Capacity Building Programme for SSNNL Engineers in Advance Geo informatics

Basic Module

Day-1 Map Editing and Topology			
S. No.	**Time**	**Topic**	
1.1	10:00 AM - 11:30 AM	Topology Rules; Validate Topology; Fix Topology errors	
1.2	11:45 AM - 01:15 PM	Raster in file geodatabase;	
1.3	02:00 PM - 03:30 PM (Practical)	Topology Rules; Validate Topology; Fix Topology errors	
1.4	03:45 PM - 05:15 PM (Practical)	Raster in file geodatabase; Geodatabase raster datasets; Geodatabase raster catalog;	
1.5	05:15 PM - 05:30 PM	Discussions and preparation for next day	
Day-2 Satellite Imagery and its Interpretation for preparation of Maps			
S. No.	**Time**	**Topic**	
2.1	10:00 AM - 11:30 AM	INDICES: Standard Deviation and Histogram	
2.2	11:45 AM - 01:15 PM	Environment; Setting Toolbar environment	
2.3	02:00 PM - 03:30 PM (Practical)	Interphases for spatial analysis; Analysis environment; Setting	
2.4	03:45 PM - 05:15 PM (Practical)	Practical on Standard Deviation and Histogram, NDVI; NDBI, NDWI, Water stress index (WSI)	
2.5	05:15 PM - 05:30 PM	Discussions and preparation for the next day	
Day-3 Interpolation Techniques			
S. No.	**Time**	**Topic**	
3.1	10:00 AM - 11:30 AM	Spatial interpolation Methods	
3.2	11:45 AM - 01:15 PM	Spatial interpolation for estimating missing data	
3.3	02:00 PM - 03:30 PM (Practical)	IDW (inverse distance weighted); IDW parameters; Natural neighbours; Spline;	
3.4	03:45 PM - 05:15 PM (Practical)	Water quality assessment using spatial analysis.	
3.5	05:15 PM - 05:30 PM	Discussions and preparation for next day	
Day-4 SAR Remote Sensing			
S. No.	**Time**	**Topic**	
4.1	10:00 AM - 11:30 AM	Introduction of the synthetic aperture Radar(SAR)	
4.2	11:45 AM - 01:15 PM	Analysis Techniques of the SAR Images for identification of the Crop Pattern	
4.3	02:00 PM - 03:30 PM (Practical)	Downloading SAR Images and Identification of the Characteristics of the SAR Images	
4.4	03:45 PM - 05:15 PM (Practical)	Analysis of the SAR Images	
4.5	05:15 PM - 05:30 PM	Discussions and preparation for the next day	
Day-5 Remote Sensing Applications in Irrigation:			
S. No.	**Time**	**Topic**	
5.1	10:00 AM - 11:30 AM	Estimation of Irrigation Water Requirements and Mapping of Command Area and infrastructure	
5.2	11:45 AM - 01:15 PM	Crop suitability analysis	
5.3	02:00 PM - 03:30 PM (Practical)	Overview of quantification of hydrological elements using Remote Sensing Modeling – Evapotranspiration, Soil Moisture and its use in Irrigation Water Management	

5.4	03:45 PM - 05:15 PM (Practical)	Precision agriculture using GIS	
5.5	05:15 PM - 05:30 PM	Discussions and preparation for next day	
Day-6 Geographically weighted regression (GWR) model in addition to the OLS model			
S. No.	**Time**	**Topic**	
6.1	10:00 AM - 11:30 AM	Geographical Weighed Regression(GWR)	
6.2	11:45 AM - 01:15 PM	Ordinary Least Squares Methods(OLS)	
6.3	02:00 PM - 03:30 PM (Practical)	Application of the OLS	
6.4	03:45 PM - 05:15 PM (Practical)	Use of the GWR for identification of the hotspot areas	
6.5	05:15 PM - 05:30 PM	Discussions and preparation for next day	
Day-7 Spatial Statistics			
S. No.	**Time**	**Topic**	
7.1	10:00 AM - 11:30 AM	Data Quality and Data Error in GIS	
7.2	11:45 AM - 01:15 PM	Focal function; Focal neighborhoods; Zonal Statistics: Language of raster; Expression syntax rules	
7.3	02:00 PM - 03:30 PM (Practical)	Application to use the Zonal Statistics	
7.4	03:45 PM - 05:15 PM (Practical)	Neighborhood Statistics	
7.5	05:15 PM - 05:30 PM	Discussions and preparation for next day	
Day-8 Multi Criteria Analysis			
S. No.	**Time**	**Topic**	
8.1	10:00 AM - 11:30 AM	'Performance Evaluation of Canal Irrigation Projects Using Remote Sensing & GIS'	
8.2	11:45 AM - 01:15 PM	What is MCDM, the Method of Use of MCDM, and where it can be used?	
8.3	02:00 PM - 03:30 PM (Practical)	Modeling Spatial Problems; Site Suitability Analysis using Multi-Criteria Analysis/AHP	
8.4	03:45 PM - 05:15 PM (Practical)		
8.5	05:15 PM - 05:30 PM	Discussions and preparation for the next day	
Day 9: Emerging technologies			
S. No.	**Time**	**Topic**	
9.1	10:00 AM - 11:30 AM	Emerging technologies in Water Management and GIS (Drones, IoT).	
9.2	11:45 AM - 01:15 PM	Working on the Projects	
9.3	02:00 PM - 03:30 PM	Working on the Projects	
9.4	03:45 PM - 05:15 PM	Working on the Projects	
9.5	05:15 PM - 05:30 PM	Discussions and preparation for next day	
Day-10			
S. No.	**Time**	**Topic**	
10.1	10:00 AM - 11:30 AM	Working on the Projects	
10.2	11:45 AM - 01:15 PM	Working on the Projects	
10.3	02:00 PM - 03:30 PM	Review Presentation and Evaluation	
10.4	03:45 PM - 05:15 PM	Review Presentation and Evaluation	
10.5	05:15 PM - 05:30 PM	Valedictory Session and certificate distribution	