CEP Short Term Course on

Introduction to Robotics: Mechanics, Control, and Programming

October 26 – 28, 2018

Course Coordinators

Dr. Atul Thakur, IIT Patna
Dr. Raju Halder, IIT Patna

**Office of
Continuing Education & Quality
Improvement Programmes**

**Indian Institute of Technology
Patna, Bihta - 801106**

Introduction

Robots are deployed in variety of industries like automobile, aerospace, and appliances in order to cater to the pressing need for increased productivity and delivery of products of uniform quality and overwhelming variety. Robotics, an interdisciplinary area, demands a thorough knowledge of mechanics, control systems, sensors, actuators, computer systems, and artificial intelligence. A systematic and focussed introduction to all the aforementioned areas delivered in a short period can help the beginners in the area of robotics to segue into the exciting field of robotics. This course has been specially designed for the students, researchers, teachers, and industry personnel to provide them with an introductory yet exhaustive knowledge in the field of robotics. It is expected that the course will help in enabling the participants to contribute to the academic research laboratories as well as R&D units of the robotics industry.

Broad Scope

The topics to be covered in the course will range from mathematical preliminaries, robot kinematics and dynamics, control of robotic systems, trajectory planning, bio-inspired design of mobile robots, and an introduction to robot operating system (ROS). The course features theory lectures as well as laboratory practical on robot mechanics simulators and ROS.

Target Audience

The course is suitable for students pursuing B. Tech. / M.Tech. in Computer, Mechanical, Electrical, Instrumentation, or equivalent backgrounds. The course also welcomes research scholars and faculty members of schools and colleges. The course can also be useful for industry participants who are presently working in the capacity design or R&D engineers.

Course Contents

- ❖ Mathematical preliminaries of robotics
- ❖ Robot kinematics and dynamics
- ❖ Control of robotic systems
- ❖ Bio-inspired design of robotics systems
- ❖ Introduction to Robot Operating System (ROS)
- ❖ Introduction to robot simulation software
- ❖ Hands-on practical sessions

Instructors

Dr. Atul Thakur,
Department of Mechanical Engineering, IIT Patna

Dr. Raju Halder,
Department of Computer Science and Engineering, IIT Patna

How to apply

Scanned copy of the filled in Registration Form (proforma has been provided on the right-most column) should be sent to athakur@iitp.ac.in or halder@iitp.ac.in on or before October 15, 2018.

Since, the number of seats is limited, early registrants will be given a preference.

Fee Payment

The Participation fees for the CEP programmes will be accepted only through Demand Draft drawn in favour of "Indian Institute of Technology Patna" or e-transfer /RTGS/ NEFT. Personal cheque will **not** be accepted in any case. Details for Online Payments through RTGS/NEFT or e-transfer:

Bank: State Bank of India,
Branch: IIT Patna, Bihta
Bank Account No.: 30957551934
MICR Code: 801002005
Beneficiary: Indian Institute of Technology Patna
Bank Telephone: 0612-3028062
IFSC: SBIN0017164
Account Type: Savings A/c

Registration Fees (INR)

Student: 2000/-
Faculty: 4000/-
Industry delegates: 5000/-

Accommodation

There is a limited availability of accommodation in IIT Patna hostels for student participants at an affordable rate, which will be offered on a first-come-first-served basis. Besides there are several hotels and guest-houses around IIT Patna where the participants may stay during the course.

About IIT Patna

IIT Patna is an institute of National importance by an Act of the Indian Parliament in 2008. It is ranked 108 among BRICS nations by the QS World University Rankings of 2018. It is ranked 24 among engineering colleges in India by the National Institutional Ranking Framework in 2018.

IIT Patna's campus is located at Bihta, 35 km from Patna and 20 km from Ara, at a 501 acres site. The nearest railway station is Bihta, 2 km from the campus. IIT Patna has good road connectivity to and from Patna and Ara. Regular bus services have been provided by the Govt. of Bihar from Gandhi Maidan, Patna to IIT Patna campus. The nearest airport to reach IIT Patna campus is Jai Prakash Narayan Domestic Airport, Patna, which is located 5 km southwest Patna.

Course Registration Form
CEP Short Term Course on Introduction to Robotics: Mechanics, Control, and Programming

1. Name: _____

2. Date of Birth: (DD/MM/YYYY)_____

3. Sex (M/F):_____

4. Designation:_____

5. Organisation:_____

6. Address for correspondence: _____
_____

7. Email:_____

8. Phone/Mobile:_____

9. Highest Academic Qualification:_____
_____

10. Specialization:_____

11. Details of fee payments (Reference No., Date of payments, Amount, etc.):_____
_____

Date: _____
Place: _____

Signature: _____