SHORT TERM COURSE ON

ADVANCED GEO-IMAGING, REMOTE SENSING AND GIS FOR MINING AND GEO-SPATIAL INDUSTRIES

4th – 6th January, 2018

Coordinator

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Organized by

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INTRODUCTION & OBJECTIVE

Understanding of the different methods, the modern technologies, the underlying principles, high potentials and limitations of the advanced geo-imaging and geo-informatics techniques including learning about the criteria for useful applications - conceptualizing the processes of creating digital databases & environments - gaining the practical skills by using existing tools in laboratory sessions - developing complete applications through field / group projects, form the basis of this course.

During the last two decades techniques of **positioning, navigation and surveillance engineering** has undergone rapid & leap changes. Advanced technologies have dramatically changed the different operations of map generation, acquiring-planning and scheduling inputs for proper design and inventory management aided with the associated field operations (like in***: civil, chemical, mining, geo-resources, architecture, highways, railways, airports*** etc.) for adequate and intensive analysis followed by improved planning and management.

It is undoubtedly important that the digital signal and image based surveying operations need to have **exposure** to handle the advanced equipment like: the ***digital level, autolevel, total station, GPS, DGPS, laser beams, robotic theodolites, space craft image-based operations for terrestrial as well air / satellite borne and robotic*** *mapping* for various purposes of industrial operations.

More importantly, familiarization with the downloaded data to store and analyse the information using the associated algorithms / software tools as well as integrating them with the related planning software; forms the other important aspects of this task.

The applications of the latest algorithms and tools of Geo-informatics in this sector is particularly important in surveying, mapping and planning. This trend is definitely going to bring modern concepts of surveying and positioning to a completely new dimension where automation, virtual reality etc will be playing a vital role.

DEPARTMENT OF MINING ENGINEERING

Mining Engineering at IIT Kharagpur has been working on these advanced technologies and the respective application of IT in this sector, and has earned its reputation by serving the industry over the last decades.

The Geo-Location, Mapping, Surveying and Geo-informatics division of the department has developed high level of expertise and experience in the applications of these modern surveying techniques and advanced information handling algorithms with the recent methods including **remote sensing**, **cadastral mapping**, digital **photogrammetry**, **GIS** and **DGPS** etc. in the past years. The proposed executive / academic development program will be offered especially for the surveyors, and Industrial planning- and managerial- executives, with the theoretical and practical hands-on exercises.

COURSE CONTENT

Introduction - Enabling Technologies of Digital Image Processing, Geo-Spatial Imaging, Remote Sensing & GIS - Definition and Characteristics of the modern sensors - Applications – Principles of latest techniques for solving various engineering problems - Geometric Modeling Principles - Modeling of Digital Environments - Existing Tools - Special Topics: Global Positioning System, GIS, Remote Sensing, LU/LC, Change detection, Digital Photogrammetry, Cadastral Intelligence, Situational Awareness, Terrestrial Laser Scanner and Radar Scanners.

LABORATORY SESSIONS

Basics and Introduction – Conventional methods of data capturing – Data Modeling and Analyses – Familiarization with the Associated Software Packages and Tools - Preparing Models for Field Applications - **Group Mini Project Works**.

FACULTY

Faculty for the course involves eminent professors working in the field of Geo-informatics and Mapping with their applications at the Institute, sister IITs, IISc and some experts from the industry, e.g.: ISRO, NRSC, IIRS, SOI,

GSI, MOEF, DGMS etc., who may deliver the lectures and help in practical sessions.

WHO SHOULD APPLY

The course is open to anyone interested and working on the application of Geo-informatics, Geo-Imaging, Remote Sensing and GIS Technologies. Field / practicing engineers, faculty of government / private colleges / institutions of the country or interested students with sufficient background, and people involved in R&D or consultancy or industry on these areas are eligible to apply. Persons with backgrounds in CSE/ EE / ECE/ GG / EXGG / Civil / Mining / Geography may apply. Participation would be on **a first-come-first-serve basis**. This course fee will cover lecture notes (softcopy) and related material, which excludes the transportation, fooding and lodging charges.

APPLICATION AND REGISTRATION

The interested and eligible candidates (following the above mentioned criteria) may send their application (through proper channel) for the participating in the short term course in the format attached at the end, to the course coordinator by **December 20, 2017**, *along with the course fee in the form of a* ***demand draft*** *drawn in favour of* ***'CEP-STC, IIT Kharagpur'*** *payable at Kharagpur or deposited electronically in* SYNDICATE BANK, IITKGP; Bank, A/C No.: 9556 2200002955, Bank Code: MICR 000025000, Core Banking No for Electronic Fund Transfer: SYNB0009556. The course fee for different categories of participants is as follows:

(a)	Industry executives (individual) : Group (not less than 3 individuals) Rs.18,000.00 per individual	Rs.20,000.00
(b)	Faculty from Colleges / Institutions / scientists from different organizations Group (not less than 3 individuals) Rs.13,000.00 per individual	Rs.15,000.00
(c)	Officials from NGOs (Individual) : Group (not less than 3 individuals) Rs. 8,000.00 per individual	Rs.10,000.00
(d)	Research Scholars / Students / Technical Assistants (Individual) : (of Diploma, BSc, MSc, BTech, MTech & other related post-graduate level students) Group (not less than 3 individuals) Rs.6,000.00 per individual	Rs. 8000.00

Note: The course fee excludes transportation, fooding and lodging charges; and will cover lecture notes (softcopy), refreshment during classes and local transport costs only.

BOARDING AND LODGING

As per the present institute norms, the selected candidates / participants from industry / academic institutions / NGO / other participants, would have to bear these costs.
Arrangements for accommodation for limited number **(a maximum of 30)** of the selected participants will be extended **(on first-come-first-serve-basis)** in our institute technology guest house in a double / single bedded *(non-AC / AC) rooms on the payment basis at the institute rate (double bedded AC Rs 1500)* and VGH D/B AC room Rs. 600, D/B Non AC room Rs. 300, depending on the availability at the time of the course. Also several restaurants and cafeteria of different types are available on and around the campus. Refreshments / Tea will be made available during the sessions.

GENERAL INFORMATION

IIT Kharagpur is located in a rural environment at a distance of about 5 km from Kharagpur Railway Station (SER). Kharagpur, 116 km from Kolkata, is conveniently connected to Howrah (Kolkata) by Local and Express trains. It has direct rail links with most of the major cities in India. Those traveling by air may take a taxi to Howrah Station from Kolkata Airport. Auto-rickshaws (Rs. 140/-) and Taxis (Rs. 180/-) are available from the Kharagpur Railway Station to IIT Kharagpur. Weather during September is rainy but pleasant.

IMPORTANT DATES

Last date of receipt of application : ***December 20, 2017***
Intimation of selection : ***December 24, 2017***
Confirmation by applicant : ***December 26, 2017***

ADVANCED GEO-IMAGING, REMOTE SENSING AND GIS FOR MINING AND GEO-SPATIAL INDUSTRIES

Registration Form

Name: Mr. / Mrs.: ……
Office Address: ……
Telephone No : ……..……
FaxNo.: ……..…..
Mobile Nos.: ……..……
E-mail ID: ……..…
Highest Academic Qualification with year: ……..…
……
Professional Experience: ……
Sex: Male / Female
Accommodation :Required: Yes / No

Candidate's Signature: …….

Payment Details: ……Dated…….

Registration Certificate

This is certify that Mr/Mrs ..……..…… working as …….. ….. in our Organisation. He / She is approved to attend the short term course on advanced surveying and geo-information for mining and geo-spatial industries

Date: **Signature of Head of the Organization**