ROBOTICS

COURSE:	CENG 4391 SPRING 2016 23511 Tuesday 1PM-3:50 PM
INSTRUCTOR:	Dr. Thomas L. Harman harman@uhcl.edu
OFFICE:	D104 Phone: 283-3774
OFFICE HOURS:	After 4PM M T W and Evenings (Check office or lab D125),
PREREQUISITES:	N/A
DESCRIPTION:	The course presents a study of techniques applied to the study of robotics. The purpose is to introduce the students to the use of robots and the techniques necessary to design and develop hardware and software for applications.
COURSE FORMAT:	The course format will consist of lectures with homework and examinations. In addition to regular homework and examinations, a project report will be due at the end of the semester.
TEXT:	*Handouts In Class*
GRADING:	The grade will be divided as follows:

Exams and Quizzes	55%
Homework	30%
Project and presentation	15%

The project will consist of a design with documentation for a complete robotic system serving some useful purpose. The presentation will consist of a brief lecture and report on the project at the end of the semester.

ROBOTICS

CENG 4391 Course Outline
(Tentative – Changes with interest of the students)

Material to be covered	HW	HWdue
Introduction to the Course	**1. WEB assignment**	
Special Robotic Systems Mobile Robots Swarm Robots		
ROS the Robot Operating System		
Systems View of Robots		
Sensing, data acquisition, control, and navigation		
More on Specification of Robot Systems		
DUE: BRIEF ORAL AND WRITTEN SUMMARY OF PROJECT.		
Mechanical Components of a Robot		
Control of Actuators		
Robotic Sensory Devices including Vision		
MIDTERM EXAMINATION		
Computer Considerations for Robotic Systems		
More of the Math of Robots		
Other topics – Safety, New Trends		
DUE: PROJECT DEMONSTRATIONS AND REPORTS.		

Honesty

Academic Honesty

The Academic Honesty Policy at UHCL (found in the University of Houston-Clear Lake Catalog) states:

Academic honesty is the cornerstone of the academic integrity of the university.

It is the foundation upon which the student builds personal integrity and establishes a standard of personal behavior.

> Because honesty and integrity are such important factors in the professional community, you should be aware that failure to perform within the bounds of these ethical standards is sufficient grounds to receive a grade of "F" in this course and be recommended for suspension from UHCL.

The Honesty Code of UHCL states "I will be honest in all my academic activities and will not tolerate dishonesty."

Learning Outcomes CENG 4391

Understand the various types and capabilities of Robots including mobile robots.

Understand how a robot's component parts are used in applications.

Describe the mechanical parts of a robot and their characteristics.

Understand how a robotic system is controlled and how the control parameters are measured or acquired using ROS.

Describe the sensors of a robot and their characteristics for various applications. Learn how ROS allows simple interface to the sensors.

Be able to design a project to use a robot in an application.

Be able to design a computer system architecture to apply to a robotic system.

Understand and apply the mathematics used to coordinate a robot's movement.

Write a project report according to the directions and give presentations in class.

Accommodations (as specified by the Americans with Disabilities Act) - Suggested statement: If you will require special academic accommodations, please contact the Disability Services Office at 281-283-2627.

Academic Honesty Code: see section 2.1.4 in this handbook for the UHCL Academic Honesty Code.