## About Electronics & ICT Academy at PDPM IIITDM Jabalpur

The Ministry of Electronics and Information Technology, Government of India has instituted seven Electronics and ICT Academies with one academy at PDPM IIITDM Jabalpur. The primary objective of the Academy is to prepare manpower for two important missions - 'Digital India' and 'Make in India'. The Academy aims at scalable training programmes in niche areas of Electronics and ICT for the development of required knowledge base, skills and tools to unleash the talent of the Indian population. In addition to the faculty development programmes on fundamental and advanced topics, the Academy conducts customized training programmes for the corporate sector and research promotion workshops in emerging areas. The Academy is envisioned to become a central hub of activities on training, research, consultancy work and entrepreneurship programmes.

## About PDPM IIITDM Jabalpur

PDPM IIITDM Jabalpur was established in 2005 with a focus on education and research in IT-enabled Design and Manufacturing. Since its inception, PDPM IIITDM Jabalpur has been playing a vital role in producing quality human resources for contribution in India's mission of inclusive and sustainable growth. The Institute offers undergraduate, postgraduate and PhD programmes in Computer Science and Engineering, Electronics and Communication Engineering, Mechanical Engineering, Design and PhD programmes in Mathematics, Physics and Literature. Under IIIT act, the Institute has been declared as an Institute of National Importance in January 2015. The Institute campus is being developed on 250 acres of land close to Dumna Airport, Jabalpur. The Institute is 10 km from the main railway station and 5.5 km from Dumna Airport, Jabalpur.

## Faculty Development Programme Robotics and Intelligent Systems

**Who can attend:** Programme is open to faculty from all colleges and universities preferably from the states of Madhya Pradesh, Chhattisgarh, and Maharashtra. Faculty members from other states are also eligible.

Industry personnel working in the concerned/allied discipline may also apply. **Limited seats are available for research scholars.**

**How to apply:**

**Online:** The participants may log on to the website ict.iiitdmj.ac.in and fill up the application form selecting the name of the course. One may also send a scanned copy of your completed application form to academyiiitdmj@gmail.com.

Application format may be downloaded from the website (Also given in this brochure). Print out of the filled-in application form duly endorsed by the forwarding authority and a demand draft of the applicable amount (as given below) in favour of 'Electronics and ICT Academy, IIITDMJ' payable at Jabalpur may be sent to the address given below. No Travelling Allowance will be paid by the Academy.

**Important Dates:**

**Last Date of Online Registration: March 20, 2019**
**Spot Registration also available if seats are available.**
**Course Dates: March 25 – 30, 2019**

**Registration Fee :**
Academic: Rs. 2000/- (Gen/OBC), Rs. 1000/- (SC/ST)
Industry: Rs. 5000/-
(Includes lunch + tea)
Accommodation charges (if needed):
Rs. 1500/- (includes breakfast + dinner in the hostel)
Accommodation is also available in Institute Guest House ( Visitors' Hostel) on payment basis.

**Contact us**
Prof. Vijay K. Gupta : +91-761-2794413
Prof. Aparajita Ojha : +91-761-2794221
Electronics and ICT Academy
PDPM IIITDM, Jabalpur,
Dumna Airport Road, Jabalpur 482005
**Email:** academyiiitdmj@gmail.com
**Website:** ict.iiitdmj.ac.in

## Faculty Development Programme

## Robotics and Intelligent Systems (RIS)
**March 25 - 30, 2019**



Seamless Learning Opportunities
At
Electronics and ICT Academy
An Initiative of
Ministry of Electronics and Information Technology,
Government of India

PDPM
Indian Institute of Information Technology,
Design and Manufacturing, Jabalpur,
Dumna Airport Road,
Jabalpur 482005

Building Human Resources For Digital India

E&ICT Academy IIITDMJ

## Robotics and Intelligent Systems

### March 25 - 30, 2019

**Course objectives:**

This course is designed to provide an exposure to the fundamentals of Robotics and Artificial Intelligence. Participants will learn kinematics and dynamics of industrial manipulators, kinematics of mobile robots, trajectory planning, path planning and control and how to embed intelligence in robotic tasks. Hands-on training and practice sessions will help participants gain confidence on robotic concepts, their simulation and implementation including sessions on intelligent agents. The course will be useful for faculty of engineering and sciences  who are interested in the learning robotics and intelligent systems.

### Resource Persons

1.   Prof. S.B. Nair, IIT Guwahati,
2.   Prof. Aparajita Ojha, PDPM IIITDM Jabalpur
3.   Prof. Vijay Kumar Gupta, PDPM IIITDM Jabalpur
4.   Dr. Prabin Kumar Padhy, PDPM IIITDM Jabalpur

## Course contents

Introduction to Robotics: Components and mechanisms of a robotic system, Robot Manipulators, Mobile Robots, Aerial Robots, Applications.
Forward and Inverse kinematics, Velocity Kinematics, Brief Idea of Manipulator Dynamics.
Path and Trajectory Planning: Joint-space schemes, Cartesian-space schemes, Trajectory planning: PTP method, using Via points.
Configuration space, path planning using potential fields, roadmap methods. Obstacle avoidance and Intelligent path planning.
Linear and nonlinear robot control: Feedback Control: Proportional, Derivative and Integral Control, PID control, Lyapunov stability condition. trajectory-following control.
Artificial Intelligence: Nature-inspired AI, Programming agents (with hands-on), Agent based control of robots/IoT (with hands-on and demos).
Rigourous hands-on lab sessions on robot simulators will be conducted.

### Course Coordinators
Prof. Vijay Kumar Gupta
Email: vkgupta@iiitdmj.ac.in
+91-761-2794413
Prof. Aparajita Ojha
Email: aojha@iiitdmj.ac.in
+91-761-2794221

Website: ict.iiitdmj.ac.in

## Application Form

Name of the Course / Programme: Robotics and Intelligent Systems (RIS)

Name of the Applicant (first, last): ......................................

................................................................................................

Gender :     M / F/ T          Category:  GEN/SC/ST/OBC

Designation: ...........................................................................

Name and Address of the Organization/Institute/College:

................................................................................................

................................................................................................

City/town:................................. Email: ...................................

Alternate email (if any): ........................................................

Phone Number:  .....................................................................

Mobile Number: .....................................................................

Do you need accommodation? (Yes/No):

Note: Accommodation and meal facility will be available only from the evening of March 24 to the morning of March 31, 2019.

DD Number: ...............................   Date: .......................................

Issuing Bank: ............................       payable at: ..........................

Signature of the Applicant

I hereby agree to relieve Mr./ Ms./ Dr.................................... .................................................... in case she/he is selected to attend the programme.

Signature and Seal of the Forwarding Authority

Name ...................................................................................

Designation ......................................................................