TRAINING/ WORKSHOP REPORT
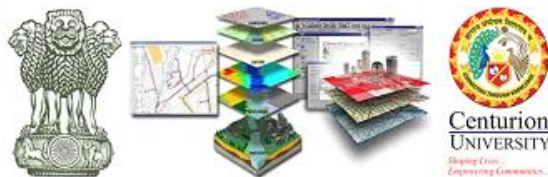
GEOSPATIAL TECHNOLOGY SIGNIFICANCE, APPLICATIONS AND BEYOND

From Monday 30th Nov. 2015 to Saturday 19th Dec. 2015

Sponsored by
NRDMS, Dept. of Science and Technology, Govt. Of India, New Delhi

Organized by
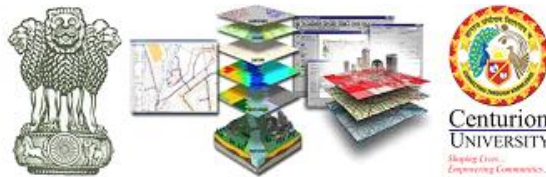**Department of Civil Engineering**
Centurion University of Technology and Management, Paralakhemundi

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ACKNOWLEDGEMENTS

We are extremely grateful and thankful to DST/NRDMS who believed on us, supported and encouraged us for the successful completion of the workshop.

We wish our sincere thanks and deep sense of gratitude to Dr.Bhoop Singh and Dr.A.K.Singh for giving us an opportunity to conduct a 21 days workshop/training progemmame in Centurion University of technology and Management, Paralakhemundi.

We also like to thanks to the resource persons who made hands on learning environment in the workshop.

We would also like to thanks to the participants who have willingly shared their precious time during this workshop.

To make this training program a grand success I express my gratitude to Mr. Vishal Sing, Asis Modi , Staff and Students of Civil Dept. for their constant unselfish support and contributions .

I express my thankfulness to respected Vice President Prof. D.N Rao, Honorable VC Dr. D. Nageswar Rao, Dr.A.K.Mishra (Registrar), Dr.Anita Patra Dean SoET, Dr. MLN Dean Academic affair for their guidance, inspiration and support in providing all facilities.

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A special thanks to Ms.Suchitra Panda Co convener of this workshop for her constant unselfish support and contributions.

Convener

Prof.Prafulla Kumar Panda

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Introduction:

Geoinformatics has been described as "the science and technology dealing with the structure and character of spatial information , its capture ,classification ,storage , portrayal and dissemination ,including infrastructure necessary to secure optimal use of this information" or "the art ,science or technology dealing with the acquisition ,storage processing production ,presentation and dissemination of geoinformation" Geography and earth science increasingly rely on digital spatial data acquired from remotely sensed images analyzed by geographical information system and visualize on paper or computer screen.

Advanced techniques like Remote Sensing (RS), Global Positioning System (GPS) and Geographic Information Systems (GIS) integrated with Earth Sciences, can provide valuable information about the system, process and resources. The application of Geospatial technologies is increasing rapidly, creating an urgent need for trained manpower. This workshop aims to provide an in-depth view on the key concepts and principles in Geospatial Technologies, areas of global and national developments, its applications, and strategies. Thus to visualize and understand the future trends, expansion; the concerns that lead to various international and national initiatives to tackle them is the aim of this workshop. The workshop includes lectures and Hands-on exercises.

Objectives: The major objectives of the workshop were

1. To apprise the participants on the relevance and importance of GIS and Remote sensing
2. To enable the participants apply the knowledge gathered for further knowledge dissemination and taking up UP/PG projects
3. To build up confidence level in the participants to apply the knowledge gathered for taking up research project
4. To bridge the gap between theory and practice in field of GIS among the practicing GIS professionals.

   The targeted group of this training progamme included the Land use planner, surveyor, Agricultural professionals, natural disaster mitigators apart from faculty teaching the subjects related to GIS and its application.

   For the training communicator's important workshop outcomes were:
   - Discussion with local stakeholder about priority research needs within the region

2. Location and period of the workshop

The workshop held at Centurion University of Technology and Management, Paralakhemundi, From Monday 30th Nov. 2015 to Saturday 19th Dec. 2015

