CONTINUING EDUCATION CELL
NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR
G.E. Road, Raipur – 492010 (C.G.) Ph- (0771)2253934

Notice

Continuing Education Cell, NIT Raipur is going to offer a certificate course on "Robotics". The details are mentioned below:

Course Name	Tentative schedule	Details
"Robotics" **(Offline mode)**	17th – 21st June 2024 (09:30 am to 05:15 pm each day)	Annexure-A

Interested candidates/organizations can apply in the prescribed application form(Annexure-B) along with the details of course fee. The course Fee is given as follows:

Course Fee	Students of NIT Raipur	₹1,500 + 18% GST
	Outside Students (other than NIT Raipur)	₹2,000 + 18% GST
	Faculty/ Industry Personnel	₹3,000 + 18% GST

The payment can be done either in the form of a Demand Draft (DD) in favour of "Director, NIT, Raipur" payable at Raipur or **through online mode*(account details in the last page of this document)***. For online payment, the scanned copy of the application form along with the proof of payment should be sent to ***cec_assistant@nitrr.ac.in*** by the due date (**10th June 2024**). For payment made through DD, the hard copy of the application along with the DD should be sent to the **Chairman, Continuing Education CELL, NIT Raipur, Raipur, Pin: 492010** by the due date (**10th June 2024**). After payment, participant is required to fill the following google form:

https://forms.gle/ZgTwmKSvHTXHgZ9z9

For any clarification, please contact the course coordinators, **Dr. Rajesh Doriya** (Email: rajeshdoriya.it@nitrr.ac.in/Mobile: 7805984189) and **Prof. S. Sanyal** (Email: ssanyal.me@nitrr.ac.in/Mobile: 9826425326) Professor, Department of Mechanical Engineering, NIT Raipur, For course details kindly refer to Annexure- A. Conduction of the course is subjected to enrolment of minimum number of students.

Dr. Subhojit Ghosh
Chairman,
CEC NIT, Raipur

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Course Content

Module I: ***Introduction to Robotics & Robot Kinematics***

Robot Anatomy, Workspace, Coordinate Transformation, Fundamental Rotation Matrices, Homogeneous Transformation Matrix, DH notations, Forward and Inverse Kinematics Modeling of Manipulators, Examples

Module II: ***Trajectory Planning of Serial Manipulators***

Various Terminologies, Joint Space trajectory planning, Polynomial Trajectories, Cartesian Space Trajectory Planning, Examples

Module III: ***Sensors, Actuators & Controls***

Sensor classifications, Characteristics of Sensors, Various Internal and External Sensors. Characteristics of Actuators, Pneumatic, Hydraulic and Electrical Actuators.

Transfer Function, Sequence Control, Servo motor operation and control, PID Controller Design, Regulation of Robotic Manipulators, Intelligent Control, MATLAB for controller design

Module IV: ***Robot navigation and Vision***

Introduction to mobile robot navigation, types of mobile robot navigation schemes, hands-on session on A*, RRT, PRM, APF, mobile robot schemes. Building of basic mobile robots such as line follower robot, obstacle avoidance robot, etc. Deep learning approaches in mobile robot path planning.

Module V: ***Robotics Simulation Tools: Robot Operating System, Webots, Advances in Robotics.***

Introduction to Robot Operating System, Installation of ROS-2, Environment Configuration, understanding of nodes, and topics using **turtlesim** robot. Introduction to Webots, working with Webots. Advances in Robotics: humanoid robots, service robots, medical robots, nano robots, soft robots, cloud robots.

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APPLICATION FORM

Paste a Passport Size Color Photograph Here

Name of the Course Applied: .....

Name: .....

Father's/Husband's Name: .....

Date of Birth: ..... Sex: Male ☐ Female ☐

Occupation: .....

Qualification: .....

Address.....

.....

.....*E-mail ID:.....

Phone (with STD code): Residence: .....Mobile: .....

Aadhar Number : .....

Fee Details:

Amount: .....DD No.: ..... Date:.....

Name of Bank.....

(Please write your name and course applied for in the back of the Demand Draft also.)

Date: **Signature of the Applicant**

Note:

1. Time/Batch will be allotted as per the convenience of the applicant in general, however candidate may be asked to change the batch as per the requirement of the course.
2. The Fee Deposited for any course is non-refundable & non-transferable.
3. Information regarding the classes will be sent to through mail after registration.
4. If applicant is in Government service, they need to apply through proper channel.

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For Office Use Only

Course and Time allotted: .....

Fee Details: .....

Place & Date: Signature of CEC-Chairman

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ACCOUNT DETAILS FOR ONLINE PAYMENT

Bank Name:	State Bank of India
Account Number	38027633250
Account Holder Name	Director NIT Raipur
Branch Name and Address	NIT Branch, G. E. Road Raipur, Chhattisgarh 492010, India
IFSC Code	SBIN0002852
MICR Code	492002004
Swift Code	SBININBB646
PAN Card Number	AAAJN0643G
GSTIN Number	22AAAJN0643G1ZN