

Summer School in Geospatial, Science And Technology (Level 1: Standard Program)

27th May to 16th June 2024



Organized by

Department of Civil Engineering,
VNR Vignana Jyothi Institute of
Engineering and Technology,
Hyderabad, Telangana, India



सत्यमेव जयते
Department of Science & Technology
Govt. of India

Supported by

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



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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 programs is to build knowledge and various levels of governance in collaboration with academia and user agencies and foster innovation.

Level 1 Summer / Winter School In Geospatial Science and Technology

The 21-day summer/winter school in Geospatial Science and Technology (Level 1) 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 open source geospatial software. It uses a standardized curriculum focusing on basics of GIS, remote sensing, digital image processing and includes hands on lab sessions, field work and a mini project.

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 VNR Vignana Jyothi Institute of Engineering and Technology, Hyderabad, Telangana is one of the selected institutions for conducting the Level 1 Program.

VNR Vignana Jyothi Institute of Engineering and Technology, Hyderabad, Telangana

“Vallurupalli Nageswara Rao Vignana Jyothi Institute of Engineering and Technology (VNR VJIET)” sponsored by 'Vignana Jyothi', an educational Society founded by a group of industrialists, businessmen and professionals for promoting professional education, started functioning from the academic year 1995-96 with the approval of AICTE and Govt. of A.P. The institute is running with a missionary zeal to develop as 'Centre of Excellence' and to train human resources to international standards in the areas of Engineering & Technology. All the courses offered by the institute are accredited by NBA. UGC Autonomous status was conferred on VNRVJIET.

The Institute is accredited with “A++” grade by NAAC. Being one of the most preferred colleges in Telangana State, VNR VJIET is well known for its discipline, infrastructure, research activities etc. The institute is located near Pragathi Nagar village, in Nizampet Municipal Corporation, Medchal-Malkajgiri district, about 22 km from Secunderabad Railway Station and 40 km from Airport, about 6 km from JNTU, Hyderabad.

Department of Civil Engineering

The Department of Civil Engineering was started in the year 2001. The department also offers PG programs in Structural Engineering, Highway Engineering and Geo-technical Engineering with an intake of 18 each. UG program in Civil Engineering is accredited by NBA for 6 years, consecutively second time in December 2022. The department has all infrastructural facilities required for imparting high quality education and is structured to meet the present day needs of the society. The department is equipped with excellent laboratories with state-of-art equipments and experimental facilities.

The department has well qualified and experienced faculty (19 Ph.D.'s in various specializations of Civil Engineering) with an average teaching experience of 9 years. The faculty of department published 270 papers in various International / National Journals and Conferences in the last 5 years. Department has MoU's with Industry and also undertake consultancy to promote Industry Institute Interaction. The Department is offering consultancy services to GHMC and more than 30 private agencies every year and generated Rs. 150 Lakhs in last 7 years. The research grant of Rs. 76.1 Lakhs has been received under different research schemes namely SERB, CRG, ISRO, TEQUIP-II, DST, RPS etc and FDPs also sponsored by RPS, AICTE & UGC. The Department is actively involved in organizing seminars/Conferences/Workshops for Professional interaction to keep abreast with the latest developments in the field of Civil Engineering.



VNR Vignana Jyothi Institute of Engineering and Technology, Hyderabad, Telangana

Who can apply?

- Faculty of colleges and universities, state and central government officials,
- Personnel from research institutions
- School teachers
- Research Scholars* (max 3 persons),
- NGOs registered with the DARPAN portal* (max 3 persons).

