



सत्यमेव जयते  
Department of Science & Technology  
Govt. of India

# Winter School In Geospatial Science and Technology (Level 1)

10 November—30 November, 2021  
In Online Mode

## Organized by

Sher-e-Kashmir University of  
Agricultural Sciences and  
Technology of Kashmir,  
Kashmir, India

## Supported by

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

at

Sher-e-Kashmir University of Agricultural  
Sciences and Technology of Kashmir,  
Kashmir, India

## **Patron**

Prof. J. P. Sharma, Hon'ble Vice Chancellor, SKUAST-K

## **Co-Patron**

Prof D. M. Makhdoomi , Director Extension, SKUAST Kashmir

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## **Principal Investigator**

Mushtaq A. Wani, Professor, Sher-e-Kashmir University of Agricultural Sciences and Technology (SKUAST), Kashmir, India

## **Co-coordinators**

- . Prof. Masood Salim Mir, Associate Director Extension (A/S)
- . Dr. Farahnaz Rasool, Deputy Director Trainings

## Sher-e-Kashmir University of Agricultural Sciences and Technology (SKUAST)

Sher-e-Kashmir University of Agricultural Sciences and Technology (SKUAST), is a multi-campus university, named after the great patriotic leader Jenab Sheikh Mohammad Abdullah popularly known as Sher-e-Kashmir. It was established in the year 1982 through an Act of the J&K Assembly, with its head-quarter at Shalimar, Srinagar. In the year 1998-99, the University was renamed as Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir (SKUAST-Kashmir) and its territorial jurisdiction redefined to Kashmir and Ladakh regions. The University is situated on the bank of the world famous Dal lake. Teaching, research and extension education services related to agriculture and allied sciences directed to food, nutritional and livelihood security is the mandate of university and is committed to develop quality human resource, innovative technologies and their dissemination so as to serve the farming community of the State with dedication and zeal. Visit us on: [skuastkashmir.ac.in](http://skuastkashmir.ac.in)

### Department of Soil Sciences

The division of Soil Science was established in 1982 under the Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir at Shalimar, Srinagar, J&K. It has well established laboratories for analysis of soil, plant, water and fertilizers. We have five Professors, 12 Associate Professors and 18 assistant Professors. We are imparting Bachelors, Masters and Doctorate Programmes under different sub disciplines like pedology, fertility, chemistry, microbiology and plant nutrition. We are also providing the consultation to different industries related apart from farming community. 35 Students have qualified Doctorate degree and 73 students have passed their Masters degree since inception.



## 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 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. The three week Summer/ Winter School in Geospatial technology is being conducted at two levels– Level 1 and Level 2.

### Who can apply?

Faculty members, scientist, technologist, researchers from academia, national institutes of research, smart city cells, municipal corporations and other government departments, personnel from non government organizations are eligible to apply. Only 2-3 seats at each centre 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>. under Summer School in GST (2021-23)
- Selected candidates will be informed by mail.
- For any further queries write to [dst-iget@bvier.edu.in](mailto:dst-iget@bvier.edu.in) or call on +91-20-24375684/24362155.
- Address all queries to PI of the Summer/Winter School through email.

## Important Information

**Last date for registration :** 30 September 2021

**Dates of the program:** 10 November to 30 November, 2021

**Mode of conduct:** Online

**Registration Fees:** Nil

**Number of Seats:** 25-30

**Principal Investigator:** Mushtaq A. Wani, Professor, Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir (SKUAST-K), Kashmir, India

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### Co-coordinators

- Prof. Masood Salim Mir, Associate Director Extension (A/S)
- Dr. Farahnaz Rasool, Deputy Director Trainings
- Dr. Parshotam Singh, Associate Professor

### For any queries contact

Mushtaq A. Wani, Professor, (Principal Investigator)

Email: mushtaqb4u@gmail.com/ mushtaqb4u@skuastkashmir.ac.in

**Venue:** SKUAST, Shalimar, Srinagar, Jammu and Kashmir 190019

## Grading and Certification

Participants will be assessed based on assignments completed during the course, a mini project are expected to complete, active participation during

course, a mini project are expected to complete, active participation during the training program as well as attendance. An e-certificate will be awarded.

