

Report on
**One month Certificate Program on “Hands on Skills
in Disaster Management using RS and GIS”**
01st Oct. 2020 to 31st Oct. 2020

Organized by



CENTRE FOR REMOTE SENSING & GEOINFORMATICS (CRSG)
SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY
JEPPIAAR NAGAR, RAJIV GANDHI ROAD, CHENNAI, TAMIL NADU

Prepared by
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Centre for Remote Sensing and
Geoinformatics

November 2020

**One month Certificate Program on “Hands on Skills in Disaster
Management using RS and GIS”
01st Oct. 2020 to 31st Oct. 2020**

Organized by:

**Center for Remote Sensing and Geoinformatics
Sathyabama Institute of Science and Technology, Chennai**

Date: 01st Oct. 2020 to 31st Oct. 2020

One month Certificate Program on “Hands on Skills in Disaster Management using RS and GIS” was organized and conducted by Centre for Remote Sensing and Geoinformatics (CRSG) of Sathyabama Institute of Science and Technology, Chennai from 01st Oct. 2020 to 31st Oct. 2020 through online mode.

The program aimed at awareness creation in the field of RS and GIS technology applications. Around 08 participants attended the certificate program. The main aim of the program is to equip the participants for job oriented to produce qualified, motivated students who have been trained in GIS, Remote Sensing, GPS and all the related state of the art technologies.

The Centre successfully conducted the one month certificate course on 'Hands-on using RS and GIS in Disaster Management with various disasters like flood monitoring, drought monitoring, coastal cyclones and various other related fields. Tackling the underlying risk factors in the natural and built environments and in the social and economic conditions of people remains one the most difficult tasks of disaster risk management. The planned approach to this challenge has been broadly illustrated under the type of “mainstreaming disaster risk reduction in development”. This approach has been highlighted in various global, regional, and national frameworks on disaster risk management, but there has been little progress. So this program will be very useful for the research students on the specific field.

The course gave state of the art concept and practice of remote sensing and GIS to the learners. The course covered from fundamentals of Rs and GIS to advanced methods. The course gave comprehensive understanding on solving RS & GIS research problems in wide areas of application.


SATHYABAMA
INSTITUTE OF SCIENCE AND TECHNOLOGY
(Deemed to be University)
Accredited with NAAC 'A' Grade
 Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai - 600 119



Col. Dr. Jeppiaar Research Park

CENTRE FOR REMOTE SENSING AND GEOINFORMATICS
(Joint initiative with Indian Space Research Organization (ISRO), Government of India)



Organizes

Online Certificate Program on
HANDS ON SKILLS IN DISASTER MANAGEMENT USING RS AND GIS
 01st OCTOBER, 2020 - 31st OCTOBER, 2020



Patrons

Dr. MARIAZEENA JOHNSON
Chancellor

Dr. T.SASIPRABA
Vice - Chancellor

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President

Organizing Secretary
DR. B. SHEELA RANI
 Director (Research)

SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY

About the course:

Remote Sensing and Geographic information systems (GIS) can be a very useful tool for the whole disaster management cycle starting from the preparedness phase, mitigation to response, recovery and reconstruction. Remote Sensing and GIS has proven to be efficient for implementing coherent Disaster Risk Reduction (DRR) activities at regional, national and local scales. Quantifying risk and expected future losses is a key step in any DRR program. Geospatial risk assessment can be performed with GIS tools and techniques which can quantify risk and identify the locations in need of risk reduction measures. The role of GIS doesn't stop there; in the immediate aftermath of a disaster, satellite based rapid analysis enables the emergency response agencies to respond in a better and coordinated way.

Course Content

- > Introduction to Remote Sensing & GIS
- > Flood monitoring using remote sensing and observational data
- > Drought exploration
- > Observation of cyclones and their movement
- > Coastal Disasters
- > Hands on Exercise

Registration Fees : Rs.1000/-

Coordinator	Conveners
Dr. Anoop Kumar Mishra	Dr. K.Nagamani Dr. B.Prabhu Dass Batvari
Scientist -F/Head,	Scientist C Scientist C

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Brochure for One Month Certificate Course on Hands on Skills in Disaster Management using RS and GIS

BROCHURE:

Disasters are the environmental realities of this living world. The paradigm shift from relief and response centric to prevention and mitigation centric approach has percolated both ways bottom up as well as top down, convergence of which is now in pace at various levels and across sectors which is the call of the time. India is among the world's most disaster prone areas nations. Of the 36 States and Union Territories, as many as noted as 27 are highly-disaster prone. With growing technology and scientific advances the possibility of occurrence, time, place and severity of the strike can be reasonably and in some cases accurately predicted. Like in case of cyclones and typhoons, their genesis, growth and pathway can be tracked for hours and days in advance. But extreme weather events such as unprecedented precipitation, cloud bursts, flash floods and landslides all underline the element of uncertainty and unpredictability about the time and scale of disasters, as introduced by the incidence of climate change.