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.
- Selected candidates will be informed by mail.
- For any further queries after application write to dst.iget@bharativedyapeeth.edu or call on +91- 7559288803
- Address all queries regarding the program **once selected** to the PI, *Dr. K. Ravikumar at ravikumar_k@vnrvjiet.in. 96005 78984*

Important Information

Last date for application: 15th May 2024

Date of intimation of selection: 18 May 2024

Dates of the program: 27th May to 16th June 2024

Mode of conduct: Offline

No. of seats: 25

Registration Fees: Nil

Principal Investigator: Dr. K. Ravikumar, Associate Professor, Department of Civil Engineering, VNR Vignana Jyothi Institute of Engineering and Technology, Hyderabad, Telangana

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For any queries contact

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Address

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Grading and Certification

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 Facilities

Laboratory

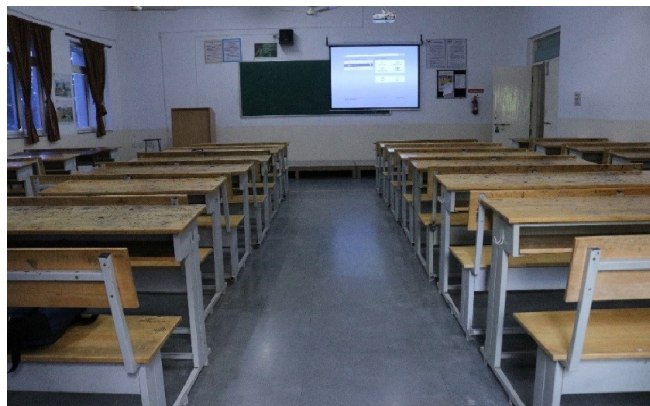
The department is well equipped with excellent lab facilities in the areas of Remote Sensing, Geographical Information System, Structural Engineering, Transportation Engineering, Environmental Engineering, Geo-technical Engineering and Water Resources Engineering. All classrooms are equipped with projector, audio-visual facilities.

Lodging and Boarding

The institution has well-equipped guest house facilities. Rooms will be made available to the participants on a double sharing basis.



Remote Sensing and GIS Lab



Class



Auditorium



Guest House

Deputation Letter (Format) for DST Summer/Winter School/ Geoinnovation Program 2024-25 (Prospective participant must submit this on the letter-head 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 DST Summer School in Geospatial Capacity Building Program (Level 1: Standard Program)

Conducted by: VNR Vignana Jyothi Institute of Engineering and Technology, Hyderabad, Telangana

27th May to 16th June 2024

| Day and Date | Day | Morning Session (3 hours): Theory | Lunch | Lab Session (3 hours)/ Field |
|----------------------------|-----------|---|--------------|--|
| Day 1 27-05-2024 | Monday | Keynote address and introduction of the programme. | Lunch | Ex.: Acquiring data (capture) <i>Dr. K. Ravikumar & Mr. K. Veerendra Gopi</i> |
| | | Introduction to Remote sensing and GIS <i>Dr. K. Ravikumar, Assoc Prof, CE, VNR VJIET</i> | | Ex.2: Application RS and GIS- Displaying video, interaction with participants <i>Dr. K. Ravikumar & Mr. K. Veerendra Gopi</i> |
| Day 2 28-05-2024 | Tuesday | Understanding scales <i>Mr. K. Veerendra Gopi, Asst Prof, CE, VNR VJIET</i> | Lunch | Ex.: Overview of QGIS <i>Dr. K. Ravikumar & Mr. K. Veerendra Gopi</i> |
| | | Projections <i>Mr. K. Veerendra Gopi, Asst Prof, CE, VNR VJIET</i> | | Ex.: Working with projections using QGIS <i>Dr. K. Ravikumar & Mr. K. Veerendra Gopi</i> |
| Day 3 29-05-2024 | Wednesday | Understanding data quality <i>Dr. K. Ravikumar, Assoc Prof, CE, VNR VJIET</i> | Lunch | Ex: Georeferencing <i>Dr. K. Ravikumar & Mr. K. Veerendra Gopi</i> |
| | | Extracting data - Geo referencing and extraction of data <i>Dr. K. Ravikumar, Assoc Prof, CE, VNR VJIET</i> | | Ex: Extracting data <i>Dr. K. Ravikumar & Mr. K. Veerendra Gopi</i> |
| Day 4 30-05-2024 | Thursday | Understanding map making <i>Dr. K. Sai Sahitya, Asst Prof, CE, VNR VJIET</i> | Lunch | Ex: Map preparation <i>Dr. K. Sai Sahitya & Dr. Seenu P Z</i> |
| | | Group exercise on quality analysis of maps with reasons. <i>Dr. K. Sai Sahitya, Asst Prof, CE, VNR VJIET</i> | | Continue with the above ex. <i>Dr. K. Sai Sahitya & Dr. Seenu P Z</i> |

