 A.M-12:30 P.M Session: Harnessing Geospatial Technology for Traffic emission reduction SDG Theme: Sustainable Cities & Communities Type: Lecture Resource Person: Prof. Leeza Malik, IIT ISM Dhanbad
		12:30-3:00 P.M LUNCH BREAK
	Afternoon Session	3:00 – 4:00 P.M Session: Hands-on exercise in Image Classification - IV Software to be used: QGIS and Google Earth Engine Type: Hands-On Resource Person: Prof. S.R. Samadder, IIT ISM Dhanbad
		4:00 – 04:30 P.M Tea Break 4:30 – 5:30 P.M. Session: Hands-on exercise in Image Classification – IV (Continued from the last session)
Day 7 20/06/2024	Morning Session	10:00 – 11:00 A.M Session: Application of soft computing techniques for disaster mitigation SDG Theme: Sustainable Cities & Communities Type: Lecture Resource Person: Prof. Biswajit Pradhan, UTS Australia
		11:00 – 11:30 A.M. Tea Break
		11:30 A.M-12:30 P.M Session: Hyperspectral Remote sensing and its application in the field of mineral exploration SDG Theme: Industry, Innovation and Infrastructure Type: Lecture Resource Person: A.S. Venkatesh, IIT ISM Dhanbad

		12:30-3:00 P.M	LUNCH BREAK
	Afternoon Session	3:00 – 4:00 P.M	Session: Advanced applications of Google Earth Engine - I Software to be used: QGIS and Google Earth Engine Type: Hands-On Resource Person: Prof. Srinivas Pasupuleti, IIT ISM Dhanbad
		4:00 – 04:30 P.M	Tea Break
		4:30 – 5:30 P.M.	Session: Advanced applications of Google Earth Engine – I (Continued from the last session)
Day 8 21/06/2024	Morning Session	10:00 – 11:00 A.M	Session: An overview of 2D/3D geophysical modelling approaches SDG Theme: Sustainable Cities & Communities Type: Lecture Resource Person: Prof. Giri Y., IIT ISM Dhanbad
		11:00 – 11:30 A.M.	Tea Break
		11:30 A.M-12:30 P.M	Session: Synergistic application of Geospatial and hybrid techniques for sustainable mitigation of ground water contamination. SDG Theme: Clean Water & Sanitation Type: Lecture Resource Person: Prof. D.K. Sandilya, IIT ISM Dhanbad
		12:30-3:00 P.M	LUNCH BREAK
	Afternoon Session	3:00 – 4:00 P.M	Session: Advanced applications of Google Earth Engine - II Software to be used: QGIS and Google Earth Engine Type: Hands-On Resource Person: Prof. S.R. Samadder, IIT ISM Dhanbad
		4:00 – 04:30 P.M	Tea Break
4:30 – 5:30 P.M.		Session: Advanced applications of Google Earth Engine – II (Continued from the last session)	
Day 9 22/06/2024	Morning Session	10:00 – 11:00 A.M	Session: Collection and processing of DRONE datasets. SDG Theme: Sustainable Cities & Communities Type: Lecture Resource Person: Prof. Radhakanta Koner, IIT ISM Dhanbad
		11:00 – 11:30 A.M.	Tea Break
		11:30 A.M-12:30 P.M	Session: Geospatial aspects of hydrological modelling application in WRE SDG Theme: Clean Water & Sanitation Type: Lecture Resource Person: Prof. Ajai Singh, Central University of Jharkhand
		12:30-3:00 P.M	LUNCH BREAK
	Afternoon Session	3:00 – 4:00 P.M	Session: Advanced applications of Google Earth Engine - III Software to be used: QGIS and Google Earth Engine Type: Hands-On Resource Person: Prof. S.R. Samadder, IIT ISM Dhanbad
		4:00 – 04:30 P.M	Tea Break
4:30 – 5:30 P.M.		Session: Advanced applications of Google Earth Engine – III (Continued from the last session)	

