



**Green Mining Approach:**  
**Ensuring Positive Impacts on Environment**  
***Technology for Mine Closure Preparedness***  
***and Mine Site Restoration***



***DEPARTMENT OF MINING ENGINEERING***

***INDIAN INSTITUTE OF TECHNOLOGY***

**Coordinator and Principal Instructor:**

**Prof. Khanindra Pathak**

INFORMATION BROCHURE  
Short Term Course  
On

**GREEN MINING APPROACH: *Ensuring Positive Impacts on Environment***

**Technology for Mine Closure Preparedness and Mine Site Restoration**

(During **October 9-11, 2017** at Department of Mining Engineering, IIT Kharagpur)

Mining and quarrying are indispensable for the sustaining the developmental pace of the modern society. ***Everything that we see that is not agro-product like wood, wool, cotton has probably been produced from materials that were excavated / mined out of the ground. Mining supplies all the essential*** raw materials for the power plants and metallurgical plants in India. Over the last four decades a large number of spoil dumps are generated in mines and mine sites are left as destroyed landscape. Numbers of mines are now at the verge of completing their mining life. Strong environmental legislation these days insist that there is MINIMAL damage to the local habitat and that remediation of the area is carried out to a satisfactory standard after the mining has ceased.

However, there are still certain problems like stabilization of spoil dumps slope, control of soil erosion and sedimentation loads on the catchment areas of the river system near the mining area. Enhancing the soil quality of the broken areas near mining site is also a problem. Moreover, after the mine closure generation of alternative economic activities in the mining areas and enhancing the environmental condition near the mining site is a challenging problem to be addressed under corporate social responsibility.

Vetiver system technology is an approach of application of bio-engineering that believe in restoring a mine site naturally by vegetation growth. Vetiver grass that can grow on the slopes to work as soil anchor with a characteristic roof system can assist the mine management in integrating social responsibility with environmental management. However, such approach needs careful planning and systematic deployment. For Data Driven Decision making or for attaining excellence through involvement in getting a proper star rating it is essential that the officers engaged in mining and quarrying can fully explain what Advanced Technology Integration is necessary for developing Intrinsic Self-Regulation for environmental excellence.

Keeping these in view, this executive development programme is designed to introduce the vetiver system technology to the mine managers and environmental engineers responsible for corporate social responsibility and environmental management along with introduction of advanced technology like application of Remote sensing and GIS and RADAR technology for information gathering and situation management in mines.

The course coverage will include:

- Introduction to Terrain Analysis using Remote sensing and GIS and 3D visualization of mining and surrounding regions.
- Principles of mine closure preparedness and post mining mine site restoration

- Integration of CSR & EMP
- Vetiver system technology for slope stabilization, vegetation development and catchment area management.
- Alternative landform design and land use development in post mining mine sites
- Case studies of vetiver system technology from India and abroad

### **Course Objective**

After going through this course the participants will be able to:

- identify advanced technology to enhance the closure preparedness and compliance readiness of their mines
- select the appropriate post-mining mine site restoration alternatives
- explain the vetiver system technology and its benefits and drawbacks
- plan implementation programme for vetiver system technology in a specific mine site
- identify potentials problems of vetiver system technology
- draw a layout and initiate programme for CSR and EMP integration in specific site
- discuss alternative post mining revenue generation near mining areas

### **Course Content**

The course will include the following broad areas:

- Applications of Satellite Remote Sensing and GIS and 3D terrain modeling for assessing mine closure preparedness and compliance readiness
- Mining waste management issues, obstacles and technical measures
- Introduction to vetiver system technology with case studies of its implementation: global review and summary of results of vetiver research around the world
- Corporate Social Responsibility and means CSR and EMP integration: a Nature to Nature approach
- Environmental management and compliance requirements
- Measurement of positive impacts of mining on environment
- Excellence Through Involvement Approach: Using Star Rating methodology for developing Intrinsic Self-Regulation for environmental excellence

### **Participation:**

The course will be useful for the top and middle level mine managers as well as mine environment and CSR managers, executives and officers working in mining industry. The Public Relation Officers will also be benefitted by this course and will get new approach of dealing with PAP and R&R issues. The candidates may register online using the link (<http://www.miningpedagogy.iitkgp.ernet.in/GreenMining-2017/index.php>). Online registration is not mandatory. Registration may be done offline also at the course venue. Nomination letters may be send as early as possible.

**Limited Seat Availability:** The numbers of participants are restricted to 60 only.

## Venue of the Programme

The programme will be held at the **Department of Mining Engineering, IIT Kharagpur.**

## Course fee

*A course fee of Rs.20000.00 per participant for the course inclusive of course material is payable by demand draft in favor of "CEP-STC, IIT, Kharagpur" payable at Kharagpur or by electronic money transfer to "CEP STC IIT Kharagpur" to the account number 95562200002955 of Syndicate Bank at Branch SRIC IIT Kharagpur (IFSC Code SYNB0009556). The course fee will not be refunded unless the nomination is withdrawn 3 weeks before the commencement of the course. 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. 18% GST should be added while making payments as per Gol rule.*

Companies sending more than 5 participants will avail the following reduced fee:

1. For 6 participants: Rs. 100000/- .
2. More than Six participants: Rs. 15000/- for every additional participant

## Address for Communication

For any other information or sending nomination please write to:

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### **Department of Mining Engineering, IIT Kharagpur**

Set up in the year of 1956, this Department has steadily grown as one of the best mining education centre in the country. Besides offering undergraduate, postgraduate, and doctoral courses in Mining Engineering, it is actively involved in short term courses and research activities in the areas of Mining Machinery, Mine Safety and Reliability, Mine Fire and Explosions, Model Studies in Ventilation, Rock Mechanics and Ground Controls, Numerical Analysis of Mine Structures, Underground and Surface Environment, Geometrics and Remote Sensing, Mine Closure Planning and relevant computer applications. Short-term courses, consultancy, sponsored research programmes and postgraduate project works are part of the department's regular activities.