

COURSE	Name	: Human-Robot Interaction
	Code	: EE185525
	Credit(s)	: 2
	Semester	: (Elective Course)

Description of Course

In this course, students are introduced to the technology of interaction between humans and robots with aspects related to the modeling, analysis and design of the regulatory system. Broadly, human-robot interaction is divided into two major parts, namely computer-based interaction and physical-based interaction. The final section of the lecture also discusses the security aspects of human robot interaction.

Learning Outcomes**Knowledge**

(P02) Mastering engineering concepts and principles to develop the necessary procedures and strategies for systems analysis and design in the areas of power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics.

Specific Skill

(KK02) Being able to compose problem solving in engineering through depth and breadth of knowledge which adapts to changes in science and technology in power systems, control systems, multimedia telecommunications, electronics, intelligent multimedia network, or telematics.

General Skill

(KU11) Being able to implement information and communication technology in the context of execution of his/her work.

Attitude

(S11) Trying his/her best to achieve perfect results.

(S12) Working together to be able to make the most of his/her potential.

Course Learning Outcomes**Knowledge**

Mastering the concepts and applications of human and robot interaction systems in terms of their controls.

Specific Skill

Able to do analysis and design of human-robot interaction based on computer and physical control.

General Skill

Able to use assistive system control software to conduct analysis and design for human-robot interaction controls.

Attitude

Try his/her best to achieve best results

Working together to be able to make the most of his/her potential.

Main Subjects

1. Concept of human - robot interaction (HRI)
2. Types and levels of HRI
3. Problems with computer based HRI (CHRI) and physical HRI (PHRI)
4. CHRI analysis and design
5. Modeling and arrangement of the PHRI Arm
6. Modeling and control on virtual end effector PHRI
7. Modeling and control on the whole body PHRI
8. Modeling and control on reactive movement (avoiding collisions)
9. Modeling and control on repulsive and active movements
10. Safety aspects of HRI

Reference(s)

- [1] Takayuki Kanda, Hiroshi Ishiguro, Human-Robot Interaction in Social Robotics, 2017, CRC Press
[2] Arkin, R.C., Behavior-Based Robotics. 1998, The MIT Press

Prerequisite(s)

Robot Dynamics and Control