**Note:** Participants must ensure that they have a laptop and a strong internet connection. purposes.

## Infrastructure and Facilities

- Faculty of 08 Professors, 12 Associate Professors and
- 15 Assistant Professors
- GIS Laboratory with more than thirty Desktops
- ARIS Laboratory with more than 25 Desktop
- GPS more than 05 for survey groups
- Software -ArcGIS, ERDAS, QGIS, SAGA, ILWIS, etc.
- Guest houses 04 for boarding and lodging
- Pool of vehicles (Light and heavy)
- Canteen
- Smart Committee rooms, Smart GIS Laboratory

## Infrastructure and Facility



Directorate of Extension



Well equipped geospatial laboratory

**Program schedule for 21-Days Winter School Program (Level 1) in Geospatial Science and Technology,  
(10th November to 30th November, 2021)**

Date	Time	Topic
<b>Day 1</b>		
<b>10.11.2021</b>	0930-1000 hrs	Online Registration
	1000-1030 hrs	Inauguration
	1030-1100 hrs	Introduction of training group
	1100-1200 hrs	Geospatial Sciences: What, why and how?
	1200-1300 hrs	Introduction to Data types in Geospatial information; Overview of spatial and non-spatial data types; Overview of data sources
	1430-1730 hrs	Exercise No.1. Acquiring data Downloading ASTER, MODIS, BHUVAN, Toposheets from SOI, ordering IRS data, acquiring secondary data
	1730-1745 hrs	Online Feedback form
<b>Day 2</b>		
<b>11.11.2021</b>	1000-1300 hrs	Understanding scales and projections a. Scales b. Projections
	1400-1700 hrs	Exercise No.2. Overview of QGIS Exercise No.3. Working with projections using QGIS; -Using existing projection - Making a new projection - Importing a projection

	1700-1715 hrs	Online Feedback form
<b>Day-3</b>		
<b>12.11.2021</b>	1000-1130 hrs	Understanding data quality - Elements of data quality - Sources and types of errors in geospatial data building - Importance of meta data
	1130-1300 hrs	Extracting data -georeferencing and extraction of data
	1400-1530 hrs	Exercise No.4. Georeferencing
	1530-1700 hrs	Exercise No.5. Extracting data
	1700-1715 hrs	Online Feedback form
<b>Day-4</b>		
<b>13.11.2021</b>	1000-1130 hrs	Understanding Map making - Cartographic evolution - Map classification - Map elements - Principles of map design
	1130-1300 hrs	Group exercise on analysis of good and bad maps with reasons
	1400-1530 hrs	Exercise No.6. Map presentation
	1530-1700 hrs	Exercise No.6. Map presentation (continue)
	1700-1715 hrs	Online Feedback form



Day-5		
14.11.2021	1000-1130 hrs	Understanding attribute data - Importance of database
	1130-1300 hrs	Database management system - Building attribute table
	1400-1530 hrs	Exercise No.7. Data exploration
	1530-1700 hrs	Exercise No.8. Working with tables
	1700-1715 hrs	Online Feedback form
Day-6		
15.11.2021	1000-1300 hrs	Visualizing data through queries
	1400-1700 hrs	Exercise No.9. Working with queries
	1700-1715 hrs	Online Feedback form
Day-7		
16.11.2021	1000-1130 hrs	Introduction to GPS
	1130-1300 hrs	Exercise No.10. Field exercise for collecting points using GPS
	1400-15300 hrs	Exercise No.11. Importing GPS data into QGIS
	1530-1700 hrs	Exercise No.12. Using Google Earth and Bhuvan
	1700-1715 hrs	Online Feedback form
Day-8		
17.11.2021	1000-1130 hrs	Types of Remote Sensing
	1130-1300 hrs	Application of Remote Sensing
	1400-1700 hrs	Exercise No.13. Introduction to SAGA