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|-----------------------------------|----------|--|--------------|--|
| Day 5 31-05-2024 | Friday | Mini Project discussion <i>Dr. K. Ravikumar, Assoc Prof, CE, VNR VJIET</i> | Lunch | Planning of mini project <i>Dr. K. Sai Sahitya & Dr. Seenu P Z</i> |
| | | Data collection <i>Dr. Seenu P Z, Asst Prof, CE, VNR VJIET</i> | | Ex. Downloading data. <i>Dr. K. Sai Sahitya & Dr. Seenu P Z</i> |
| Day 6 1-06-2024 | Saturday | Understanding attribute data <i>Dr. Seenu P Z, Asst Prof, CE, VNR VJIET</i> | Lunch | Ex: Data exploration <i>Dr. K. Sai Sahitya & Dr. Seenu P Z</i> |
| | | Database management systems <i>Mr. K. Veerendra Gopi, Asst Prof, CE, VNR VJIET</i> | | Ex. Working with tables. <i>Dr. K. Sai Sahitya & Dr. Seenu P Z</i> |
| Day 7 2-06-2024 | Sunday | Introduction to GPS Field visit for data collection through GPS & DGPS <i>Dr. A. Ramesh, Prof, CE, VNR VJIET & Dr. T. Naga Teja, Asst. Prof, CE, VNR VJIET</i> | Lunch | Field visit for data collection through GPS & DGPS \ GPS data transfer and analysis <i>Dr. A. Ramesh, Prof, CE, VNR VJIET & Dr. T. Naga Teja, Asst. Prof, CE, VNR VJIET</i> |
| Day 8 3-06-2024 | Monday | Database creation/development <i>Dr. K. Ravikumar, Assoc Prof, CE, VNR VJIET</i> | Lunch | Ex: Working with queries <i>Dr. K. Sai Sahitya</i> |
| | | Visualizing data through queries-contd.. <i>Dr. K. Sai Sahitya, Asst Prof, CE, VNR VJIET</i> | | Ex: Working with queries <i>Dr. K. Sai Sahitya & Dr. Seenu P Z</i> |
| Day 9 4-06-2024 | Tuesday | Types of remote sensing <i>Mr. PVSG Raghunadh, Asst Prof, CE, VNR VJIET</i> | Lunch | Ex. Intro to SAGA <i>Dr. K. Sai Sahitya & Dr. Seenu P Z</i> |
| | | Applications of remote sensing <i>Dr. K. Sai Sahitya, Asst Prof, CE, VNR VJIET</i> <i>Dr. Seenu P Z, Asst Prof, CE, VNR VJIET</i> | | Ex. Intro to SAGA-contd. <i>Dr. K. Sai Sahitya & Dr. Seenu P Z</i> |
| Day 10 5-06-2024 | | Understanding the image – elements of visual interpretation <i>Mr. PVSG Raghunadh, Asst Prof, CE, VNR VJIET</i> | Lunch | Ex: Image interpretation <i>Mr. PVSG Raghunadh</i> |

