## **ABOUT MNIT**

Malaviya National Institute of Technology (MNIT) Jaipur is one of the NITs established by Ministry of Human Resource Development, Government of India. The Institute, earlier known as MREC, was established in 1963 as a joint venture of the state and central Governments. Later in 2002, the college was given the status of National Institute of Technology and on August 15, 2007, proclaimed Institute of National Importance through Act of Parliament. MNIT campus spreads over 325 acres of lush green area in the prime location of Jaipur city. At present, in addition to research, consultancy and developmental activities, the Institute offers UG and PG (M. Tech./M.Sc. & Ph.D.) level courses to about 5000 students in almost all leading fields of engineering, technology, management and sciences.



## DEPARTMENT OF ELECTRICAL ENGINEERING

The Electrical Engineering Department is one of the oldest departments of the institute which was established in the year 1963. At present, the department offers undergraduate courses in Electrical Engineering along with postgraduate courses in Power System, Power Electronics & Drives and Power Systems Management. The department has undertaken a number of research projects/schemes with the financial assistance from AICTE, DST and MHRD, including international collaborative research projects.

## **ABOUT FDP**

The Faculty Development Program (FDP) is designed for understanding and implementing advanced optimization techniques in different fields. The application of these techniques is quite broad including area of engineering, business and medicine. It is important for engineering UG/PG students and faculties to gain a hands-on experience in implementing the advanced optimization techniques on different projects. This FDP will include lectures and hands-on lab sessions for the participants to know in-depth theoretical concepts of different advanced optimization techniques and their programming implementation in MATLAB and Python.

# **PATRON**

Prof. N P Padhy Director, MNIT Jaipur

## CONVENER

Prof. Harpal Tiwari Professor & Head Department of Electrical Engg., MNIT Jaipur

## **COORDINATORS**

Dr. Ravita Lamba Assistant Professor M: +91-9549650797, <u>ravita.ee@mnit.ac.in</u>

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Prof. Rajesh Kumar Professor M: +91-9549654481, <u>rkumar.ee@mnit.ac.in</u> Department of Electrical Engg., MNIT Jaipur

### **IMPORTANT DATES**

Last Date of Registration Form	8 June 2023
Confirmation of Selection	10 June 2023
FDP Start Date	12 June 2023

# Malaviya National Institute of Technology Jaipur

announces

4<sup>th</sup> Faculty Development Program (FDP) on

# Advanced Optimization Techniques

during

June 12-25, 2023

# Organized by

Robotics and Machine Analytics (RAMAN) Lab Department of Electrical Engineering Malaviya National Institute of Technology Jaipur, Rajasthan-302017, India

www.mnit.ac.in

## REGISTRATION FROM Advanced Optimization Techniques (June 12-25, 2023)

Iname
Category (Student: UG, PG, PhD/Faculty):
Specialization For PG/Faculty only):
Department, Semester:
Institute:
Mailing Address:
Mobile:
Email:

Accommodation Required: (Yes/No):

#### **Registration fee Details:**

Mode of payment (DD or NEFT/IMPS): .....

Transaction No/DD No: .....

Amount Paid: .....

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The above-mentioned information is accurate to the best of my knowledge at the time of completion of the form. If selected, I agree to abide by the rules and regulations of the program and MNIT Jaipur.

Date: Signature of Applicant The applicant is permitted to participate in the above program from the mentioned duration.

Date:

Signature of Sponsoring Authority with seal

#### **COURSE CONTENTS**

- Introduction: Optimization fundamentals, Classical Optimization, Advanced Optimization, MATLAB and Python for Optimization.
- Linear Optimization: Unconstrained and Constrained Optimization, Linear Programming, Graphical Method, Symmetric Dual Problems, Simplex Method, Derivative based-Optimization, Newton's Method, Least Mean Square Method. Quadratic Programming and Network Optimization.
- Non-Linear Optimization: Non-Linear Optimization, Mixed Integer Non-Linear Programming.
- Search-Based Optimization: Breadth First Search, Uniform Cost Search, Depth First Search, Depth Limited Search, Iterative deepening depth-first search, Bidirectional Search, Best Search First.
- Metaheuristic Optimization: Multi-modal function \* Optimization, Evolutionary-Based Optimization Algorithms (Genetic Algorithm, Mematic Algorithm, Differential Evolution Algorithm, Social Spider Optimization), Swarm-Based Optimization Algorithms (Particle Swarm Optimization, Bald Eagle Search, Gray Wolf Optimization, Ant Colony Optimization, Cat Swarm Optimization, Cuckoo search, Whale Optimization), Physics-Based Optimization Algorithms (Simulated Annealing, Nuclear Reaction Optimization, Multi-verse Optimization, Colliding Bodies Optimization, Gravitational Search Optimization), Human-Based Optimization Algorithms (Teaching Learning Based Optimization, Teamwork Optimization. Culture Algorithm), System-Based (Artificial Ecosystem Optimization Algorithms Optimization, Water Cycle Algorithm), Music-Based Optimization Algorithms (Harmonic Search Algorithm), Bio-Based Optimization Algorithms (Biogeography Based Algorithm, Earthworm Optimization Algorithm, Virus Colony Search Algorithm, Artificial Immune System, Bacterial Foraging Optimization), Math-Based Optimization Algorithms (Arithmetic Optimization Algorithm, Sine Cosine Algorithm, Gradient Based Optimizer). -
- **\*** Hands-on with MATLAB and Python.

### FDP APPLICATION PROCESS

Applications are advised to follow the given instructions while registering.

#### **REGISTRATION FEES**

Category	<b>Registration Fee</b>	GST (18%)	Total Fee
UG/PG/PhD students	Rs. 5000/-	Rs. 900/-	Rs. 5900/-
Faculty	Rs. 7500/-	Rs. 1350/-	Rs. 8850/-
Industry Person	Rs. 10000/-	Rs. 1800/-	Rs. 11800/-

 Payment Mode

 Demand Draft

 Demand draft (DD) payable at MNIT Jaipur,

 in the name of:

 Registrar (Sponsored Research) MNIT

 NEFT/IMPS:

 Name: Registrar (Sponsored Research) MNIT

 Account No.: 676801700388

 IFSC CODE: ICIC0006768 (ICICI BANK, MNIT)

### **REGISTRATION FORM DETAILS**

After fee submission, the applicant must register themselves by submitting details on <u>Google Form Link</u>

Further details for FDP and instructions for filling the form may be found on <u>Raman Lab Website</u>.

The applicant may also mail the filled registration form (given below) with the appropriate requirements to the address of correspondence mentioned.

All registration forms must be received by 8 June, 2023. Registration fee is non-refundable.

The selection for the FDP will be on 'first come first served' basis. The confirmation of the selection to attend the course will be emailed by the mentioned date.

For further details about the course, contact ravita.ee@mnit.ac.in

#### ADDRESS FOR CORRESPONDENCE

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