

**GOVERNMENT COLLEGE OF ARTS, SCIENCE AND
COMMERCE, SANQUELIM – GOA**

Short Term Certificate Course (STCC)

In

Applications in Geospatial Technologies

From 26th December, 2022 to 31st December, 2022

Organized by the

Department of Geography

Duration: 30 hours

Course Objectives:

- a) To provide hands on experience of using mobile and computer based modern free and open source and advanced geo-spatial technologies available in the field of cartography.
- b) To identify, classify and generate various sources of spatial and attribute data and carry out the analysis with FOSS (Free and Open Source Softwares): - QGIS and SAGA GIS.
- c) To empower aspirants in the field of cartography and spatial data analysis, presentation and interpretation.
- d) To develop and enhance the cartographic skills which can be applicable in research and Government/ private organizations working in spatial solutions.

STCC SYLLABUS

Curriculum: The Course is divided into 4 Modules:

- 1) Remote Sensing and Digital Image Processing
- 2) Geographical Information System
- 3) RS and GIS Applications
- 4) Global Positioning System

The Topics include;

- 1) GIS, Elements of GIS, Data Bases, Georeferencing, map or image registration, Digitizing, Data Generating, Layer generating, attribute data attaching, map layout and design, Spatial analysis, Spatial queries and open Source software.
- 2) Basic Principles of Remote Sensing, Earth observation, Satellites, Remote Sensing Platforms, Spectral Signature of different land cover features,
- 3) Sources of Satellite data, image analysis; RGB Composition for LULC, Mosaicking, Clipping or sub-setting, DEM and elements of image interpretation and Catchment Delineation.
- 4) RS & GIS Applications in brief (only theory): Agriculture and Soil, Forestry and Ecology, Geography, Geology and Geo-hazards, Marine and Atmospheric Science, Urban and Regional Studies and Water Resources.
- 5) Global Positioning System (GPS): Introduction to GPS, Data Collection using GPS Essential (mobile app), Data Conversion and Visualization in Google Earth.

Course Outcomes

At the end of the course aspirants will be able to;

- 1) Differentiate the hard map and georeferenced map and their advantages.
- 2) Carry out geo-referencing, image or map registration, digitizing and map layout and design.
- 3) Generate Map layer, spatial and attribute data analysis, portray, and query building.
- 4) Accomplish satellite image analysis, RGB composition, clipping, mosaicking and DEM preparation and analysis.
- 5) Comprehend sources of free and open source geospatial technologies in the field of cartography and their areas of applications
- 6) Develop the skill in geographical analysis, presentation and interpretation.
- 7) Apply the principles of GPS in Research Field.

SCHEDULE OF THE COURSE

Days	Time	Session	Topic	Name of the Resources Person
Day 1 26/12/2022	8.45 A.M.- 9.15A.M.	Registration		
	9.15 A.M.- 9.45A.M	Inaugural Function		
	9.45 A.M.- 11.45 A.M.	Session I	Introduction to GIS and Remote Sensing: Downloading and Installation of QGIS- familiarize with QGIS Interface	Mr. RameshNannaware
	11.45 A.M.- 12.00 PM	Refreshment		
	12.00 PM - 2.00 PM	Session II	Downloading Free Satellite Data from Open Online Sources for GIS Work, Concept of Plug-in in QGIS	Mr. RameshNannaware
Day 2 27/12/2022	9.00 A.M.- 11.00 A.M.	Session I	Georeferencing in QGIS: Concept of Geographic and Projection Co-ordinate System, Creating Shape Files	Mr. RameshNannaware
	11.00 A.M.- 11.15 A.M.	Refreshment		
	11.15 A.M.- 2.00 P.M.	Session II	Image interpretation: Concept of False Color Composite (FCC) and True Color Composite (TCC), Elements of Image Interpretation	Mr. RameshNannaware
	9.00 A.M.-	Session I	Digitization: using vector	Dr. K.R. Badiger

