



**A REPORT OF  
FACULTY DEVELOPMENT PROGRAMME  
ON**

**ADVANCED OPTIMIZATION TECHNIQUES & HANDS-  
ON WITH MATLAB/SCILAB**

**CONDUCTED THROUGH NKN**

**BY**

**DEPARTMENT OF COMPUTER SCIENCE AND APPLICATION  
ATAL BIHARI VAJPAYEE VISHWAVIDYALAYA, BILASPUR (C.G)**

**IN ASSOCIATION WITH**

**ICT ACADEMIES**

**MINISTRY OF ELECTRONICS & INFORMATION TECHNOLOGY (MEITY). GOV. OF INDIA**

**DATE : 13 JULY - 24 JULY 2020**

**PRINCIPAL CO-ORDINATING  
ACADEMY**

**MNIT JAIPUR**

**CO-PRINCIPAL CO-ORDINATING  
ACADEMY**

**IITDM JABALPUR**

**CO-ORDINATOR, NODAL CENTRE**

**Dr. H. S. HOTA**

**HOD**

**DEPT. of CSA**

**ABVV, BILASPUR (C.G.)**

## ABOUT ICT ACADEMICS

India is fast emerging as a world power in Information, Communications Technology and Electronics (ICTE) sectors. To complement its growth and further development, there is an ever-increasing need for trained professionals with specialization in this space. This includes training of professionals not only in existing and changing technologies but also in the fields of R&D and electronics manufacturing. This will specifically be aimed at the ICTE sector to create a substantial resource pool of talent and generate ample opportunities for entrepreneurs. Ministry of Electronics & Information Technology (Meity) has approved a scheme and setup Electronics and ICT Academies at 07 (seven) institutions viz. IIT Guwahati, IIT Kanpur, NIT Warangal, NIT Patna, IIITDM Jabalpur, IIT Roorkee and MNIT Jaipur. The Ministry had earlier setup two ICT Academies at Tamil Nadu and Kerala respectively. These Academies are aimed at faculty/mentor development and upgradation to improve the employability of the graduates, diploma holders in various streams, through collaboration of States/Union Territories. Each Academy is being provided funding support for four years and is expected to generate revenue by charging fee and taking up other activities to meet the recurring cost in a gradual manner and become self-sustainable by the end of fourth year onwards. All these Academies will cater to the requirements of identified neighbouring States and UTS also.

## ABOUT REMOTE CENTRE

Electronics & ICT Academy, PDPM IIITDM Jabalpur has identified Department of Computer Science & Application, Atal Bihari Vajpayee University, Bilaspur (C.G.) as remote nodal centre to run FDP from time to time. The objective is to meet the skill requirements of the industry and generate more employment especially in tier 2 and 3 towns, the rural parts of the country. Initially the department was the only remote nodal centre in the state of CG.



## EVENT DETAILS

The Faculty Development Program (FDP) on "Advanced Optimization Techniques & Hands-On with MATLAB/SCILAB" took place from July 13 to July 24, 2020. This program was conducted in a physical mode at a remote nodal center, identified by the IIITDM ICT Academy. The lectures were delivered online using the Vidyo application. The FDP drew the participation of 51 attendees from nearby universities and colleges. MNIT Jaipur served as the principal coordinating academy, while IIITDM Jabalpur acted as the co-principal coordinating academy for this FDP. The program focused on advanced optimization techniques and hands-on practical sessions with MATLAB and SCILAB, two powerful tools widely used in academic and research environments.

The FDP covered crucial topics related to MATLAB, SCILAB, and advanced optimization techniques. MATLAB and SCILAB are popular platforms for numerical computing and simulation, and optimization techniques play a pivotal role in various scientific and engineering applications. Teachers and participants enjoyed the hands-on practice sessions, which allowed them to apply the concepts learned during the lectures directly. Engaging with MATLAB and SCILAB in a practical setting enhanced their proficiency in using these tools for various applications. The FDP concluded with a certificate distribution ceremony on the last day. Vice Chancellor Prof. G.D. Sharma personally distributed certificates to all 51 participants. A group photo was taken to commemorate the successful completion of the program, capturing the collective memory of the valuable learning experience.

