



# Engineering Staff College of India

(Autonomous Organ of The Institution of Engineers (India))

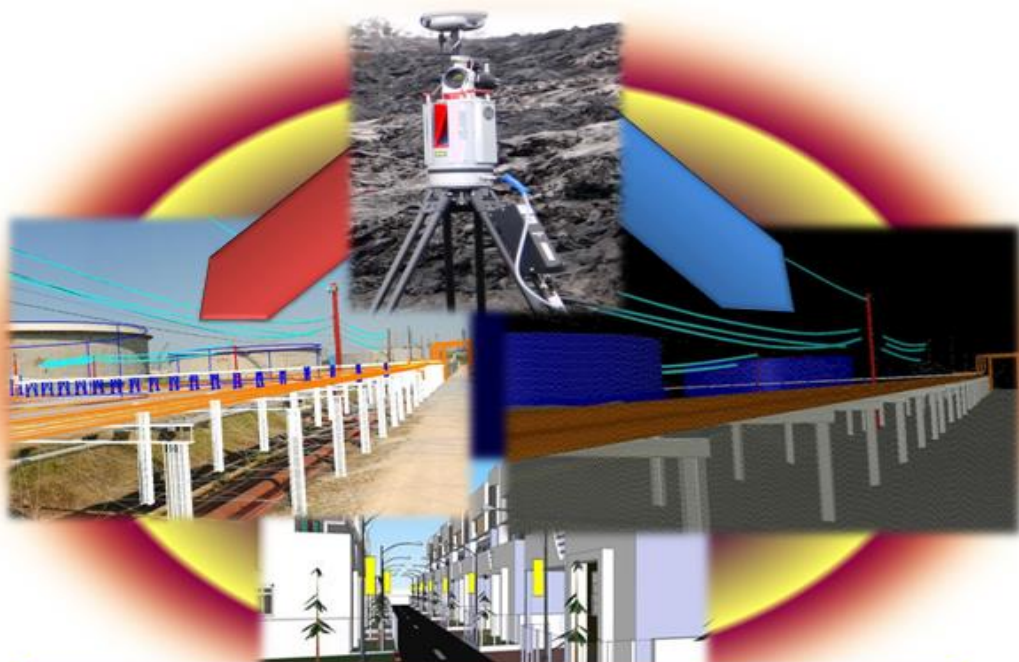
(An ISO 9001:2015 Certified, AICTE & CEA Recognised Institution)

Old Bombay Road, Gachi Bowli, Hyderabad – 500 032. TS, India

## MANAGEMENT AND TECHNOLOGY DIVISION

Continuing Professional Development Programme on  
*3 Dimensional LASER Land Scanners for Mining and other  
Applications*

*31 July – 03 Aug 2018*



**3 D LASER LAND SCANER**



(An ISO 9001:2015 Certified, AICTE & CEA Recognized Institution)

**Centre for Promotion of Professional Excellence**

## INTRODUCTION

In various sectors of planning & development like Mining, construction, infrastructure, power etc, Geospatial technology has emerged as the most efficient IT tool of data capture and management. Amongst Data capture techniques, 3D scanners have emerged as most efficient technology. This combines technologies like –satellite Remote Sensing, Photogrammetry, maps, GPS and similar systems, Total station, leveling, LiDAR etc.

The equipment is fitted with scanner (like LiDAR), photogrammetric cameras, GPS and related software to generate 3-dimensional digital maps for a variety of applications. This latest system is fast, efficient and cost effective.

3 D data capture techniques are growing. Laser scanners are the latest. In a short time, a laser scanner captures huge data in 360 degrees range and generates 3D maps and other outputs.

The course also covers the process of integrating disparate (heterogeneous) spatial data for generating GIS outputs

**Principle: Use of ground based device that uses a laser to measure the 3D coordinates of a given region of an object's surface automatically, in a systematic order at a high rate in (near) real time**

- Survey Range up to 1400 m
- Non Contact Data Acquisition
- High Speed Data Acquisition
- High Accuracy
- Measurement Rate up to 1,22000 measurements/sec
- Field of View up to 100° x 360°
- High Resolution Color Images
- Takes images from platform about 60 ft high
- Point cloud and Photorealistic 3D Visualization

### Application Areas (illustrative list only)

- Calculating volumes of heaps
- Surveying open cast mines
- Roads survey with LS & CS
- Buildings and urban areas
- Bridges and monuments
- Modeling (2D, 3D), Volumes, surface cal and generates Contours
- Cross sections of underground mines
- Coloured outputs
- Automatic extraction of step edges, such as kerbs & gutters

## OBJECTIVE

To familiarize the participants with the fundamentals of Data capture techniques for GIS data bases and expose them to the latest technology of 3 Dimensional LASER Land Scanner.

## CONTENTS

The topics that would be deliberated during the programme are:

Data capture techniques with focus on 3D scanner – Maps, Total station, satellite imagery, Photogrammetry, Leveling, Latest techniques.