Course   Content

* Fundamentals of Geography –Shape of the Earth, Datum and its types, Coordinate System
* Introduction to GIS-Definition, Components of GIS, Functions of GIS
* Spatial analysis-Data modeling, Querying the GIS – Attribute query, Spatial query
* Basic Concepts of spatial data and elements of spatial data systems
* Arithmetic & Relational Operations. Data retrieval & Selection and its prominence
* GIS, database, Topology, Spatial analysis and open source software
* Basic Principles of Remote Sensing, Earth Observation and Platforms, Spectral Signature
* Digital Image Processing: Basic Concepts of Rectification and Registration, Enhancement, Classification and accuracy assessment techniques.
* GIS and its application in Town planning - a case study
* GIS and its application in Traffic Management analysis – a case study
* Introduction to GPS and GNSS, receivers, processing methods, errors and accuracy
* GIS and its application in natural resource management – a case study
* Remote Sensing and GIS Applications: Geology and Geomorphology,
* Engineering Geology with emphasis on Landslide studies, Coastal zone Management,Water Resource Management, Hydrogeology / Groundwater and Disaster Management.
* Geoinformation Science - Recent and Future Trends

3. Participants:

The participants were from various parts of the country. The total number of participants was 46.the list is enclosed below.

Participants list of Geospatial workshop

Sl.no	Name	Gender	Designation
1	Debi Prasanna Behera	M	Data engineer, Weatherford Oil Tool M.E. Ltd.
2	Bibhu Prasad Behera	M	GIS Engg.
3	Sneharika Rao	F	GIS Engg.
4	Padmacharan sahoo	M	Research scholar
5	Amiya Kumar Mudali	M	Research scholar, IIT Roorkee
6	Ramakrishna Edupalli	M	Research scholar, Hyderbad
7	Mr. S. Vamsi Krishna	M	Research scholar, Hyderabad
8	M.Chiranjeev	M	Asst. Prof, Department of Civil Engg, Vishakpatanum
9	Jyoti Reddy	F	Research scholar, Dhenkanala
10	S V N Sunil Kumar	M	Asst. Prof, Srikakaulm
11	P.Revantkumar	M	Asst. Prof, Srikakaulm
12	Sunil kumar sahu	M	Asst. Prof, Berhampur
13	Binapani Mohapatra	F	Research scholar, Burla
14	Sujit singh	M	GIS Engg., BMC
15	Sangeeta Sahu	F	Lecturer
16	Sudarsan Sahoo	M	Town Planning Specialist
17	Ranjan Kumar Acharaya	M	MIS Specialist
18	Prasanta Kumar Dhala	M	CB & Training Specialist
19	Hrushikesa Tripathy	M	Social Development Specialist
20	Meghanad Behera	M	City Project Coordinator
21	Rena Makuda	F	Asst. Prof, Bhubaneswar
22	Abinash Gaya	m	Asst. Prof, CUTM, Paralakhemundi
23	Sashi Bhusan Moharana	M	Asst. Prof, Computer Science, CUTM, Paralakhemundi
24	Pabitra Kuamr Palo	M	GIS Engg, Bhubaneswar
25	Bhabani sankar Panda	M	Asst. Prof, Computer Science, CUTM, Paralakhemundi
26	M.Vijay	M	Asst. Prof, Chemical, CUTM, Paralakhemundi
27	Tamanna Sahoo	F	Research scholar, Civil, Cutm
28	Sasmita Panda	F	Project Executive
29	Rakesh Kumar Sahu	M	GIS Engg, Bhubaneswar
30	Madhusmita Ghadei	F	Research scholar, Civil ,Cutm
31	Saurav kumar	M	Research scholar, ECE,Bangolore
32	G.Tanuja Rao	F	Lecturer

33	Pranati Panda	F	Lecturer
34	M.Bhargav naidu	M	Asst.prof, civil,CUTM ,Paralakhemundi
35	Suraj kumar	M	Lecturer
36	Abinas paikray	M	Asst. Prof, ECE, CUTM, Paralakhemundi
37	Asish modi	M	Project Executive
38	Suchitra Panda	F	Lecturer
39	Vishal Singh	M	Project Executive
40	Anup Nayak	M	Project Executive
41	Tejaswini Maharana	F	Lecturer
42	Pratap Kumar Dakua	M	Asst. Prof, ECE, CUTM, Paralakhemundi
43	Dr. Banitamani Mallik	F	Associate Professor
44	G.K.SAHU	M	Senior lecturer
45	Ramesh sahu	M	Project Executive
46	Dr.Prabhat Kuamr Dikhit	M	Associate Professor,MITS,Bhubaneswar

Workshop/Training time table: Anexure-1

Inauguration:

The inauguration was held on at CSREM seminar hall on 30th November 2015 in the gracious presence of Dr. Jaya Gopal Jena as a Chief Guest and Dr V.V Rao as Guest of Honor. Dr.M.L.Narasimham, Dean Academic , Dr. C.R.Rao, Emeritus Professor, Dr. S.S. Hota ,HOD Civil Branch , Prof. Prafulla Panda (Convener) , staff , students and participants(46 numbers) who had come from different corner of the Country. Some of the figure attached here.