Day 10 23/06/2024	Morning Session	10:00 – 11:00 A.M	Session: Risk Assessment framework in mining regions of India SDG Theme: Clean Water & Sanitation Type: Lecture Resource Person: Prof. M.K. Jain, IIT ISM Dhanbad	
		11:00 – 11:30 A.M.	Tea Break	
		11:30 A.M-12:30 P.M	Session: From Pixel to Progress: Geospatial Innovations for sustainable management of river basins. SDG Theme: Clean Water & Sanitation Type: Lecture Resource Person: Prof. C.M. Rao, NIT Jamshedpur	
		12:30-3:00 P.M	LUNCH BREAK	
	Afternoon Session	3:00 – 4:00 P.M	Session: Advanced applications of Google Earth Engine - IV Software to be used: QGIS and Google Earth Engine Type: Hands-On Resource Person: Prof. S.R. Samadder, IIT ISM Dhanbad	
		4:00 – 04:30 P.M	Tea Break	
4:30 – 5:30 P.M.		Session: Advanced applications of Google Earth Engine – IV (Continued from the last session)		
Day 11 24/06/2024	Morning Session	10:00 – 11:00 A.M	Session: Methods and techniques of mapping Groundwater potential & pollution zones by hybrid techniques SDG Theme: Clean Water & Sanitation Type: Lecture Resource Person: Prof. Srinivas Pasupuleti, IIT ISM Dhanbad	
		11:00 – 11:30 A.M.	Tea Break	
		11:30 A.M-12:30 P.M	Session: Geospatial application in Geotechnical engineering problems SDG Theme: Sustainable Cities & Communities Type: Lecture Resource Person: Prof. S. Chawla, IIT ISM Dhanbad	
		12:30-3:00 P.M	LUNCH BREAK	
	Afternoon Session	3:00 – 4:00 P.M	Session: Driving efficiency and innovation: Case studies for AI and IOT integration SDG Theme: Industry, Innovation and Infrastructure Type: Lecture Resource Person: Prof. Tarachand. A, IIT ISM Dhanbad	
		4:00 – 04:30 P.M	Tea Break	
4:30 – 5:30 P.M.		Session: Advanced applications of Google Earth Engine - III Software to be used: QGIS and Google Earth Engine Type: Hands-On Resource Person: Prof. Srinivas Pasupuleti, IIT ISM Dhanbad		

Day 12 25/06/2024	Morning Session	10:00 – 11:00 A.M	Session: Applications of GIS & Remote Sensing for vulnerability assessment of mining regions SDG Theme: Clean Water & Sanitation Type: Lecture Resource Person: Prof. Alok Sinha, IIT ISM Dhanbad
		11:00 – 11:30 A.M.	Tea Break
		11:30 A.M-12:30 P.M	Session: Axial contaminant transport modelling in aquifer using hybrid techniques SDG Theme: Clean Water & Sanitation Type: Lecture Resource Person: M.K. Singh, IIT ISM Dhanbad
		12:30-3:00 P.M	LUNCH BREAK
	Afternoon Session	3:00 – 4:00 P.M	Session: Applications of multi-criteria decision techniques in GIS & RS Software to be used: QGIS and Google Earth Engine Type: Hands-On Resource Person: Prof. Srinivas Pasupuleti, IIT ISM Dhanbad
4:00 – 04:30 P.M		Tea Break	
4:30 – 5:30 P.M.		Session: Applications of multi-criteria decision techniques in GIS & RS (Continued from the last session)	
Day 13 26/06/2024	Morning Session	10:00 – 11:00 A.M	Session: Overview on AI and soft computing techniques -II SDG Theme: Industry, Innovation and Infrastructure Type: Lecture Resource Person: Prof. A.C.S. Rao, IIT ISM Dhanbad
		11:00 – 11:30 A.M.	Tea Break
		11:30 A.M-12:30 P.M	Session: Sand Mining: Challenges in river sediment management and scope of geospatial techniques. SDG Theme: Climate Action Type: Lecture Resource Person: Prof. Bandita Barman, IIT ISM Dhanbad
		12:30-3:00 P.M	LUNCH BREAK
	Afternoon Session	3:00 – 4:00 P.M	Session: Applications of multi-criteria decision techniques in GIS & RS Software to be used: QGIS and Google Earth Engine Type: Hands-On Resource Person: Prof. Srinivas Pasupuleti, IIT ISM Dhanbad
4:00 – 04:30 P.M		Tea Break	
4:30 – 5:30 P.M.		Session: Applications of multi-criteria decision techniques in GIS & RS (Continued from the last session)	
Day 14 27/06/2024	Morning Session	10:00 – 11:00 A.M	Session: The role of terrestrial water storage in the global hydrological cycle: The GRACE mission SDG Theme: Climate Action Type: Lecture Resource Person: Prof. Kironmala Chanda, IIT ISM Dhanbad