	1700-1715 hrs	Online Feedback form
<b>Day-9</b>		
<b>18.11.2021</b>	1000-1130 hrs	Understanding the image -elements of visual interpretation
	1130-1300 hrs	Understanding the image -understanding image statistics
	1400-1530 hrs	Exercise No.14. Image interpretation
	1530-1700 hrs	Understanding the image -(histogram)
	1700-1715 hrs	Online Feedback form
<b>Day-10</b>		
<b>19.11.2021</b>	0930-1100 hrs	Geometric correction
	1130-1300 hrs	Atmospheric and Radiometric correction
	1400-1700 hrs	Exercise No.15. Image registration
	1700-1715 hrs	Online Feedback form
<b>Day-11</b>		
<b>20.11.2021</b>	1000-1130 hrs	Introduction to image enhancement - Contrast enhancement - Band rationing - Spatial filtering - Vegetation indices

	1130-1300 hrs	Introduction to image enhancement - Principal component analysis
	1400-1530 hrs	Exercise No.16. Working with images-subsetting and mosaicking
	1530-1700 hrs	Exercise No.17. Using enhancements
	1700-1715 hrs	Online Feedback form
<b>Day-12</b>		
<b>21.11.2021</b>	1000-1130 hrs	Introduction to image classification - Unsupervised
	1130-1300 hrs	Introduction to image classification - Supervised
	1400-1700 hrs	Exercise No.18. Extracting information for satellite image using unsupervised classification
	1700-1715 hrs	Online Feedback form
<b>Day-13</b>		
<b>22.11.2021</b>	1000-1130 hrs	Accuracy assessment: why and how
	1130-1300 hrs	Exercise No.19. Extracting information for satellite image using supervised classification
	1400-1530 hrs	Exercise No.19. Extracting information for satellite image using supervised classification (continue)
	1530-1700 hrs	Exercise No.20. Accuracy assessment
	1700-1715 hrs	Online Feedback form
<b>Day-14</b>		
<b>23.11.2021</b>	1000-1130 hrs	Change detection
	1130-1300 hrs	Understanding terrain data
	1400-1530 hrs	Exercise No.21. Terrain analysis

	1530-1700 hrs	Exercise No.22. Change detection with SAGA
	1700-1715 hrs	Online Feedback form
<b>Day-15</b>		
	1000-1300 hrs	Spatial data analysis
	1400-1700 hrs	Exercise No.23. Spatial data analysis
<b>24.11.2021</b>	1700-1715 hrs	Online Feedback form
<b>Day-16</b>		
	1000-1130 hrs	Introduction to PostGRE/PostGIS and demos
	1130-1300 hrs	Understanding Geoserver-Open layer, web services and demos
	1400-1530 hrs	Catalog Service Geonetwork
	1530-1700 hrs	Exercise No.24. Using PostGRE/PosyGIS
	1700-1715 hrs	Online Feedback form
<b>Day-17</b>		
	1000-1130 hrs	Application of RS/GIS in planning (urban/rural) with specific case studies highlighting detailed methodology
	1130-1300 hrs	Application of RS/GIS in natural resource management (forest, wildlife/agriculture/watershed)with specific case studies highlighting detailed methodology
	1400-1530 hrs	Application of RS/GIS in climate studies with specific case studies highlighting detailed methodology
	1530-1700 hrs	Group exercise: Participants to make methodology flow chart for given applications
	1700-1715 hrs	Online Feedback form
<b>Day-18</b>		
	1000-1300 hrs	Discussion of possible minor projects to be done by the participants.
	1400-1700 hrs	Working on projects
<b>27.11.2021</b>	1700-1715 hrs	Online Feedback form

Day-19		
28.11.2021	1000-1300 hrs	Working on projects
	1400-1700 hrs	Working on projects
Day-20		
29.11.2021	1000-1300 hrs	Working on projects
	1400-1700 hrs	Working on projects
Day-21		
30.11.2021	0900-1300 hrs	Online Final project presentation by participants (group wise)
	1400-1500 hrs	Evaluation
	1500-1530 hrs	Valedictory Function