Workshop Sessions and Discussion

Day 1 began with hope and anticipation, with full of thoughts and concentrations. The session of this day was delivered by two veterans Prof V.V Rao and Prof. Jaya Gopal Jena with the titled Basic Principles of Remote Sensing and its application.

Day-2 Day2 was focused on Application of Remote Sensing and GIS in Natural Resources by Dr. K. Hare Krishna. The topic was covered

1. the concept and foundation of remote sensing,
2. satellite system parameter and systems
3. Application of Remote Sensing and GIS in Natural Resources

Day-3 to 5

Day 3 to 5 was concentrated on GIS Data Analysis and Application of Remote Sensing GIS Seismic Hazard and Hands on Practice by Dr. Mahon Mahan Rout, IIT Roorkey

The following topics were discussed

1. Introduction to Remote Sensing
2. Introduction to GIS-Definition, Components of GIS, Functions of GIS, Coordinate System, Projection, Datum and its types.
3. Case studies
4. Hands on exercise with ARC GIS SOFTWARE

Day 6

Day 6 was concentrated Application of Remote sensing and GIS for Hydrocarbon Exploration by Prof. Prafulla Kumar panda

1. Visualization of surface structure/signature by analyzing the tectonic, geomorphic and drainage anomalies from satellite imagery

2. Visualization of sub surface by analyzing the resistivity and Gravity data.

3. Identification of possible linkage between the surface and subsurface.

4. To bring out the total architecture of surface and sub-surface.

5. To find out the Hydrocarbon locales.

One week was culminated with Field Exposure visit to Gondahati

Day 8 was commenced with a resourceful and learning session by Dr. Mamata Panda, Deputy Secretary of Higher Education, Government of Odisha on the topic Application of Remote Sensing and GIS in the field of Geology

1. Application of remote sensing in water resources
2. Interpretation and analysis

.

Day 9 &10 was focused on most scientific session on the topics Digital Image Processing, Global Positioning System and hands on practice with ERADAS and ARC GIS by Dr. R. N. Samal, Chilika Development Authority.

The following topics were discussed

1. Digital image processing

2. Hand on Practice with ERDAS

3. Case studies

11

Day 11 and 12 was concentrated on the topic GIS for Natural Resources and Coastal Zone Management by Prof. K. Nagesh, IIT Madras and Prof. K.C. Sahu, Berhampur University, Dept. Marine Science.

The following topics were discussed

1. Hand on practice with village GIS
2. Participatory GIS for empowering communities
3. Case study of rainwater harvesting systems in village

2nd Week was culminated with Field Exposure visit to Khosoda Waterfall and nearby place

Day 14 and 15 was concentrated on Application of RS and GIS in Water Resource, Flood Risk Evaluation and Management, Coastal Hazard Assessment by Dr. Mohammad Vageer, Andhra University.

1. Analysis of Contour Trench & Percolation Tank Performance
2. Cyclone/ Tsunami hazards in Bay of Bengal – Geoinformatics applications for Disaster Management
3. Flood Zone Mapping for an Urban Catchment thro' NRCS CN Method A Case Study of Visakhapatnam
4. Hands on Practice with ILWIS and ERDAS

Day 16 was focused on Visual Image Interpretation and Digital Image Processing and hands on practice with mat lab by Prof. G. Girish and Prof P.R. Sahu.

The following topics were disused

Introduction to Digital Image Processing

Hand on practice with mat lab

Day 17th to 19 was focused on Ground water Applications and hands on practice by Prof. Kamal Kant Barik.

The topics were covered

1. Evaluation of vehicular Air Pollution against green spaces in urban area using Geospatial Techniques
2. Space technology and GIS in ground water prospect mapping

3. Health assessment of the coral reef in the Gulf of Myanmar, A Geospatial perspective.
4. Ocean colour remote sensing
5. Hands on practice with ARC GIS

All these days passed and sessions rolled in, knowledge was shared, ideas were exchanged, decisions were respected and cohesive effort of participant lead to a successful of technical sessions tested for their practicability, hands on training and field exposure visit.

20TH day Dr Dr. I.V. Murali Krishna gave an excellent talk GEOSPATIAL TECHNOLOGY….Few aspects of smart Habitations…a technical and social perspective
 What is smart city?
• Smartness in a city means different things to different people. It could be smart design, smart u1li1es, smart housing, smart mobility, smart technology etc.
• Thus it is rather difficult to give a defini1on of a smart city. However, people migrate to ci1es primarily in search of employment and economic activities beside better quality of life.

• Therefore, a Smart City for its sustainability needs to offer economic activities and employment opportunities a wide sec1on of its residents, regardless of their level of educa1on, skills or income levels.

