



HANYANG UNIVERSITY

Hanyang ERICA Summer School

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2020 HESS Course Syllabus

Course Information	Course Title(Eng)	Robot and AI	Course Category	
	Course Title(Kor)	로봇과 인공지능		
	Credit-Lecture-Lab	3 credits-4.5 hrs-0 hrs	Course Restrictions	
	College/School	International Summer School(ERICA)	College/School Responsible	
	Meeting Times	10 Times	Electronic Attendance	Y/N

Instructor Info	Department	Robot Engineering Department, Hanyang University	Name	Kyoosik Shin
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	Homepage			
Course Type	Teaching Method	Lecture and lab		

Course Description	<p>Nowadays, due to 4th industrial revolution, Robotics and Artificial Intelligence are big issues all over the world. There are some theoretical courses in the university. However, the courses providing actual knowledge on these topics are not many. Therefore, this course is prepared for robot engineers to give hands-on experience of making real robots, even it is very simple one. Also brief introduction on how to use Artificial Intelligence program. Lecture on how to implement in robots. There may be some assignments in the labs. Students should accomplish the task. The results will be demonstrated in front of other students. These will be evaluated by professors, teaching assistants and other team members. Computer work is necessary for this course.</p>
Course Objectives	<p>The objectives of this course are focused on actual experience for students. However, some of the analytic lecture are unavoidable to give insight of the robotics. Students may learn from this course as followings;</p> <ol style="list-style-type: none"> 1. Different types of robots which are now used in various fields 2. Basic mathematics involved in robotics 3. Kinematics for describing robot systems 4. Hands-on experience how to design robot hardware system. 5. Basic knowledge on how to program 6. How to combine software with hardware to control robots.



	7. Knowledge on different kinds of artificial intelligence techniques.
Notice for Students	There are some notebooks in the lab. However, your personal notework will be much more convenient to you.

Textbook	No.	Title	Author	Publisher	ISBN	Price(KRW)

Evaluation	Evaluation Criteria	Percentage(%)	Evaluation Criteria	Percentage(%)
	Attendance	10	Quiz	
	Assignments	10	Mid-term Exam	
	Discussion		Final Exam	
	Team Project	80	Participation	
	Other			Percentage(%)
	Total 100 %			

Daily Lecture Plan and Assignments	Day	Title	Activity
	1	Introduction to the course	Introduction <ul style="list-style-type: none"> - Definition of Robots - 4th Industrial Revolution and Robots - Components of Robots
	2	Lecture 1	Basic Theories of Robotics <ul style="list-style-type: none"> - Manipulators - Mobile Robots - Lab Tour 1: 1st Eng. BLDG 111, 112, BMR
	3	Lab 1	Preparation and Mission <ul style="list-style-type: none"> - Installation - Blink/Basic Functions/Sensors - Mission
	4	Lecture 2	Basic Theories of Robotics <ul style="list-style-type: none"> - Kinematics - Lab Tour 2: Prof. Lee and Prof. Choi
	5	Lab 2	Mobile Robot <ul style="list-style-type: none"> - Motor Driving - Making a Mobile Robot - Mission
	6	Lab 3	Mobile Robot <ul style="list-style-type: none"> - PID Motor Control - Mission
	7	Lab 4	Mobile Robot <ul style="list-style-type: none"> - Serial Communication - Bluetooth/Camera - Mission
	8	Lab 5	Robot Arm



			<ul style="list-style-type: none">- Introduction to 'Braccio' Robot Arm- Mission
	9	Lab 6	Artificial Intelligence <ul style="list-style-type: none">- Introduction- Machine Learning- AI Programming
	10	Wrap Up	Wrap up <ul style="list-style-type: none">- Robot Application- Lab Tour 3: