

# MHRD Scheme on Global Initiative for Academic Network (GIAN)

## ONE WEEK SHORT TERM COURSE

ON

### COMPUTER APPLICATION AND DATA ANALYSIS IN MINING AND OTHER CORE INDUSTRIES

#### Overview

The development and advancement of computer technology continues at an ever increasing rate. It is used almost in every industry today including mining. The integrated computer aided mine planning and design procedure will help to maximum deposits recovery at greatly reduced costs. This procedure would aid the mining engineer to develop a mine plan from the initial design stage. The initial design stage include analysis of bore hole data, drafting of a layout to the final working mine plan, mine schedule, simulation and cost evaluation. In mining, computers are used for reserve estimation , geological modeling, mine layout evaluation and mine design, financial modeling, equipment selection and scheduling, geotechnical information and strata monitoring during mining activity.

Similarly, other industries, like mechanical, civil and construction industries, utilize Computer Aided Design (CAD) to record and recall information with consistency, speed, and accuracy. In particular, the use of Product Data Management (PDM) systems can store the whole design and processing history of a certain product, for future reuse and also to upgrade. Computer based data analysis will help accurately generated information and easily modifiable graphical representation about the product. The user can view the actual product on screen, make any modifications to it, and present his/her ideas on screen without any prototype, especially during the early stages of the design process.

With the advent of precise and high speed instruments available in the present time, the mining and other core industries have undergone revolutionized changes. The practicing engineers in mining and other industry can't be ignorant about the modern instruments and technologies. Computer applications in mine planning have added new dimensions to this branch of engineering. In order to update the knowledge of students from mining, civil, mechanical, and executives from industry, NITK Surathkal has been conducting short - term courses on regular interval. Still, the requirements of the knowledge from trained personnel on modern computer application with data analysis is much more. Hence, to meet these requirements, Department of Mining Engineering, NTK Surathkal has planned to conduct GIAN course on computer application and data analysis in mining and other core industries from 12-16, March 2018.

Module	COMPUTER APPLICATION AND DATA ANALYSIS IN MINING AND OTHER CORE INDUSTRIES Duration: 12-03-2018 to 16-03-2018 Maximum number of participants for the course = 40		
Day 1 (12.03.2018)	Lecture 1	Optimization: Computational optimization techniques and various applications towards mining, mechanical, civil engineering.	1 Hour
	Lecture 2	Optimization Algorithms: Single-variable optimization algorithms, Multi- variable optimization algorithms, Constrained optimization algorithms, Specialized optimization algorithms, Non-traditional optimization algorithms	1 Hour
	Tutorial 1	Problem solving session with examples: Related to Optimization algorithms.	2 Hour
Day 2 (13.03.2018)	Lecture 3	Transportation problems and techniques: Application related to mining and other industries	1 Hour
	Lecture 4	Project evaluation and review techniques: Critical path methods, Application related to mining and other industries	1 Hour
	Tutorial 2	Numericals on Transportation problem : PERT and CPM	2 Hour
Day 3 (14.03.2018)	Lecture 5	Modeling and simulation (MATLAB): Application towards mining, mechanical, civil engineering.	1 Hour
	Lecture 6	Project planning: Application towards mining, mechanical, civil engineering	1 Hour

	Tutorial 3	Problem solving session with examples: modeling, simulation, and planning.	2 Hour
<b>Day 4 (15.03.2018)</b>	Lecture 7 and Lecture 8	Statistical Package for the Social Sciences (SPSS); Application towards mining, mechanical, civil engineering. Problem solving Techniques: SPSS software package	2 Hour
	Tutorial 4	Problem solving session with examples: SPSS software package.	2 Hour
<b>Day 5 (16.03.2018)</b>	Lecture 9	Artificial intelligence: benefits & risks of artificial intelligence, Applications in mining and other industries	1 Hour
	Lecture 10	Design and development of mine planning.	1 Hour
	Tutorial 5	Present scenario and problems on mine planning.	2 Hour
<b>Date of examination</b>	<b>MCQ Type Test</b>	<b>16<sup>th</sup> March 2018</b>	<b>30 Minutes</b>
<b>Who can attend</b>	<ul style="list-style-type: none"> <li>• Executives, engineers, and researchers from mining, mechanical, civil engineering from industries, and government organizations including R&amp;D laboratories.</li> <li>• Research scholar and M.Tech student from mining engineering, civil engineering, mechanical engineering, mathematical and computational sciences, and allied branches, faculty from reputed academic institutions.</li> </ul>		
<b>Registration process and fee</b>	<ul style="list-style-type: none"> <li>• The applicant is required to get themselves register on GIAN web portal (<a href="http://www.gian.iitkgp.ac.in">http://www.gian.iitkgp.ac.in</a>) to apply for any number of GIAN courses as and when necessary.</li> </ul> <p>The course registration fee is separate. The participation fees (Demand draft drawn in favour of <b>Director, NITK Surathkal, payable at Surathkal</b> for taking the course is as follows: The participation fees for taking the course is as follows: Participants from abroad : US \$500 Industry/ Research Organizations: Rs 6000/- Faculty Members from Academic Institutes: Rs 4000/- Students/Research Scholars: Rs 2000/-</p> <p>The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation, if available, on payment basis.</p>		

