

*Five days Short Term Course (Executive Development)*  
*Under*  
***Outreach Program of IIT Kharagpur***  
*on*  
***ADVANCED TECHNOLOGIES IN ROCK EXCAVATION WITH SPECIAL REFERENCE TO***  
***MITIGATION OF SAFETY AND ENVIRONMENTAL ISSUES***  
**(September 21-25, 2023)**  
Department of Mining Engineering, IIT Kharagpur

This course is designed to refresh the mining and excavation engineers to the advanced and sustainable excavation practices. The industry is currently facing the challenges of deep excavation, limited land availability and nearness of inhabitancy. This demands stringent safety and environmental requirements. The availability of minerals is also depleting with time. On the other hand, the requirement of minerals and surface, subsurface excavations are increasing steeply. To cater the same, sustainable mining has to be practiced with advanced technologies. This course is intended to expose the Engineers to the current challenges, advanced technologies and path to achieve sustainable rock excavation practice. The course will start with the basic knowledge, which professionals, in general, forget due to continuous workings as manager. Unlearn and relearn are essential for the sustainable growth of human resource in any organization. Mining Industry is a site specific industry and rock excavation is challenging and different for each cases. The geo-mining and geo-excitation system is varying with terrain condition, socio-political situation, resource availability and financial conditions. The optimization of excavation system can bring the sustainability of the mining system. The optimization can be achieved through grasping the right technology. Therefore, understanding advance technology is very important.

**Course Contents:** This course will include the following broad areas:

1. Understanding Rock/Soil as medium of Excavation
2. Advance instrumentation for rock characterisation.
3. Advances in rock excavation techniques
4. Advanced mechanised cutting and excavation system.
5. Advances in explosive, accessories and rock blasting techniques.
6. Safety and human interference in rock blasting
7. Safety requirements in mechanised rock excavation system
8. Advancement in Mining safety and zero accident plan
9. Environmental impact assessment for rock excavation system
10. Advancement in environmental analysis for sustainable rock excavation system
11. Economics of Excavation System

**Course Outcomes:** After completion of this course, the participants will be able to:

1. Optimise the rock excavation system
2. Design and execute the blast rounds
3. Design and execute the controlled blasting practice
4. Design the mechanised excavation system
5. Optimise the mechanised excavation system
6. Planning and designing the rock excavation system for any mine
7. Calculate the results of the rock excavation system
8. Calculate the environmental impacts of rock excavation system
9. Calculate the financial acceptance and profitability of the rock excavation system
10. Design the SOP and SWP for the rock excavation system

## Course Structure:

This course will be conducted during September 21-25, 2023 from 09:30AM to 5:30PM with lunch and tea breaks at the Seminar Hall of the Department of Mining Engineering, IIT Kharagpur. The programme will consist of lectures primarily by the faculty members of Indian Institute of Technology Kharagpur. Some lectures will be delivered by the experts from industry and governmental agencies. Each session will be followed by interactive Q &A session. Soft copy of the course materials and Certificate of Participation will be provided to the registered participants. The effectiveness of this course will be evaluated through examinations (short question/MCQ type).

## Participation:

The course will be useful for the middle and higher level executives looking after production, raw material supply, environment, health and safety management in mining, mineral, civil and Construction Industries, Tunneling and underground space construction and other allied industries. Executives from atomic and rare earth mineral industries, and environment, health and safety consultants, R&D organizations will also be benefitted from this course.

## Accommodation:

Accommodation for the participants is normally booked at the Technology Guest House of IIT, Kharagpur on prior request and on payment basis. Alternatively, there are local hotels available in the town. However, the accommodation in the campus is considered convenient.

## Course Fee:

The course fee of this *non-residential* programme is **Rs. 30,000.00 (Rupees Thirty thousand only)** per nominated participant from industries. **Additional 18% GST will be levied as per GOI rules.** The course fee is payable by electronic money transfer to “CEP STC IIT Kharagpur” to the account number **95562200002955 of Canara Bank at Branch SRIC IIT Kharagpur (IFSC Code CNRB0019556).** The course fee does not include boarding and lodging charges. IIT Kharagpur is exempted from Income Tax and while sending the course fee no Tax should be deducted. The Tax Exemption Certificate will be provided. *Please let us know the complete transaction details with date after the payment.*

## How to send Nominations:

Please email the nomination letter with the names of your nominated participants, designations, valid email address and mobile numbers to the Course Coordinator as early as possible.

*For any other information, or sending nomination please contact:*

### Prof. Kaushik Dey

Course Coordinator

Department of Mining Engineering

IIT Kharagpur-721302

Phone: +91-3222283728, Mobile: +91-7908742179

E-mail: kaushikdey.iitkgp@gmail.com

### Mr. Sourav Kr. Mandal

Course Manager

Department of Mining Engineering

IIT Kharagpur-721302

Phone: +91-8436718289

E-mail: [souravm.iitkgp@gmail.com](mailto:souravm.iitkgp@gmail.com)