SURESH GYAN VIHAR UNIVERSITY
Accredited by NAAC with 'A' Grade

सत्यमेव जयते
Department of Science & Technology
Govt. of India

Winter School In Geospatial Science and Technology (Level 1)

10 - 31 January 2022

In Online Mode

at

Centre for Climate Change and Water Research, Suresh Gyan Vihar University, Jaipur, Rajasthan

Organized by

Centre for Climate Change and Water Research, Suresh Gyan Vihar University, Jaipur, Rajasthan, India

Supported by

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

Principal Investigator

Dr. Shruti Kanga, Associate Professor and Coordinator
Centre for Climate Change and Water Research
Suresh Gyan Vihar University, Jaipur, Rajasthan

Suresh Gyan Vihar University

Suresh Gyan Vihar University has been duly established way back in the year 2008 by the Government of Rajasthan, vide Suresh Gyan Vihar University, Jaipur Act 2008 (act no. 16 of 2008). The university offers a wide range of programs at UG, PG and doctoral level and enjoys a high reputation of its landmark achievements in the pursuit of academic excellence. The university has been awarded with 'A' grade accreditation by the NAAC (UGC) and thereby enjoys the distinction of being the first private university in the state of Rajasthan in this category. It is situated on a sprawling and attractive campus at Mahal, Jagatpura, Jaipur known as the pink city, the capital of Rajasthan, is one of the famous tourist destinations of the country. Teaching, research and extension education services related to science, engineering, management is the mandate of university and is committed to develop quality human resource, innovative technologies and their dissemination so as to serve the society of the country with dedication and zeal. Visit us on: https://www.gyanvihar.org/

The Centre for Climate Change and Water Research (C3WR)

The Centre for Climate Change and Water Research (C3WR) has been established in the Suresh Gyan Vihar University with the aim to provide quality education and research in the field of Geoinformatics and its applications. C3WR will cover education about climate change and sustainable development (developing an awareness of problem) and research (using Geoinformatics as a tool to achieve solution). C3WR will be dedicated to the better understanding of critical scientific and social issues related to climate change and sustainable development goals through guided research. The Centre promotes multidisciplinary research approach including earth sciences, forestry, agriculture, water resources, atmospheric sciences, engineering etc. C3WR has grown into one of the premier centres in the country working in the frontier area of Geoinformatics, climate change and sustainable development. Visit us on: https://www.gyanvihar.org/research-centers/c3wr

What is the Summer/Winter Schools (Level 1)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 adaptation capacity of geospatial science and technology at across the country. The objective of the program is to build knowledge and various levels of governance in collaboration with academia and user agencies. The three week Summer/ Winter School in Geospatial technology is being conducted at two levels– Level 1 and Level 2.The 21-day summer/winter school in Geospatial Science and Technology (Level 1) supported by the Natural Resource Data Management System 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.

Who can apply?

Faculty members, scientists, technologists, researchers from academia, national institutions of research, smart city cells, municipal corporations and other government departments, personnel from non government organizations are eligible to apply. Only 2-3 seats are reserved for research scholars.

How to apply?

- Interested candidates should fill the online application form through the weblink available on http://dst-iget.in.
- Selected candidates will be informed by mail.
- For any further queries write to dst-iget@bvieer.edu.in or call on +91-20-24375684/24362155.
- Address all queries regarding the program to the PI through email.

Important Information

Last date for registration : 30 October 2021

Dates of the program: 10 -31 January 2022

Mode of conduct: Online Mode

Number of Seats: 25

Registration Fees: Nil

Principal Investigator: Dr. Shruti Kanga, Associate Professor and Coordinator, Centre for Climate Change and Water Research, Suresh Gyan Vihar University, Jaipur, Rajasthan

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For any queries contact:

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+91- 7004785015

Address: Suresh Gyan Vihar University, Mahal Road, Jagatpura, Jaipur-302017, Rajasthan

Grading and Certification

Participants will be assessed based on assignments completed during the course, a mini project are expected to complete, active participation during the training program as well as attendance.