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| | Wednesday | Understanding the image -understandingimage statistics <i>Mr. PVSG Raghunadh, Asst Prof, CE, VNR VJIET</i> | | Ex: Understanding the image (histogram) <i>Mr. PVSG Raghunadh</i> |
| Day 11 6-06-2024 | Thursday | Geometric correction <i>Mr. M. Gopaiah, Andhra University, Visakhapatnam, A.P</i> | Lunch | Image registration <i>Mr. M. Gopaiah</i> |
| | | Atmospheric and Radiometric corrections <i>Dr. I.C.Das, Head, Geosciences Division, NRSC, Hyderabad</i> | | Ex. Atmospheric correction and preprocessing <i>Mr. M. Gopaiah</i> |
| Day 12 7-06-2024 | Friday | Local visit to National Remote Sensing Centre (NRSC), Hyderabad. <i>Dr. K. Ravikumar, Assoc Prof, CE, VNR VJIET</i> | Lunch | Local visit to National Remote Sensing Centre (NRSC), Hyderabad. <i>Dr. K. Ravikumar, Assoc Prof, CE, VNR VJIET</i> |
| Day 13 8-06-2024 | Saturday | Introduction to image enhancements: Contrast enhancement, band rationing. <i>Dr. D. Srinivas Rao, Assoc Prof, IT, VNR VJIET</i> | Lunch | Ex: Working with images – sub setting and mosaicking <i>Dr. K. Sai Sahitya & Dr. Seenu P Z</i> |
| | | Spatial filtering, PCA and vegetation indices <i>Dr. K.Venkat Reddy, Prof, CE, NIT Warangal, Telangana.</i> | | Ex: Using enhancements <i>Dr. K. Sai Sahitya & Dr. Seenu P Z</i> |
| Day 14 9-06-2024 | Sunday | Introduction to image classification: Unsupervised <i>Dr. K. Sai Sahitya, Asst Prof, CE, VNR VJIET</i> | Lunch | Ex: Extracting information for satellite image using unsupervised classification <i>Dr. K. Sai Sahitya & Dr. Seenu P Z</i> |
| | | Introduction to image classification: Supervised <i>Mr. K. Veerendra Gopi, Asst Prof, CE, VNR VJIET</i> | | Ex: Extracting information for satellite image using unsupervised Classification- Contd... <i>Dr. K. Sai Sahitya & Dr. Seenu P Z</i> |
| | | Introduction to image classification: Unsupervised <i>Dr. K. Sai Sahitya, Asst Prof, CE, VNR VJIET</i> | Lunch | Ex: Extracting information for satellite image using supervised classification <i>Dr. K. Sai Sahitya & Dr. Seenu P Z</i> |

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|------------------------------------|-----------|---|--------------|---|
| Day 15 10-06-2024 | Monday | Accuracy assessment <i>Dr. G. Ramesh Chandra, Prof, CSE, VNR VJIET</i> | | Ex: Accuracy assessment <i>Dr. G. Ramesh Chandra</i> |
| Day 16 11-06-2024 | Tuesday | Understanding terrain data: DEM <i>Dr. Seenu P Z, Asst Prof, CE, VNR VJIET</i> | Lunch | Ex: Terrain analysis <i>Dr. K. Sai Sahitya & Dr. Seenu P Z</i> |
| | | Change detection analysis. <i>Dr. Seenu P Z, Asst Prof, CE, VNR VJIET</i> | | Ex: Change detection with SAGA <i>Dr. K. Sai Sahitya & Dr. Seenu P Z</i> |
| Day 17 12-06-2024 | Wednesday | Spatial data analysis <i>Dr. K. Sai Sahitya, Asst Prof, CE, VNR VJIET</i> | Lunch | Ex. on Spatial data analysis <i>Dr. K. Sai Sahitya & Dr. Seenu P Z</i> |
| | | Introduction to Web GIS <i>Dr. VSS Kiran, CEO, Garuda Lytics, Pvt Ltd, Hyderabad</i> | | Ex. on Spatial data analysis- contd <i>Dr. VSS Kiran</i> |
| Day 18 13-06-2024 | Thursday | Understanding Geoserver –Open layer,web services and demos <i>Dr. VSS Kiran, CEO, Data Garuda Lytics, Pvt Ltd, Hyderabad</i> | Lunch | Ex. on Using Post-GRE/ Post-GIS <i>Dr. VSS Kiran</i> |
| | | Mini Project Progress | | Mini Project Progress |
| Day 19 14-06-2024 | Friday | Mini project progress | Lunch | Mini project progress |
| | | Mini Project progress | | Mini Project progress |
| Day 20 15-06-2024 | Saturday | Mini Project progress | Lunch | Mini project Progress |
| | | Mini Project progress | | Mini Project Progress, report preparation and submission |
| Day 21 16-06-2024 | Sunday | Final project presentation by participants | Lunch | Assessment of mini project and theory |
| | | Final project presntation by participants | | Valedictory |

