INTRODUCTION

Mechanical engineers analyze the material properties, stress-strain behavior, and fatigue life of steel wire ropes to understand their performance under various loading conditions. This knowledge helps correlate mechanical wear and damage with magnetic flux leakage patterns observed during NDE.

Tribological studies focus on the impact of wear, corrosion, and lubrication on SWR surfaces. These factors significantly influence the magnetic properties and MFL signals. Mechanical engineers assess how environmental and operational conditions affect the lifespan and reliability of SWR, providing critical insights for NDE techniques.

The MFL method relies heavily on electromagnetic principles to magnetize the steel wire ropes and detect leakage flux caused by discontinuities. Optimizing the magnetic circuit design and ensuring efficient magnetization are critical for achieving accurate NDE results.

Develop circuits for amplifying weak magnetic signals generated during MFL testing. To design filters and noise reduction systems to ensure the clarity of signals, enabling precise identification of flaws and defects in the steel wire ropes.

COURSE CONTENT

- Condition-Based Maintenance (CBM)
- Sensor Design and Calibration
- Data Acquisition and Analysis Systems
- Tribology and Surface Effects
- Material Behavior and Structural Analysis
- Case Studies and Real-World Applications
- Practical Classes
- Field / Plant Visits

ABOUT IIT(ISM) DHANBAD

The **Indian Institute of Technology** (**Indian School of Mines**), **Dhanbad** is a fully residential and co-educational institute situated in the heart of the country's prime coking coal belt, 260 kms from Kolkata with a campus spread over an area of 393 acres, (with 218 acres of existing campus and 175 acres under acquisition and development) the fully residential IIT(ISM) has all the facilities of world class academic institute. What started as an institution to impart mining education has graduated into a full-fledged technical institution of international acclaim offering a host of programmes like B. Tech., M. Tech., M. Sc. Tech., and MBA. In addition the Institute offers M. Phil. and full as well as part time Ph. D. programmes, while also awarding D.Sc. as the highest degree of academic achievement.

DATE and DURATION:

09th June to 13th June, 2025

INTENDED PARTICIPIPANTS

Participants should be practicing engineers from industry, mines and allied fields, Post Graduate Students, Research Scholars, Faculty Members, and Scientists working in the field of Maintenance Engineering (Electrical and Mechanical), Condition monitoring, Instrumental Engineering and Tribology.

REGISTRATION

External Participants (outside IIT (ISM))	
Post Graduate/ Research Scholars	Rs. 15,000/-
Faculty members	Rs. 30,000/-
Scientists/practitioners from Industry	Rs 40,000/- (non-resident participant) Rs 45,000/- (residential participant)

- **An extra 18% GST will be charged per participant.**
- **Accommodation at EDC in IIT (ISM) will be provided for residential participants in either single or double occupancy, depending on availability.**
- **Accommodation and dinner will not be available for non-resident participants.**
- **Fooding and lodging shall not be provided to participants from IIT(ISM) and the course fee is as per the IIT (ISM) rules.**

NOMINATION & PAYMENT

Nomination along with course fee in the form of Demand Draft in favor of "**Registrar, Indian Institute of Technology** (**ISM**), **Dhanbad-826004**" payable at any bank available in Dhanbad, should reach to Course Coordinator at the address as given above on or before **31.05.2025**. The formal consent for attending the course may be sent in advance through email to the Coordinator.

The details for online transaction (e-payment) of the fee is given below*:

Name of Beneficiary: **IIT ISM Special Fund**
Address: Dhanbad, Jharkhand, Pin:-826004.
Bank Name: Canara Bank
Branch Name: Saraidhela, Dhanbad-828127
MICR Code: 826015003, IFSC code: CNRB0000986

Account no.: 0986101024892
Type of account: Saving
PAN No: AAAAI0686D

COURSE COORDINATOR:

Prof. Kartick Chandra Jana
Department of Electrical Engineering

Prof. Subrata Kumar Ghosh
Department of Mechanical Engineering,

Indian Institute of Technology (ISM),
Dhanbad-826004, Phone: 0326 - 2235601,

Mobile: +91- 9430187029, 9264436805
Email: kartick@iitism.ac.in
subrata@iitism.ac.in;
subratarkl@gmail.com

***Kindly send a copy of transaction with duly filled registration form to the course coordinator before 31.05.2025.**

Registration Form

A Short Term Course
on
Condition Monitoring of Steel Ropes by Electromagnetic Inspection, Sensors and Signal Processing Techniques

(09th June to 13th June, 2025)

1. Name: _____

(Capital Letters with Surname underlined)

2. Organization/Institute:_____
_____

3. Designation/Dept.:_____

4. Qualification: _____

5. Specialization: _____

6. Gender : (M/F)_____

7. Mailing Address: _____

8. Mobile: _____

9. E-mail_____

10. Registration Fee:_____

11. Mode of payment:_____

Amount: _____

DD No./ Transaction ID: _____

Date: _____

Issuing Bank: _____

SIGNATURE: _____

Date: _____

A Short Term Course
on

Condition Monitoring of Steel Ropes by Electromagnetic Inspection, Sensors and Signal Processing Techniques

(09th June to 13th June, 2025)

Coordinators

Prof. Kartick Chandra Jana
Prof. Subrata Kumar Ghosh

Organized by

DEPT. OF ELECTRICAL ENGINEERING
AND
DEPT. OF MECHANICAL ENGINEERING

Indian Institute of Technology (ISM)
Dhanbad– 826004, JHARKHAND
INDIA