

## Specialized Programme on Application Development using GIS & Remote Sensing

A. NAME OF INSTITUTE	Centre For Development of Advanced Computing
B. NAME/TITLE OF THE COURSE	<b>Specialized Programme on Application Development using GIS &amp; Remote Sensing</b>
C. COURSE DATES WITH DURATION IN WEEKS	<b>From February 16<sup>th</sup>, 2015 to May 8<sup>th</sup>, 2015</b> <b>In weeks: 12 Weeks</b>
D. ELIGIBILITY CRITERIA FOR PARTICIPANTS:	
1. EDUCATIONAL QUALIFICATIONS	1) Two years Technical course or Graduate in any Stream after 12 years of schooling
2. WORK EXPERIENCE required, if any	2) -----
3. AGE LIMIT	3) -----
4. Target Group [ <i>Level of participants and target ministries/departments etc. may be indicated</i> ]	4) Should meet the above educational requirements and should know English language
E. AIMS AND OBJECTIVES OF THE COURSE	<u>Objective:</u> The purpose of the programme is to introduce to the participants about Geographic Information System & Remote Sensing concepts. Further the participants would be trained on various tools so as to enable them to develop GIS Applications.
F. MODE OF EVALUATION OF PERFORMANCE OF THE TRAINEE	Lab Work & Project Work

## **Objective**

At the end of the course, Students will be able:

- To understand the GIS & Remote Sensing concepts.
- To understand information relating to integration of GIS, Remote Sensing and Application software development.
- To understand about Development of GIS Applications using Client/Server Architecture

## **Course Content**

### **1. Fundamentals of GIS**

- Introduction to Digital Cartography and Map Projection
- Introduction to GIS
- Representing Geography – Data Structures and Data Models
- Spatial Data Input and Data Transformation
- Manipulation of Spatial Data – Vector
- GIS Analysis using AutoCAD MAP, Arc GIS , QGIS
- Thematic map Preparation

### **2. Advance GIS**

- Spatial Analysis and Modeling using ArcGIS
- GIS Implementation and Project Management

### **3. Concepts of Remote Sensing**

- Basics of Remote Sensing
- Physics of Remote Sensing and EMR interactions
- Remote Sensing Platforms, Sensors and Resolutions
- Earth resource satellites – Land sat, IRS etc.

#### **4. Digital Image Processing Using ERDAS Imagine (applications of remote sensing in land use \ land Cover)**

- Analysis and Interpretation of Digital Remote Sensing Data
- Pre-processing corrections: Radiometric correction Geometric aspects
- Introduction to DIP
- Image Rectification and Restoration
- Indices and Rationing
- Image Classification
- Post Classification Smoothing
- Change Detection Analysis

#### **5. Application GIS Development**

- Non Spatial Database
  - Database Concepts
  - SQL, PL/SQL
  - Linking of External non spatial database Geo Database
- Application Development Tools
  - Mapping SDK using VB.Net
  - ASP.net & Overview of WebGIS
- Client server GIS Application Development using Oracle, VB.Net and Mapping SDK

#### **6. Project Work**