Online Future Skill Training on

Robotics and Automation

About the course.

In order to enhance employability and improve placement of students, students need to be imparted requisite hands-on- training on emerging technological areas which have huge employment potential for engineering graduates in coming 2-3 years.

Adhering to the guidelines of MHRD and NPIU it is initiated to conduct online training on upcoming technologies to impart job-oriented training to the students to make them industry ready for complying to the future skill requirements of IT-ITes industries. In this regard we are proposing a 90 hours training program on “Robotics and Automation”. The training involves online theory and practical sessions.

(Students may be allowed for necessary lab work / hands-on practice after lockdown in batches of appropriate size while following strict safety protocols and practicing social distancing)

The students shall undergo formative progress review test midway during the training program and Post training assessment and certification after the training. The tests shall be conducted online through SSC NASSCOM.

Target Audience

IV Semester and VI Semester Enthusiasts interested in understanding the hype behind Robotics and Automation.

Pre-requisites:

Understanding the fundamentals of Control System Engineering, Engineering mathematics, basics of Kinematics. Familiarity with writing code using at least one programming language, or a basic understanding of sensors and microcontrollers.

Learning Outcomes:

- ✓ Explain the basic components of a robot, closed-loop and open- loop control systems.
- ✓ Discuss Robot Kinematics including Kinematic Modelling with Translation and Rotation Representation, transformation, DH parameters, Jacobian, Singularity, and Statics.
- ✓ Discuss dynamic Modelling with Equations of motion.
- ✓ Explain Sensors and Vision System including Contact and Proximity, Position, Velocity, Force, Tactile etc
- ✓ Understand the Camera calibration, Geometry of Image formation, Euclidean/Similarity/Affine/Projective transformations.
- ✓ Explain Basics of Robot Control including Transfer functions, Control laws for P, PD, PID.
- ✓ Discuss Non-linear and advanced controls.
- ✓ Explain Robot Actuators (Electric, Hydraulic and Pneumatic) & Transmission with Gears, Timing Belts and Bearings.
- ✓ Explain Control Hardware and Interfacing for Robotic Process Automation.
- ✓ Discuss the Programming for Robot Applications.

Please find the file attached herewith containing the detailed syllabus for the course

(Annex-1).

Assessment and Certification

Following instructions shall be applicable for the student assessments during the training.

1. The formative assessments (mid-training) shall cover a max of 3-4 topics as a subset of overall assessment. These are highlighted in the attached assessment criteria sheets for each technology area.
2. The formative assessment of students shall be conducted for 100 marks and the test duration shall be between 45-60 min.
3. Post training assessment and certification shall be conducted after the successful completion of training.
4. Only those students who are attending training on Future Skills shall be eligible for mid-training and post-training assessment.
5. All assessments shall be conducted online and Auto Proctored through NASSCOM SSC.
6. The assessment results shall be shared within 3 working days with the SPOC of the institute.

7. Formative Assessment scores are independent and shall not be counted in the final assessment scores for certification.

Please find the file attached herewith containing the detailed assessment criteria for the Certification (**Annex-2**)

Course Registration

Fill in the details for registration by clicking on the link below.

https://forms.gle/zRZbx5nWsPdhKSz38

The detailed schedule of the training will be announced after the completion of the registration process.

Important dates :

Last date to fill the registration form: 09/07/2020.

Training dates: 14/08/2020 to 15/11/2020.

Mid training assessment date: 28/10/2020

The Final Assessment will be done after the completion of the training and the exam date will be announced in the last week of August 2020 (Tentative*)

*Kindly note: The dates for the final assessment is proposed assuming that the college will reopen by September 2020. The dates are tentative and are subjected to changes based on the situation/developments related to the prevailing covid19 pandemic.

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