Note: participants must ensure that they have a laptop and a strong internet connection.

Infrastructure and facility

Labs

The University has well equipped class rooms with projectors and Wi-Fi enabled. There is availability of internet with 1 GB BSNL connection and Jio Fiber. The centre has well equipped labs with high performing computers with multiple licenses of geospatial software as well as open-source software along with handheld GPS. The sophisticated equipment is available in the laboratories for the significant use of students. Apart from the central facilities like central library, research laboratory, workshops for project preparation etc. there are many laboratories that cater to students from other faculties.

Fig 1. Suresh Gyan Vihar University

Fig 2. Conference Room

Fig 3. GIS Lab

Fig 4. Seminar Hall

Program schedule for 21 Days Winter School in Geospatial Science and Technology (Level 1)

(10 -31 January 2022)

Date	Time	Topic	Resource Person
10.01.2022		**Day 1**	
	10:00-10:30 hrs	Inauguration	Coordinator
	10:30-11:00 hrs	Introduction of training group	
	11:00-13:00 hrs	Introduction to Geospatial Sciences: What, why and how?	
	13:00-14:00 hrs	**LUNCH**	
	14:00-15:00 hrs	Introduction to data types in Geospatial science	Dr. Shruti Kanga
	15:00-17:00 hrs	Hands on session 1. Acquisition of data	Associate Professor C3WR, SGVU
	17:00-17:15 hrs	Downloading ASTER, MODIS, BHUVAN, Toposheets from SOI, ordering IRS data, acquiring secondary data	
		Day 2	
11.01.2022	10:00-12:00 hrs	Basic Geodesy	Dr. Suraj Kumar Singh, Associate Professor C3WR, SGVU
	12:00-13:00 hrs	Map Projections	Dr. Shruti Kanga, Associate Professor C3WR, SGVU
	13:00-14:00 hrs	**LUNCH**	
	14:00-15:00 hrs	Hand on session 2. Overview of QGIS	Dr. Varun N Mishra Assistant, Professor C3WR, SGVU
	15:00-17:00hrs 17:00-17:15 hrs	Hands on session 3. Working with projections using QGIS - Using existing projection - Making a new projection - Importing projection	SGVU-Team

		Filling in Feedback form	
		Day-3	
12.01.2022	10:00-12:00 hrs	Understanding data quality - Elements of data quality - Sources and types of errors in geospatial data building - Importance of meta data	Invited Speaker
	12:00-13:00 hrs	Extracting data -georeferencing and extraction of data	Invited Speaker
	13:00-14:00 hrs	**LUNCH**	
	14:00-15:30 hrs	Hands on session 4. Georeferencing	SGVU-Team
	15:30-17:00 hrs	Hands on session 5. Extracting data	SGVU-Team
	17:00-17:15 hrs	Filling in Feedback form	
		Day-4	
13.01.2022	10:00-12:00 hrs	Digital Cartography - Cartographic evolution - Map classification - Map elements - Principles of map design	Dr. Shruti Kanga, Associate Professor C3WR, SGVU
	12:00-13:00 hrs	Group exercise on analysis of good and bad maps withreasons	Dr. Pranaya Diwate, Assistant Professor C3WR, SGVU
	13:00-14:00 hrs	**LUNCH**	
	14:00-17:00 hrs	Hands on session 6. Map preparation	SGVU-Team
	17:00-17:15 hrs	Filling in Feedback form	
		Day 5	
14.01.2022	10:00-12:00 hrs	Understanding Database Management System	Dr. Varun N Mishra Assistant