In conclusion, the online Faculty Development Program on "Advanced Optimization Techniques & Hands-On with MATLAB/SCILAB" in a physical mode at a remote nodal center was a resounding success. It provided participants with a deep understanding of advanced optimization concepts and practical skills in MATLAB and SCILAB. The collaborative effort of multiple prestigious institutions, along with the interactive and hands-on nature of the program, enriched the learning experience. Such programs play a vital role in enhancing the skillset of educators and researchers, fostering a culture of continuous learning in the academic community.

# PROGRAM SCHEDULE

Global Online FDP on Advanced Optimization Techniques and Hands-on with MATLAB/SCILAB

EICT Academy

Time Table

Date :13th July to 24th July 2020

Date	Session I (5PM-6PM)		Session II (6.10PM-7.10PM)	Session III(7.20PM-8.20PM)
13-07-2020 (Monday)	5PM-5.10 PM	5.10PM-6.10PM	Module I : Dr. S. J. Nanda	Lab I : Dr. Prashant K. Jain
	Introduction	Module I : Prof. G. Panda	Fundamentals of Optimization	Introduction to MATLAB for Optimization Techniques
	Optimization-an important tool of Intelligent Data Analytics			
14-07-2020 (Tuesday)	Module II : Prof. G. Panda		Module II : Dr. S. J. Nanda	Lab II : Dr. ILA Sharma
	Nature Inspired Optimization, Binary and Real coded Genetic Algorithm		Artificial Immune System & Symbiotic Organism Search	MATLAB for Fundamental Optimization
15-07-2020 (Wednesday)	Module II : Prof. G. Panda		Module II : Dr. S. J. Nanda	Lab III : Dr. S. J. Nanda
	Particle Swarm Optimization (PSO) & Ant Colony Optimization		Colliding Bodies Optimization & Social Spider Optimization	MATLAB for Binary Genetic Algorithm
16-07-2020 (Thursday)	Module II : Dr. J. C. Bansal		Module II : Prof. Rajesh Kumar	Lab IV : Dr. S. J. Nanda
	Artificial Bee Colony		Differential Evolution (DE)	MATLAB for PSO & DE
17-07-2020 (Friday)	Module II : Dr. J. C. Bansal		Module II : Prof. Rajesh Kumar	Module II : Dr. S. S. Sahu
	Spider Monkey Optimization		Grey Wolf Optimization	Teaching-Learning Based Opt.
18-07-2020 (Saturday)	Module II : Dr. J. C. Bansal		Module II : Prof. Rajesh Kumar	Module II : Dr. S. S. Sahu
	Biogeography-based optimization		Whale Optimization	Bacterial Foraging Optimiz.
19-07-2020 (Sunday)	Module III : Dr. Sriparna Saha		Module III : Dr. P. M. Pradhan	Lab V : Dr. Urvashi P. Shukla
	NSGA-II and it's application to Multi objective Clustering		Multi Objective Particle Swarm Optimization & Cat Swarm Opt	MATLAB for Social Spider Optimization
20-07-2020 (Monday)	Module III : Dr. Sriparna Saha		Module III : Dr. P. M. Pradhan	Lab VI : Ms. Rachana Gupta
	Simulated Annealing based Approach for Multi Objective Optimization		Application of MOO to Cognitive Radio	Multi-objective NSGA-II programming with MATLAB
21-07-2020 (Tuesday)	Module IV : Dr. Sriparna Saha		Module IV : Dr. P. M. Pradhan	Lab VII : Ms. Rachana Gupta
	Many & Multi Objective Optimization for Solving feature Selection Problem		Application of MOO to Wireless Sensor Networks	Many Objective NSGA-III programming with MATLAB
22-07-2020 (Wednesday)	Module IV : Dr. N. V. George		Module IV : Dr. S. J. Nanda	Lab VIII : Dr. S. J. Nanda
	Application of Multi-agent System for Nonlinear System Identification		Application to Channel Equalization	Application to System Identification & Equalization
23-07-2020 (Thursday)	Module IV : Prof. G. Panda		Module IV : Dr. N. V. George	Lab IX : Mr. Dinesh Kotary
	Application to Forecasting / Prediction of Stock Markets		Application for Active Noise Control	Application to Clustering & Classification
24-07-2020 (Friday)	Module IV : Prof. G. Panda		Module IV : Dr. S. S. Sahu	Lab X : Dr. Rahul K. Vijay
	Application to Intelligent Instrumentation		Application to Genomic Signal Processing	MATLAB for Grey Wolf Optimization
Speakers Details :		Two Online Quiz	8.20PM-8.45PM Feedback and Validation	