## Foreign faculty:



**Dr. Snehamoy Chatterjee** is an Assistant Professor of Mining Engineering, Department of Geological and Mining Engineering and Sciences, Michigan Technological University. He received his PhD in Mining Engineering from Indian Institute of Technology, Kharagpur. He was a postdoctoral research fellow at University of Alaska Fairbanks, USA from 2006 to 2008.

During 2008-2010, he was research associate in COSMO Stochastic Mine Planning Laboratory, McGill University Montreal, Canada. His research includes multi-point and multi-scale geostatistics, production monitoring and automated control using digital image analysis, mathematical and artificial intelligence modeling of mining problems, and stochastic optimization and decision making. He received Young OR (Operations Research) Professional Award by 37<sup>th</sup> International Symposium on Application of Computers and Operations Research in the Mineral Industry (APCOM 2015). Dr. Chatterjee is organising and technical committee member of different international conference and symposium. He received Best Reviewer Award from Mathematical Geosciences journal in 2014.

## Host Faculty:



**Dr. B. M. Kunar** received B.E. in Mining Engineering from Govt. Engineering College, Keonjhar (OSME, Keonjhar) Odisha and M.E in Mining Engineering from IEST Shibpur (BESU, Shibpur). He received his Ph.D. in Mining Engineering from Indian Institute of Technology, Kharagpur. During 2008-2009, he was a scientist

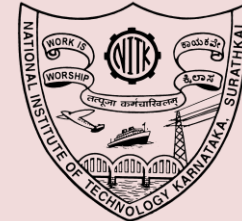
in NIRM (Ministry of Mines, Govt. of India) Bangalore. He started his teaching career in the Department of Mining Engineering, ISM Dhanbad (IIT Dhanbad), India in the year 2009. He is working as Assistant Professor in the Department of Mining Engineering, National Institute of Technology Karnataka, Surathkal, since September, 2013. He has more than 9 years of Teaching & Research experience. He has published more than 30 research papers in the area of safety management, computer application in mining, strata control management and statistical data analysis at various International/National Journals & Conferences. He has been associate Editor of “Geosciences Research” Bioinfo Publications Editorials, “Ecology and Environmental Sciences” Bioinfo Publications Editorials, and worked as a reviewer for Linacre Quarterly Taylor & Francis, Arabian Journal of Geosciences (Springer), Sadhana-Academy proceedings (Springer). His area of interest includes safety management, statistical data analysis, optimization and image processing.

## One Week Short Term Course

on

## COMPUTER APPLICATION AND DATA ANALYSIS IN MINING AND OTHER CORE INDUSTRIES

Organized by



Department of Mining  
Engineering, National Institute of  
Technology Karnataka,  
Surathkal

Supported by



## GIAN

(Global Initiative for Academic Networks)  
MHRD, GOVT. OF INDIA

**Duration: 12-03-2018 to 16-03-2018**

Venue: NITK Surathkal, Mangaluru

**Last date for registration: 28.02.2018**

**Contact Address:**

**Dr. B. M. Kunar**

Course Coordinator

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National Institute of Technology  
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**National Institute of Technology Karnataka, Surathkal**  
**MHRD Scheme on Global Initiative for Academic Network (GIAN)**  
**ONE WEEK SHORT TERM COURSE**

ON

**“COMPUTER APPLICATION AND DATA ANALYSIS IN  
MINING AND OTHER CORE INDUSTRIES”**

**Duration: 12-03-2018 to 16-03-2018**

**Registration Form**

1. Name of applicant: .....

2. Designation & Department:.....

3. Mailing Address: .....

.....

4. Tel: (Residence):.....

(Mobile):.....

(Office): .....

5. Email: .....

6. Qualification:.....

7. Experience: Teaching: ..... and

Industrial: .....

8. Comment on your exposure: .....

9. Fee Payment Details

Amount Rs: .....Demand Draft No. : .....Bank: .....

.....and Date: .....

10. Category of participants:

Faculty/Student/Research scholar of NITK

Faculty/Student/Research scholar of Outside NITK

Industry/Research Organizations

11. Require accommodation Facility? : Yes / No

I agree to abide by the rules and the regulations governing the GIAN–MHRD Course and I will attend the course for entire duration.

Place:

Date:

Signature of the applicant

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Note:1. Filled registration form with Demand Draft should be send to the course coordinator.

2. Demand draft drawn in favour of Director, NITK Surathkal, payable at Surathkal