The validation ceremony was initiated with the gracious presence, of **Dr. D. Nageswara Rao, Vice Chancellor(Guest of Honor), Dr. I.V. Murali Krishna (Chief Guest), Dr.M.L. Narasimham, Dean Academic , Dr. Anita Patra, Dean SoET, Dr. S.S. Hota ,HOD Civil Branch, Prof. Prafulla Panda (Convener)**, staff, students and participants(45 numbers) who had come from different corner of the Country. The HOD welcomed all the dignitaries and initiated the ceremony .The Convener Prof. Prafulla Panda read out an elaborated report of the training. The Chief Guest Prof. I.V. Murali Krishna gave emphasis in the application of GIS on making of Smart City and highly praised to the convener for organizing such as meaningful technical training programme for a longer period of days. The honorable VC of Centurion University congratulated the HOD, Convener and other staff and students for their eminent effort of organizing this long scientific and resourceful training program. He stated that Civil Branch will stand as exemplary for all other branch in this type of resourceful training programme. Dean Academic and Dean SoET appreciated the convener and participants for making this training programme to be successful. All the participants shared their resourceful experience about the training. The ceremony was culminated with the vote of thanks by the Co-convener Ms. Suchitra Panda

Conclusion and feed back

The 21 days   training programme completed with excellent invited lectures from various reputed institutes and industry ,2 filed visits and hand on practice .Participants were satisfied and learned concepts of GIS and Remote sensing . Researcher they can utilize the knowledge for their researcher. Faculty they can enhance their quality through teaching. In this 21 days workshop participants who came across the country learned hands on practice on remote sensing and GIS. They also learned how to use Geospatial technology in urban areas and so on. Finally Feedback has been taken which was satisfactory.

To make this training program a grand success I express my gratitude to Mr. Vishal Singh, Asish Modi, Staff and Students of Civil Dept. for their constant unselfish support and contributions.

I express my thankfulness to respected Vice President Prof. D.N Rao, Honorable VC Dr. D. Nageswar Rao, Dr. A. K. Mishra (Registrar), Dr. Anita Patra, Dean SoET, Dr. MLN Dean Academic affair for their guidance, inspiration and support in providing all facilities.

In this 21 days workshop participants who came across the country learned hands on practice on remote sensing and GIS. They also learned how to use Geospatial technology in urban areas.

I respect and thank the dignitaries for igniting the minds, will definitely let the knowledge live through our deeds and not in words.

Centurion University of Technology and Management

Department of Civil Engineering

Paralakhemundi, Odisha

NRDMS/DST Sponsored workshop on

Geospatial Technology Significance, Applications and Beyond

<u>Feed Back From</u>

<u>Rating:</u> **1-Poor , 2-Fair , 3-Good , 4-Very Good , 5-Exellent**

1. How did you know about this workshop?
   (a) Website (b) Friend (C) Poster (d) College/ University
2. Have you satisfied with the hospitality provided during this workshop?
   (a) 1 (b) 2 (C) 3 (d) 4 (e) 5
3. Where the given schedule was properly prepared or not?
   (a) 1 (b) 2 (C) 3 (d) 4 (e) 5
4. Whether the theoretical sessions were held for sufficient time or not?
   (a) 1 (b) 2 (C) 3 (d) 4 (e) 5
5. Did you feel satisfied with the seminar hall facilities?
   (a) 1 (b) 2 (C) 3 (d) 4 (e) 5
6. Were you satisfied with the lab arrangements?
   (a) 1 (b) 2 (C) 3 (d) 4 (e) 5
7. Do you feel that laboratory sessions were done for sufficient time?
   (a) 1   (b) 2   (C) 3   (d) 4 (e) 5
8. What did you like most in this workshop?
9. Do you feel the title of the workshop/Training was related to workshop/Training?
   (a) 1 (b) 2 (C) 3 (d) 4 (e) 5
10. Materials provided during workshop/Training were useful or not?
    (a) 1 (b) 2 (C) 3 (d) 4 (e) 5

11. If this type of workshops/Trainings will be conducted in future, would you like to come again?
    (a) Yes   (b)No
12. Any comments…………………………………………?

Date :-   Signature of the
                                                              (Optional)
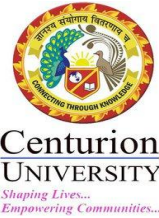
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Examination

Name:

1. Differentiate between Active and passive remote sensing and give the examples.

2. How you will discriminate clear and turbidity water using satellite data.

3. What is FCC?

4. Explain DEM and DTM and differentiate it.

5. What are the Data structures in GIS and Explain Cartography?

6. Write down the application of GIS.

7. Define Land use and Land cover.

8. What do you mean lineament and how you will identity from remotely sensed data?

9. Define SRTM? How you will prepare saddle relief map and for which purpose?

10. Discriminate various features from the satellite imagery using your interpretation techniques.

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