Training as a part of capacity building is an integral component of preparedness for future disasters. Developing Trainers in the field of Disaster Management (DM) is the need of the hour so as to percolate various disaster management components up to the grass root levels and is crucial to build capacity of a nation to withstand disasters. As part of the

basic course, the content would revolve around understanding the basic concepts

Course Title:

Hands on Skills in Disaster Management using RS and GIS

Course Objectives:

The programme intends enabling the participants to be able to use hands on Remote Sensing (RS) and Geographical Information System (GIS)

- Understand the basic concepts of disaster management
- Understand the Flood Issues
- Understand Earthquakes Risk Mitigation & Preparedness
- Understand the Rainwater Harvesting measures for Flood and Drought Management
- Understand the Drought Risk Mitigation and Management perspective

Course Content:

- Introduction to Remote Sensing (RS) and GIS
- Flood Monitoring using RS and Observational data
- Drought exploration
- Observation of cyclones and their movement
- Coastal disaster
- Hands on exercises

KEY TAKEAWAYS:

- Linkages between disaster and development still not addressed and are seen in silos.
- A lack of understanding of existing legal instruments
- Need to develop people centric planning for ease of living
- Roles of various stakeholder must be clearly identified for integrating disaster management plans into developmental planning to minimize impacts of various disasters and especially generating from natural hazards
- Imperative need for Rainwater harvesting measures must be adopted for better flood and Drought Risk Management for better mitigation and preparedness.
- Cross-cutting concerns in Disaster Management are less addressed and needs an inclusive approach for mainstreaming.



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Col. Dr. Jeppiaar Research Park
CENTRE FOR REMOTE SENSING AND GEOINFORMATICS
(Joint initiative with Indian Space Research Organization (ISRO), Government of India)
In Association with
INDIAN SOCIETY OF REMOTE SENSING - CHENNAI CHAPTER



Online Certificate Program
On
HANDS ON SKILLS IN DISASTER MONITORING USING RS AND GIS
10th October, 2020 to 10th November, 2020

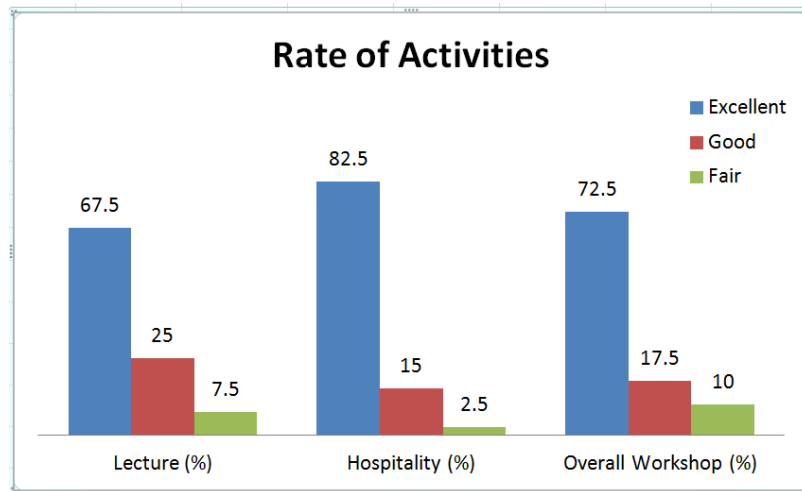
PROGRAM SCHEDULE

Date	Time	Topic	Theory/Practical	Speaker
10-10-20	5-00-6.00 PM	Introduction of Remote Sensing and GIS	Theory	Dr. K. Nagamani
11-10-20		Sunday no classes		
12-10-20	5-00-6.00 PM	Extreme events and their impact	Theory	Dr. Anoop Kumar Mishra
13-10-20	5-00-6.00 PM	Floods and droughts monitoring from Remote Sensing	Theory	Dr. Anoop Kumar Mishra
14-10-20	5-00-6.00 PM	Microwave Remote Sensing Planning your research and writing an effective research paper	Theory	Dr. Anoop Kumar Mishra
15-10-20	5-00-6.00 PM	Coastal Disasters	Theory	Dr. K. Nagamani
16-10-20	5-00-6.00 PM	Drought Prone Area – A case Study	Theory	Dr. K. Nagamani
17-10-20	5-00-6.00 PM	Demos on floods and drought monitoring-part 1	Practical	Dr. Anoop Kumar Mishra
18-10-20		Sunday no classes		
20-10-20	5-00-6.00 PM	Demos on floods and drought monitoring-part 2		Dr. Anoop Kumar Mishra
21-10-20	5-00-6.00 PM	Demos on floods and drought monitoring-part	Practical	Dr. Anoop Kumar Mishra