Day 3 28/12/2022	11.00 A.M.		files (Point, Line, Polygon), supervised classification	
	11.00 A.M.- 11.15 A.M.	Refreshment		
	11.15 A.M.- 2.00 P.M	Session II	Layouts: adding elements of maps (Legend, North Arrow, Scale Bar, Title, Labels, Map, Insets, and Projection etc.)	Dr. K.R. Badiger
Day 4 29/12/2022	9.00 A.M.- 11.00 A.M.	Session I	Install Arc GIS and Arc Pro Hands on practice	Mr. Ajinkya Tajane
	11.00 A.M.- 11.15 A.M.	Refreshment		
	11.15 A.M.- 2.00 P.M	Session II	Application of Arc GIS in recent trend	Mr. Ajinkya Tajane
Day 5 30/12/2022	9.00 A.M.- 11.00 A.M.	Session I	Basic tools operations in Arc GIS ,Arc Pro and Enterprise GIS	Dr. Nilesh Susware
	11.00 A.M.- 11.15 A.M.	Refreshment		
	11.15 A.M.- 2.00 P.M	Session II	Working on Watershed Delineation	Dr. Nilesh Susware
Day 6 31/12/2022	9.00 A.M.- 11.00 A.M.	Session I	Global Positioning System (GPS): Introduction to GPS, Data Collection using GPS Essential (mobile app), Data Conversion and Visualization in Google Earth	Dr. NileshSusware
	11.00 A.M.- 11.15 A.M.	Refreshment		
	11.15 A.M.- 12.45 P.M	Session II	Application of Remote Sensing and GIS	Dr. NileshSusware
	1.00 P.M.- 1.30 P.M.	Written Test		
	1.30 P.M.- 2.00 P.M.	Valedictory Function		

The Department of Geography organized state level Short Term Certificate Course in “**Applications in Geospatial Technologies**” from 26-31st January 2023. The programme was open for students, teachers and officials of Govt. departments. In total, there were 25 participants, comprising of 16 students of which 7 students were from of our college and 09 students were from Govt. College Khandola. There were total 7 teachers’ participants and 1 person from Department of Environment, MOEFCC.

There were 4 resource persons, for the course, three of which were from state of Maharashtra.

Following were the Resource Persons for the course

- a. Dr. K. R. Badiger, (Former Asso. Prof.Govt. College of Arts, Science and Commerce, Sanquelim Goa) Specialisation: Geography
- b. Mr. Ramesh Nannaware, Assistant Professor, Department of Geography, Pune University Specialisation: Geoinformatics

c. Dr. Nilesh Susware, Assistant Professor, Department of Geography, Gopal Krishna college, Kolhapur, Specialisation: Remote sensing and GIS, Geomorphology, Hydrology.

d. Mr. Mahesh Jagdale, Sr. Analyst, ESRI India, Specialisation: Arc GIS solutions, Portal for Arc GIS, Arc GIS Server, Desktop and Pro solutions.

On Day 1, 26/12/2023, Mr. Ramesh Nannaware, Assistant Professor, Department of Geography, Pune University, was the resource person and he conducted 2 sessions.

First session was focused on Introduction to GIS and Remote Sensing: Downloading and Installation of QGIS- familiarize with QGIS Interface.

Second Session was related to Downloading Free Satellite Data from Open Online Sources for GIS Work, Concept of Plug-in in QGIS.

The students were able to get the basic understanding about GIS and Remote Sensing and its use in our day to day life.



On Day 2 and 3, 27/12/2023 & 28/12/2023, Dr. K. R. Badiger, (Former Asso. Prof. Govt. College of Arts, Science and Commerce, Sanquelim, Goa) was the resource person.

The sessions on Day 2, were mainly focused on Georeferencing in QGIS and Image Interpretation.

Georeferencing is the process of converting hard map to facilitate locating an entity in real world coordinates.



Day 3 was more related to Digitization and creating map layout.

Digitizing is the process of converting geographic features on a paper map into digital format. Here the resource person gave insights about how to create own maps of your interest, which is mainly useful in research.



On Day 4, the sessions were conducted by Mr. Ajinkya Tajane and Nilesh Susware.

The main focus of the session was to make aspirants aware of Arc GIS platform and its applications.



On Day 5, the aspirants were given hand held training to use GPS and take various GPS Readings, to be later been added to the GIS Platform.



Day 6, the sessions were more focused on Applications of GIS, Watershed Delineation, Georeferencing using Arc GIS.

The aspirants could get hand held training of various GIS software's like QGIS, Arc GIS, GPS, Google Earth which could be applicable in various fields.



The assessment of the students was done with MCQ questions via Google form to test the understanding of the concepts of Geoinformatics.

It was a very interactive session where the students could get the hands on training in the fields of GIS and Remote Sensing.

Mr. Stephen Fernandes

Course Coordinator