- Integration of spatial data from different sources including **Unmanned Aerial Vehicles (UAV's)** to generate GIS data bases for applications
- 3 Dimensional LASER Land Scanner Basics.
- Overview on current surveying & Geospatial technologies
- Map Projections and Coordinate systems
- Maps, Scales, Accuracies vis-a-vis integration of spatial data bases
- Photogrammetry, LiDAR & 3D Terrestrial Land scanner Geo-referencing of satellite imagery using maps and field observations
- Image Processing for RS and also for LiDAR and 3D scanner
- Field Surveying Techniques – Total Station, Leveling, 3D Land Scanner- Integration
- Drone based 3 d surveying including area and volume calculations
- Area /Volume calculation and generating Outputs
- Integration of GPS /GIS with ERP system (SAP) in mining operations Hands-on exercises with GIS Software
- DGPS Principles and applications, Demo of GPS instruments & latest 3 d land scanner
- Group Discussion & Two Social Visits.

## METHODOLOGY

Methodology includes class room Sessions with Lecture/discussion with audio visual aid, Chalk & Talk sessions, group discussions, case studies, sharing of experiences. All the sessions will be interactive demanding active participation from all the members.

## Programme Advisor and Resource Persons



Mr. G S Kumar,  
Former Director,  
Survey of India



Mr. K.K.Pappan,  
Former Senior Scientist,  
NRSC/ISRO



Mr. MS Swamy  
Director,  
3 D Visuals &  
Video Solutions



Dr. K. B. Chari, MS,  
MPhil, PhD  
GIS Consultant



Mr. NK Agrawal  
author of the first Indian book  
on GPS  
"Essentials of GPS"

## FACULTY

The faculty consists of experts from industry / research / academia besides that from ESCI.

## TARGET PARTICIPANTS

Engineering Managers, Executives working in various mining, cement industries and Engineers involved in *mining of coal, exploration of minerals and those working with construction projects, ports, canals, irrigation projects, hydro power projects, dams, quarries and other organizations* will derive immense benefit.

## BENEFIT TO THE PARTICIPANTS

- Exposure to the latest technology
- Familiarization with applications of 3D laser scanner in India and other countries
- Guidance on economic and operational aspects with information about manufacturers

## PROGRAMME DATES VENUE & TIMINGS

**Programme Dates** 31 July – 03 Aug 2018

### Venue & Timings

Venue is ESCI Campus, Gachi Bowli, Hyderabad. Registration will commence at 0900h on the first day. On all other days, the programme will be from 0945 to 1715 hrs.

## COURSE DIRECTOR



**Gp Capt (Retd) BS Phillora** BE (ETC), AE (L), MMS (MS), M Phil, FIE  
Dean of Studies ESCI &  
Faculty & Head, Management & Technology Division  
ESCI, Hyderabad

## COURSE FEE

₹ **20,000** /-(**Residential Fee**) per participant. Fee includes, course material, course kit, twin-sharing/single AC accommodation as per availability, breakfast, lunch, dinner, tea / coffee and snacks during the actual days of training programme.

## DISCOUNTS

- ❖ **Non-Residential Fee-** 10% discount on course fee is allowed for non-residential participants.
- ❖ **Group Discount:** Additional 10% discount for three or more participants, if sponsored by the same organization.

**(All discounts are applicable only if fee is received at ESCI before the commencement of the programme.)**

**Goods and Services Tax @ 18%** is to be paid extra over and above the training fee. PAN Card No AAATT3439Q; **GST No. 36AAATT3439Q1ZV.** (Under commercial training or coaching services).

**Programme fee is to be paid in favour of "IE(I)--Engineering Staff College of India"** in the form of demand draft payable at Hyderabad.

Alternatively, the payment may be made by Electronic Fund Transfer (EFT) to ESCI - SB A/c No.0432104000039631 with The IDBI Bank Ltd., Gachibowli Branch, Plot No. 2-53/2, JNIBF, IIIT Junction, Gachibowli, Hyderabad-500032 by RTG's/ NIFT / IFSC Code No: IBKL0000432. ESCI PAN No. is AAATT3439Q. **While using EFT/ Draft method of payment, kindly forward a covering letter giving details on the names of the participants, Title and the programme schedule so that proper accounting can be done.**

## REGISTRATION

Online registration shall be available on ESCI website.([URL:www.escihyd.org](http://www.escihyd.org)) <http://escihyd.org/index.php/mt-upcoming-trainings>

To register, manually please send your nominations giving details of name, designation, contact address, email address, mobiles no, telephone and fax number of the participant along with the details of mode of payment of fee, addressed to:

### Head, Management & Technology Division

Engineering Staff College of India  
Old Bombay Road, Gachi Bowli,  
Hyderabad 500 032, TS, India  
Ph : 040-66304111,66304112 & 66304105  
Fax : 04066304103 & 914030995227  
Email : [mt@escihyd.org](mailto:mt@escihyd.org)

### For Registration & Information Contact:

Mr. LV Rao  
Programme Officer  
Mob 09949145865  
Land Line 040 6630 4105

## CERTIFICATION

**A certificate of participation will be awarded to each participant on conclusion of the programme.**

## GENERAL INFORMATION

- ESCI encourages participants to present case studies from their respective organizations.
- ESCI provides complimentary accommodation and boarding to the participants one day before commencement (Check-in 1200 h) and one day after conclusion (Check-out 1200 h) of the programme duration. Overstay charges will be applicable as per ESCI rules (subject to availability of accommodation)
- Well-developed Information Centre and Internet facilities are available to the participants.
- **Nominating authorities are requested to kindly send the contact details of the participants while sending their nomination letter. This will help us in making necessary administrative arrangement for them.**