

**Category 1:** No fees (Enclose Certificate that your institute is approved by TEQIP-II)

**Category 2:** ₹ 5000

**Category 3:** ₹ 500

Payment should be made via demand draft drawn in favour of “CEP-STC, IIT Kharagpur”, payable at Kharagpur

DEMAND DRAFT DETAILS	
Amount ₹	
Bank Name	
Place	
Branch Code	
DD No. & Date	

#### Declaration

The information provided is true to the best of my knowledge. If selected, I agree to abide by the rules and regulations of the course and shall attend the course for the entire duration without any failure.

Place \_\_\_\_\_

Date \_\_\_\_\_

\_\_\_\_\_  
Signature of applicant

**Please complete the details above and mail alongwith registration fee to:**

**Dr. Geetanjali Panda**  
Dept. of Mathematics  
IIT Kharagpur – 721302  
E-mail: geetanjali@maths.iitkgp.ernet.in

## About IIT Kharagpur

### History

First in the chain of IITs to be set up by the Government of India, Indian Institute of Technology, Kharagpur started in 1951 in the erstwhile Hijli Detention Camp. It has now blossomed into one of the finest technical institutions in the world, with 585 faculty members in 19 Departments, 9 Centres, and 12 Schools offering 6 M.Sc. programmes, 5 Joint M.Sc. -Ph.D. programmes, 15 B.Tech (Hons.) programmes, 49 joint M.Tech. - Ph.D programmes, 2 M.Tech. programmes (in video-conferencing mode), 1 Master of City Planning programme, 1 Master of Medical Science and Technology programme, 1 LL.B. in Intellectual Property Rights programme, 34 Dual-Degree (both B.Tech and M.Tech) programmes, and 2 Management programmes. It also has MS, Ph.D, and D.Sc. programmes.

### Location

Kharagpur is known world over for two landmarks. One, the longest railway platform, and the other, the Indian Institute of Technology, more commonly known as IIT. Situated about 120 km west of Kolkata, Kharagpur can be reached in about 2 hours by train from Howrah railway station of Kolkata or 3 hours by car from Kolkata Airport. Kharagpur is also connected by direct train services to most major cities of the country. The Institute is about 10 minutes drive (5 km) from the Kharagpur railway station. Private taxi, auto-rickshaw or cycle-rickshaw can be hired to reach the Institute.

### Weather

Winter (October to February) is moderate and pleasant (10 to 25°C) in Kharagpur. Summer (March to June) is hot (25 to 40°C) and sometimes humid. Rains are normally confined to the months of June to September.

# GRADIENT BASED NUMERICAL OPTIMIZATION ALGORITHMS

## Overview

This short term course offers a careful theoretical introduction of some basic gradient based numerical algorithms of continuous optimization problems. The syllabus is designed for the people who are interested to have knowledge for understanding optimization algorithms.

### Objective of the Course

- Exposing the participants to the fundamentals of convex optimization
- Providing exposure to the theory of numerical optimization algorithm

### Venue

IIT Kharagpur and its extension centers at Bhubaneswar and Kolkata through online video lecture. All video-conferencing enabled classrooms at Kharagpur, Kolkata and Bhubaneswar are equipped with high definition video-conferencing system. Each of these acoustic treated air-conditioned video enabled classrooms with multiple HD cameras, document viewers and large display monitors permit teachers to conduct LIVE interactive sessions from Kharagpur with multiple remote classrooms at Kolkata and Bhubaneswar. 8 Mbps leased line connectivity of Kolkata and Bhubaneswar centers with Kharagpur ensure uninterrupted bi-directional lossless audio video transmission.

### Important Dates

**Last date for receiving application:** November 1, 2015

**Intimation to the applicants:** November 15, 2015

**Course Dates:** December 7 - 11, 2015

### Eligibility

**Category 1:** Faculty / Students from TEQIP SPONSORED institutions

**Category 2:** Professionals from R&D institutions and industries

**Category 3:** IIT Kharagpur students with background on Linear algebra and multivariate calculus.

### Course Schedule and Methods

**Date:** December 7 - 11, 2015

**Time:** 6 PM to 8 PM



geetanjali@maths.iitkgp.ernet.in

## Course Contents

- Lecture 1:** Basic concepts of convex optimization, convergence properties of numerical algorithms.
- Lecture 2:** Descent property, basic structure of line search methods, Steepest Descent method and its convergence property.
- Lecture 3:** Newton method and Newton like methods.
- Lecture 4:** Newton like methods continued.
- Lecture 5:** Sequential Quadratic Programming.

## The Faculty



**Geetanjali Panda**, is currently working as Associate Professor at Department of Mathematics, Indian Institute of Technology, Kharagpur, India. Her fundamental areas of research are convex optimization, Numerical Optimization, Optimization with uncertainty and Portfolio optimization. She has authored several research papers and supervised many Ph.D scholars in these areas.

### Course Fees

**Category 1:** No fees (Enclose Certificate that your institute is approved by TEQIP-II)

**Category 2:** ₹ 5000

**Category 3:** ₹ 500

Payment should be made via demand draft drawn in favor of "CEP-STC, IIT Kharagpur", payable at Kharagpur

### Accommodation

Outstation participants will be provided accommodation at IIT Kharagpur on self payment basis as per availability on prior request.

### Course Co-Ordinator

**Dr. Geetanjali Panda**

Associate Professor

Department of Mathematics

Indian Institute of Technology Kharagpur

Kharagpur - 721302, West Bengal, India

Phone: +91-3222-283680 (O)

Mobile : +91 9932877594

**E.mail:** geetanjali@maths.iitkgp.ernet.in

## REGISTRATION FORM

## KNOWLEDGE DISSEMINATION PROGRAMME

### GRADIENT BASED NUMERICAL OPTIMIZATION ALGORITHMS

December 7 - 11, 2015

Name .....

Date of Birth .....

Gender  Male  Female

Category  Academic  Student  Professional  
(Please enclose a bonafide certificate from your parent institution)

Organization .....

Address for Correspondence .....

Preferred location for attending .....

Phone .....

E-mail .....

Highest Academic Qualification .....

Experience (in years) .....

Accommodation Required (at IIT Kharagpur)  Yes  No