		11:00 – 11:30 A.M.	Tea Break
		11:30 A.M-12:30 P.M	Session: Seismic hazard analysis of Dhanbad city using Remote Sensing and GIS SDG Theme: Sustainable Cities & Communities Type: Lecture Resource Person: Prof. Rajib Sarkar, IIT ISM Dhanbad
		12:30-3:00 P.M	LUNCH BREAK
	Afternoon Session	3:00 – 4:00 P.M	Session: Optimal Irrigation Planning using RS and GIS techniques SDG Theme: Life on Land Type: Lecture Resource Person: Dr. Purushottam Agrawal, WRD Raipur
		4:00 – 04:30 P.M	Tea Break
Day 15 28/06/2024	Morning Session	10:00 – 11:00 A.M	Session: Geospatial Technology for Water Quality. SDG Theme: Clean Water & Sanitation Type: Lecture Resource Person: Prof. R.K. Setia, PRSC
		11:00 – 11:30 A.M.	Tea Break
		11:30 A.M-12:30 P.M	Session: Applications of Geospatial technique in estimating hydrological events SDG Theme: Climate Action Type: Lecture Resource Person: Prof. Shushobhit Chaudhary, IIT ISM Dhanbad
		12:30-3:00 P.M	LUNCH BREAK
	Afternoon Session	3:00 – 4:00 P.M	Session: Applications of Hyperspectral remote sensing in the field of water resource management SDG Theme: Clean Water & Sanitation Type: Lecture Resource Person: Prof. N. Rama Rao, IIST Thiruvananthapuram
		4:00 – 04:30 P.M	Tea Break
		4:30 – 5:30 P.M.	Session: Hydrological models for efficient management of watersheds. SDG Theme: Clean Water & Sanitation Type: Lecture Resource Person: Prof. Ashish Pandey, IIT Roorkee
Day 16 29/06/2024	Morning Session	10:00 – 11:00 A.M	Session: Applications of machine learning in Hydrology SDG Theme: Clean Water & Sanitation Type: Lecture Resource Person: Dr. A.K. Lohani, NIH Roorkee

		11:00 – 11:30 A.M.	Tea Break
		11:30 A.M-12:30 P.M	Session: Assessment of Glacial Lake outburst using Geospatial technique SDG Theme: Sustainable Cities & Communities Type: Lecture Resource Person: Dr. P.K. Thakur, IIRS Dehradun
		12:30-3:00 P.M	LUNCH BREAK
	Afternoon Session	3:00 – 4:00 P.M	Applications of Geospatial Technologies in tackling water quality and quantity issues SDG Theme: Clean Water & Sanitation Type: Lecture Resource Person: Prof. A.K. Keshari, IIT Delhi
		4:00 – 04:30 P.M	Tea Break
		4:30 – 5:30 P.M.	Applications of Geospatial techniques in the management of large river system SDG Theme: Clean Water & Sanitation Type: Lecture Resource Person: Prof. Arup K. Sarma, IIT Guwahati
Day 17 30/06/2024	Morning Session	10:00A.M – 12:30 P.M	Mini Project
		12:30-3:00 P.M	LUNCH BREAK
	Afternoon Session	3:00 – 5:30 P.M.	Mini Project
Day 18 1/07/2024	Morning Session	10:00A.M – 12:30 P.M	Mini Project
		12:30-3:00 P.M	LUNCH BREAK
	Afternoon Session	3:00 – 5:30 P.M	Mini Project
Day 19 2/07/2024	Morning Session	10:00A.M – 12:30 P.M	Mini Project
		12:30-3:00 P.M	LUNCH BREAK
	Afternoon Session	3:00 – 5:30 P.M	Mini Project
Day 20 3/07/2024	Morning Session	10:00A.M – 12:30 P.M	Examination
		12:30-3:00 P.M	LUNCH BREAK
	Afternoon Session	3:00 – 5:30 P.M	<i>Feedback</i>
Day 21	Morning Session	10:00 – 12:30 P.M	Project Evaluation
		12:30-3:00 P.M	LUNCH BREAK

4/07/2024	Afternoon Session	3:00 – 5:30 P.M	Valedictory Function
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