		3		
22-10-20	5-00-6.00 PM	Satellite Data Downloading	Practical	Dr. K. Nagamani
23-10-20	25-00-6.00 PM	Installation of QGIS Software	Practical	Dr. Prabu Dass Batvari and Dr. K. Nagamani
24-10-20	5-00-6.00 PM	Registration of Toposheets and Images	Practical	Dr. Prabu Dass Batvari and Dr. K. Nagamani
25-10-20		Sunday no classes		
26-10-20	5-00-6.00 PM	Creation of Shapefile and Digitization	Practical	Dr. Prabu Dass Batvari
27-10-20	5-00-6.00 PM	Mosaicking and Subset Images	Practical	Dr. Prabu Dass Batvari
28-10-20	5-00-6.00 PM	Creation of Thematic Maps	Practical	Dr. Prabu Dass Batvari
29-10-20	5-00-6.00 PM	Data Exploration	Practical	Dr. Prabu Dass Batvari
30-10-20	5-00-6.00 PM	Working with Tables	Practical	Dr. Prabu Dass Batvari
31-10-20	5-00-6.00 PM	Terrain Analysis	Practical	Dr. Prabu Dass Batvari
01-11-20		Sunday no classes		
02-11-20	5-00-6.00 PM	Flood Hazard Zonation Map	Practical	Dr. Prabu Dass Batvari
03-11-20	5-00-6.00 PM	GIS PRACTICALS	Practical	Participants Discussion
04-11-20	5-00-6.00 PM	GIS PRACTICALS	Practical	Participants Discussion
05-11-20	5-00-6.00 PM	GIS PRACTICALS	Practical	Participants Discussion
06-11-20	5-00-6.00 PM	GIS PRACTICALS	Applications	Participants Discussion
07-11-20	5-00-6.00 PM	GIS PRACTICALS	Practical	Participants Discussion
08-11-20		Sunday no classes		
09-11-20	5-00-6.00 PM	GIS PRACTICALS	Practical	Participants Discussion
10-11-20	5-00-6.00 PM	GIS PRACTICALS	Practical	Participants Discussion
11-11-20	5-00-6.00 PM	Feedback	Participants	Valedictory

EVALUATION

The certificate program can be considered as a very successful to enhance the influence and existence of this program. First the participants had limited understanding of the study before the program, whilst all participants had good or sufficient knowledge of disaster management problems and actions, after the program. 67.5% of participants found the hands on program is excellent and it is very useful and some are interested and wanted to learn even more, the remaining 32.5% of them are finding it useful. 93% of participants rated the facilitator / trainers as excellent or very good. One less positive issue identified by participants was more time needed for practical than lectures, although the present time periods were rated very positively.



Additional comments relating to the program included the following:

- Great handling of logistics on the ground
- It would be good to include participants from respective agencies / departments in charge of terrestrial & marine area.
- More hands on expertise needed in future programs and needed the same topic for two months.

GLIMPSE OF THE PROGRAM

Basics of Remote Sensing

The diagram illustrates the process of remote sensing. It shows the Sun emitting incident solar radiation, which passes through the atmosphere to reach the Earth's surface. The surface is divided into different land cover types: Forest, Water, Grass, Bare Soil, Paved Road, and Built-up Area. Each type reflects solar radiation differently, which is then captured by a satellite in orbit. The reflected solar radiation is shown as arrows pointing from the surface to the satellite.

FREE SATELLITE IMAGERY DATA SOURCES

Free Satellite Imagery
Eyes From the Sky

Today practical class will be on

- Sources for free of cost downloading Satellite data
- How to download Toposheets from Survey of Indian Website
- How to download Satellite data from USGS
- How to download Satellite data from BHUVAN Website
- How to download Sentinel Data from Website
- How to download SRTM data

The bottom screenshot shows the QGIS software interface. The 'Processing' dialog box is open, displaying the 'Semi-Automatic Classification Plugin' parameters. The 'Interpolation method' is set to 'Linear'. The 'Output raster size' is set to '1000000' by '1000000'. The 'Interpolated' checkbox is checked. The 'Run as Batch Process' checkbox is also checked. The 'Run' button is highlighted.