- 1) Prof. Ganapati Panda, Fellow INAE, Fellow NSAI, Former Dy. Director and Prof. Emeritus, IIT Bhubaneswar
- 2) Dr. Pyari M. Pradhan, Dept. of Electronics and Communication Engg., IIT Roorkee
- 3) Dr. Sriparna Saha, Dept. of Computer Science and Engineering, IIT Patna
- 4) Dr. Nithin V. George, Dept. of Electrical Engineering, IIT Gandhinagar
- 5) Dr. Jagdish Chand Bansal, Dept. of Mathematics, South Asian University, New Delhi
- 6) Dr. Sitanshu Sekhar Sahu, Dept. of Electronics & Communication Engg., Birla Institute of Technology, Mesra
- 7) Dr Prashant K. Jain, Dept. of Mechanical Engg., IIITDM Jabalpur (Coordinator)
- 8) Dr. Rahul Kumar Vijay, Dept. of Computer Science, Banasthali Vidyapith
- 9) Prof. Rajesh Kumar, Dept. of Electrical Engg., MNIT Jaipur
- 10) Dr. Satyasai J. Nanda, Dept. of Electronics & Communication Engineering, MNIT Jaipur (Coordinator)
- 11) Dr. Ila Sharma, Dept. of Electronics & Communication Engineering, MNIT Jaipur
- 12) Dr. Urvashi Prakash Shukla, PhD from Dept. of Electronics & Communication Engineering, MNIT Jaipur
- 13) Ms. Rachana Gupta, Submitted PhD at Dept. of Electronics & Communication Engineering, MNIT Jaipur
- 14) Mr. Dinesh Kumar Kotary, PhD from Dept. of Electronics & Communication Engineering, MNIT Jaipur

# ATTENDANCE OF PARTICIPANTS

Name	Institute	Designation
NISHANT BEHAR	GGV	asst prof and phd scholar
Anupama Pandey	D. P. Vipra college	Faculty
BISAHU RAM SAHU	DR.C.V.RAMAN UNIVERSITY,KOTA,BILASPUR(C.G)	FACULTY
L . K. Gavel	Govt. G. S. G. P. G. College, Balod (C.G.)	Faculty
Abhishek Patel	Guru Ghasidas Vishwavidyalaya	Student
Dr. H.S. Hota	Atal Bihari Vajpayee University	Associate Professor
DURGESH KUMAR KOTANGLE	Govt. V.Y.T. PG. AUTONOMOUS COLLEGE, DURG (C.G.)	PHD Scholar
VINEET KUMAR AWASTHI	Dr.C.V. Raman University, Bilaspur(CG)	Faculty
Venkateswaran N	SSNCE	faculty
NAVEED JEELANI KHAN	BGSB University Rajouri, J&K	PhD Scholar
Dr.Selvan.C	National Institute of Technology, Tiruchirappalli	Post Doctoral Fellow
NISHI YADAV	GURU GHASIDAS VISHWAVIDYALAYA, A CENTRAL UNIVERSITY ,BILASPUR,CHATTISGARH	Assistant Professor
Mohammad gauhar	IFTM UNIVERSITY,MORADABAAD	scholar
Dr.Ragini Shukla	Dr.C.V.Raman University,Kota,Bilaspur,Chhattisgarh	Faculty
Richa Handa	D.P. Vipra College, Bilaspur	Faculty
Dr.S.Pavani	CM Dubey PG college	Faculty
CHINMAYA RANJAN PRADHAN	NM INSTITUTE OF ENGINEERING & TECHNOLOGY	ASSISTANT PROFESSOR
Jyoti Bala Gupta	DR C V RAMAN UNIVERSITY, BILASPUR	Faculty
SALMA MOHD SHAFI	BHILAI MAHILA MAHAVIDHYALAYA	HEAD & ASSTT PROFESSOR
Bhawna jyoti	Himachal Pradesh University ,Shimla	PhD. Scholar
Priyanka Verma	Atal Bihari Vajpayee –Indian Institute of Information Technology and Management Gwalior, India	PhD Scholar
Kayathri Devi D	Kamaraj College of Engineering and Technology	Assistant Professor

