

Experiments for Robotics Class

Department of Mechanical and Industrial Engineering, IIT Roorkee

February 13, 2016

(You may get this form photocopied or may download from www.iitr.ac.in)

After Completion, please mail to: Dr. Bhupendra K. Gandhi Coordinator, QIP Center, IIT Roorkee Roorkee – 247 667 (Uttarakhand) Phone: (01332)285241, 284341 Fax: (01332) 286691, 2273560 Email: qip.iitr@gmail.com , qip@iitr.ac.in	Affix passport size photograph
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1. Name of applicant (in block letters): Ms./Mr.
2. Designation
3. Age (Years)
- 4a. Residential address with pin code

Tel:
Mobile:
- 4b. Official address with pin code
Phone (Off.)
Fax:
Email:

Fax:
Email:
- 4c. Name of the Institute where employed
- 4d. Name of the Department
5. Highest Academic Qualification
6. Branch of Specialization
7. Teaching Experience in Years

Date: **Signature of applicant**

Note:

- (i) Application should reach QIP Office at the above address latest by **25th January, 2016**.
Scanned copy may be sent by e-mail
- (ii) Please come to Roorkee to attend the workshop, only if you have received intimation.

SPONSORSHIP CERTIFICATE

- (a) The applicant will be permitted to participate in the above Workshop, if selected. Further, I have personally talked to the applicant and he/she seemed to be sure to attend it, in case the admission is offered to him/her.
- (b) Certified that this institute is recognized by AICTE.

Date: **Signature of Sponsoring Authority**
(Principal/Director)

Seal of the Institution

QIP Workshop on

Experiments for Robotics Class

February 13, 2016

Being organized at and by
DEPARTMENT OF MECHANICAL AND INDUSTRIAL
ENGINEERING

In association with
Q.I.P. CENTRE



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SIGNIFICANCE AND A BRIEF ABOUT OF ROBOTICS

Robotics is the study of design, programming and control of robots. Robots are gradually entering into our daily life. Days are not far when they will be part of our family. Essentially a robot contains manipulators, sensors, control systems, power supplies and software all working together to perform a task. Manipulator provides movement. A robot needs to be able to move around its environment either by joint movement, or rolling on wheels, or walking on legs or propelling by thrusters. Sensing is required to sense its surroundings and find its own location. Control system provides intelligence through programming. A robot needs to be able to power itself either by solar cells, or electricity, or battery.

OBJECTIVE & SCOPE OF THE WORKSHOP

Robotics is taught as a course in many colleges and universities. There are many standard text books available which cover areas like kinematics, dynamics, programming, and control. To give a clear understanding of the subject to students it is essential that they are exposed to experiments which use concepts from various aspects of robotics. The immediate question that comes to one's mind is, what experiments should be designed for students? What software/hardware infrastructure is required? What prerequisites are required for the course? The workshop will aim to discuss these questions and try to find a solution so that our students are best trained.

The workshop is designed to cover the needs of engineering college faculty teaching or interested in robotics as well as of practicing engineers who would like to learn about robotics.

The workshop is designed with following objectives

1. Introduce robotics to professionals.
2. Introduce latest modeling and simulation tools used in robotics.
3. Introduce the different types of robots through which robotics concepts can be explained.
4. List of experiments and tentative lab manual for the robotics lab.

COURSE CONTENTS

1. Introduction to robots.
2. Modeling, simulation and animation tools for robots.
3. List of experiments and tentative lab manual.
4. Demonstration on KUKA KR5, SCORBOT industrial robot, Robotino wheeled mobile robots, Phantom Omini haptic robot, Servo Trainer.

ABOUT IIT ROORKEE

IIT Roorkee became the seventh IIT of the country when 21st September 2001 the prestigious University of Roorkee was converted into an IIT. Founded as Thomason College of Civil Engineering in 1847, this temple of learning, the oldest engineering institution in Asia and the first one in the then British Empire, is now 160 years old. The Institute offers 11 undergraduate courses in Engineering and Architecture and 51 postgraduate courses in different disciplines of Engineering, Architecture, Management and Sciences along with 5 Integrated Dual Degree, 3 Integrated M.Tech. and 3 Integrated M.Sc. programs. Ph.D. programs are conducted in all disciplines.

IIT Roorkee possesses a unique environment congenial for research and development activities and the faculty has expertise in almost all the major fields of engineering and sciences. The Institute has 18 academic departments, one academic center and 3 centers of excellence. Modern centralized facilities exist at the Institute, including a Computer Center, Information Super-Highway Center and Instrumentation Center. The Institute's Central Library and the libraries of several national institutes located at Roorkee provide priceless technical literature, seldom available at any other engineering center in the country.

ABOUT ROORKEE

Roorkee is a part of the State of Uttarakhand and is located at the foothills of Himalayas. Roorkee Railway Station is on the main line of Northern Railways having direct links to Delhi, Mumbai, Calcutta, Amritsar, Jodhpur and Shri Ganganagar. The place is also within easy reach by road from Delhi (200 km) and Chandigarh (180 km). It is located on Delhi – Haridwar and Delhi – Dehradun bus routes. Roorkee is ideally located near several tourist places, like Dehradun (70 km), Mussorie (100 km), Haridwar (32 km) and Rishikesh (50 km).