			Professor C3WR, SGVU
	12:00-13:00 hrs	Database models	Dr. Varun N Mishra Assistant Professor C3WR, SGVU
	13:00-14:00 hrs	**LUNCH**	
	14:00-16:00 hrs	Hands on session 7. Data exploration	SGVU-Team
	16:00-17:00 hrs	Hands on session 8. Working with tables	SGVU-Team
	17:00-17:15 hrs	Filling in Feedback form	
		Day 6	
15.01.2022	10:00-12:00 hrs	Spatial Analysis	Dr. Suraj Kumar Singh, Associate Professor, C3WR, SGVU
	12:00-13:00 hrs	Spatial Analysis (continue)	Dr. Suraj Kumar Singh, Associate Professor C3WR, SGVU
	13:00-14:00 hrs	**LUNCH**	
	14:00-16:00 hrs	Hands on session 9. Working with queries	SGVU-Team
	16:30-18:00 hrs	Hands on session 9. Working with queries (continue)	SGVU-Team
	18:00-18:15 hrs	Filling in Feedback form	
		Day 7	
16.01.2022	10:00-12:00 hrs	Introduction to GNSS	Invited Speaker
	12:00-13:00 hrs	Introduction to GNSS (continue)	Invited Speaker
	13:00-14:00 hrs	**LUNCH**	
	14:00-16:00 hrs	Hands on session 10. Field exercise for collecting points through hand held system	SGVU-Team
	16:00-17:00 hrs	Hands on session 11. Importing GPS data into QGIS	SGVU-Team
	17:00-17:15 hrs	Filling in Feedback form/Initiation of project topic selection	
		Day-8	

17.01.2022	10:00-12:00 hrs	Remote Sensing and its Physics	Invited Speaker
	12:00-13:00 hrs	Remote Sensing applications	Invited Speaker
	13:00-14:00 hrs	**LUNCH**	
	14:00-16:00 hrs	Hands on session 12. Introduction to SAGA	SGVU-Team
	16:00-17:00 hrs	Hands on session 12. Introduction to SAGA (continue)	SGVU-Team
	17:00-17:15 hrs	Filling in Feedback form	
		Day-9	
18.01.2022	10:00-12:00 hrs	Elements of visual interpretation	Invited speaker
	12:00-13:00 hrs	Image quality assessment and Statistical Evaluation	Dr. Suraj Kumar Singh, Associate Professor, C3WR, SGVU
	13:00-14:00 hrs	**LUNCH**	
	14:00-15:30 hrs	Hands on session 13. Image interpretation	SGVU-Team
	15:30-17:00 hrs	Hands on session 13. Understanding the image (histogram)	SGVU-Team
	18:00-18:15 hrs	Filling in Feedback form	
		Day-10	
19.01.2022	10:00-11:30 hrs	Geometric correction	Invited Speaker
	11:30-13:00 hrs	Atmospheric and Radiometric correction	Invited Speaker
	13:00-14:00 hrs	**LUNCH**	
	14:00-16:00 hrs	Hands on session 14. Image registration	SGVU-Team
	16:00-17:00 hrs	Hands on session. 15 Image registration (continue)	SGVU-Team

	17:00-17:15 hrs	Filling in Feedback form	
		Day-11	
20.01.2022	10:00-12:00 hrs	Introduction to image enhancement	Invited Speaker
	12:00-13:00 hrs	Introduction to image enhancement- Principal component analysis and indices	Invited speaker
	13:00-14:00 hrs	**LUNCH**	
	14:00-16:00 hrs	Hands on session. 16. Working with images-subsetting and mosaicking	SGVU-Team
	16:30-18:00 hrs	Hands on session 17. Using enhancements	SGVU-Team
	18:00-18:15 hrs	Filling in Feedback form	
		Day-12	
21.01.2022	10:00-12:00 hrs	Introduction to image classification- Supervised	Invited Speaker
	12:00-13:00 hrs	Introduction to image classification- Unsupervised	Invited Speaker
	13:00-14:00 hrs	**LUNCH**	
	14:00-15:00 hrs	Hands on session 18. Extracting information for satellite image using unsupervised classification	SGVU-Team
	15:00-17:00 hrs	Hands on session 19. Extracting information for satellite imageusing supervised classification (continue)	SGVU-Team
	17:00-17:15 hrs	Filling in Feedback form	
		Day-13	
22.01.2022	10:00-11:00 hrs	Accuracy assessment: why and how	Invited speaker
	11:00-13:00 hrs	Digital change detection	Invites speaker
	13:00-14:00 hrs	**LUNCH**	