# ATTENDANCE OF PARTICIPANTS

Dr.shanti Rathore	Galgotias University	Faculty
Mr. Vishal Hingmire	Dept of CSE, School of Engineering, Nalla Narasimha Reddy Group of Institutions, Hyderabad, India	Faculty
RAVI SHANKAR KUMAR	NIFFT, HATIA RANCHI	STUDENT
VENKATESHKUMAR R	Dr. C.V. Raman University Bilaspur	Faculty
Vishal Pramod Patil	Arvind Gavali College of Engineering	Faculty
Samhitha Prathivadi	National Institute of Technology Tiruchirappalli	PHD SCHOLAR
Arshia Nag	R. C. Patel Institute of Technology, Shirpur	Assistant Professor
Arthanareeswaran A	Shiv Nadar University	Student
Gautam Prasad Dewangan	University of Delhi	Student
VISHNU PRASAD YADAV	R.M.K. Engineering College	Faculty / Ph.D
Amit Jain	School of Studies Engineering & Technology, Guru Ghasidas Vishwavidyalaya, Bilaspur	Assistant Professor
Dr Anamika Jain	Guru Ghasidas Vishwavidyalaya, Central University, Bilaspur	Assistant Professor
Dr. Amita Telang	GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR	Faculty
Dr. Chittaranjan Mallick	S. V. Polytechnic College Bhopal	Faculty
RAGHU RAMAKRISHNAN	Gurukul Mahila Mahavidyalaya,Raipur(C.G.)	Faculty
kumar prabhakar	Parala Maharaja engineering college	Assistant professor
Mr. L. JAYASEELAN	1. Tata Consultancy Services 2. Guru Gobind Singh Indraprastha University, Delhi	Others
Amitesh jha	IIITDM Jabalpur	PhD Scholar
Anamika Shukla Sharma	GOVERNMENT ARTS & SCIENCE COLLEGE, PENNAGARAM	FACULTY
Akhilesh Kumar Shrivastava	Fir Ghashidas Vishwavidyalaya Bilaspur	Faculty
Dr.Deepshikha Sharma	Government E.R.Rao PG Science College,Bilaspur(CG)	Assistant Professor
Gargee Shukla	Guru Ghasidas Vishwavidyalaya Bilaspur,Chhattisgarh	Faculty
BIKRAM BIKASH DAS	Gurukul Mahila Mahavidyalaya	Faculty
SRIKANTH SATTENAPALLI	Government NPG College of Science Raipur(CG)	Assistant Professor

# ATTENDANCE OF PARTICIPANTS

VIVEK TIWARI	BBCI, GUWAHATI, ASSAM, INDIA, PIN 781016	OTHERS-IT NETWORK ENGINEER
Annam Sunny Kumar	Mumbai University	Faculty
Dr Nupur Agarwal	Govt. E. Raghavendra Rao Postgraduate Science College	Faculty
Dr.Vikas	GITAM University	Faculty
Rashmi Gupta	Dr. C.V. Raman University kota Bilaspur C.G.	Research scholler

## CONCLUSION

In conclusion, the "Advanced Optimization Techniques & Hands-On with MATLAB/Scilab" Faculty Development Program, attended by 51 participants, has been an enriching experience. Throughout the program, educators delved into sophisticated optimization methodologies and practical applications using MATLAB/Scilab, fostering a comprehensive learning environment. The collaboration among participants, combined with hands-on exploration, has equipped these educators with advanced tools to enhance their teaching and research endeavors. As the program concludes, the 51 participants are now empowered to impart cutting-edge optimization knowledge, contributing to the evolution of their academic disciplines. The success of this FDP underscores the commitment to advancing expertise, ensuring a lasting impact on both educators and their students.