	14:00-15:00 hrs	Hands on session 20. Accuracy assessment	SGVU-Team
	15:00-17:00 hrs	Hands on session 21. Change detection with SAGA	SGVU-Team
	17:00-17:15 hrs	Filling in Feedback form	
		Day-14	
23.01.2022	10:00-11:30 hrs	Introduction to Google Earth engine	Invited Speaker
	11:30-13:00 hrs	Understanding terrain data	Invited Speaker
	13:00-14:00 hrs	**LUNCH**	
	14:00-16:00 hrs	Hands on session 22. Terrain analysis	SGVU-Team
	16:00-17:00 hrs	Hands on session 23. Spatial data analysis	SGVU-Team
	17:00-17:15 hrs	Filling in Feedback form	
		Day-15	
24.01.2022	10:00-11:30 hrs	Introduction to Web GIS	Invited Speaker
	11:30-13:00 hrs	Introduction to Web GIS (continue)	Invited Speaker
	13:00-14:00 hrs	**LUNCH**	
	14:00-16:00 hrs	Hands on session 24. Using QGIS to create a web GIS	SGVU-Team
	16:00-17:00 hrs	Hands on session 24. Using QGIS to create a web GIS (Continue)	SGVU-Team
	17:00-17:15 hrs	Filling in Feedback form	
		Day-16	
25.01.2022	10:00-11:30 hrs	Introduction to PostGRE/PostGIS and demos	Invited speaker
	11:30-13:00	Understanding Geoserver-Open layer, web services anddemos	Invited speaker
	1300-1400 hrs	**LUNCH**	

	14:00-16:00 hrs	Catalog Service Geonetwork	Invited speaker
	16:00-17:00 hrs	Hands on session 25. Using PostGRE/PosyGIS	SGVU-Team
	18:00-18:15 hrs	Feedback	
		Day-17	
27.01.2022	10:00-11:30 hrs	Application of RS/GIS in planning (urban/rural) with specificcase studies highlighting detailed methodology	Invited Speaker
		Application of RS/GIS in natural resource management	Dr. Shruti Kanga
	11:30-13:00 hrs	(Forest, wildlife/agriculture/watershed) with specific case	Associate Professor
		studies highlighting detailed methodology	C3WR, SGVU
	1300-1400 hrs	**LUNCH**	
	14:00-16:00 hrs	Application of RS/GIS in climate studies with specific casestudies highlighting detailed methodology	Invited Speaker
	1630-1800 hrs	LUNCH	
	18:00-18:15 hrs	Group exercise: Participants to make methodology flowchart for given applications Filling in Feedback form	SGVU-Team
		Day-18	
28.01.2022	10:00-11:30 hrs	Advances in RS and GIS	Invited speaker
	11:30-13:00 hrs	Use of RS and GIS in SDGs	Invited Speaker
	13:00-14:00 hrs	**LUNCH**	
	14:00-16:00 hrs	Discussion of possible minor projects to be done by the participants/Working on projects	SGVU-Team

	16:00-17:00 hrs	Working on projects	SGVU-Team
	17:00-17:15 hrs	Filling in Feedback form	
		Day-19	
29.01.2022	10:00-11:00 hrs	Working on projects	SGVU -Team
	11:00-12:00 hrs	Working on projects	SGVU -Team
	12:00-13:00 hrs	Working on projects	SGVU -Team
	13:00- 14:00 hrs	**LUNCH**	
	14:00-16:00 hrs	Project work	SGVU -Team
	16:00-17:00 hrs	Project work	SGVU -Team
		Day-20	
30.01.2022	09:00-11:00 hrs	Working on projects	SGVU-Team
	11:30-13:00 hrs	Working on projects	SGVU-Team
	13:00-14:00 hrs	**LUNCH**	
	14:00-17:00 hrs	Quiz(Objective type)	SGVU-Team
		Day-21	
31.01.2022	10:00-12:00 hrs	Final project presentation by participants (group wise)	

	12:00-13:00 hrs	Valedictory Function