FINAL TEST REVIEW   6533 Spring 2015

1. READ THE REFERENCES ON THE WEB SITE

Adept Specs RobotSpecs RobotSystem 10Mistakes RobotPhysics Xforms1 RobotControl StepperMotorDesign RobotPWMcontrol

Sensors Software Safety References 1/18/2015 Collaborative Robots

2. Go over your Homework, quiz and Previous Test

General Outline – Review the topics

Basic Physics and kinematics (Torque, Inertia, velocity, acceleration, etc.**)**

Classification of Robots   Type, DOF, coordinate system, components

Advantages and disadvantages of various types

>   Robotic Applications – Need for certain types of robots for the application

>   Ex. Continuous path versus point-to-point motion, Requirement for DOFs, compliance

>   Rotary joints or prismatic links, Cartesian, cylindrical, articulated, etc.

>   Types of end effectors (grippers, vacuum, special tools such as welding gun)

Basic Selection parameters (payload, accuracy, repeatability, speed, etc**)**

>   Causes of inaccuracy in positioning and repeatability

Mechanical Components of a Robot

>   Know about motors, linkages and gears

Control of Robot Actuators

>   Motor control, Feedback control of joint motors

Sensors Types, characteristics and errors

>   Range, resolution (sensitivity), linearity, accuracy, response time, etc.

Systems View of Robots controlled by computers

>   Data acquisition for sensing and control (Precision, Accuracy, sampling rate, filtering for noise reduction)

>   Architecture and Software requirements, Functions of the computer and software

Computer Considerations for Robotic Systems

My example showing code and coordinates; Eshed robot from video and class handouts

Programming Modes, Operating Systems

Robot Operating System (ROS) and ROS Industrial

Safety Requirements and Regulatory Agencies

Read OSHA Chapter 4 on WEB

Causes of Hazards

Methods of insuring safety of workers and operators

Collorative Robots - Baxter

Kinematics - Forward and Inverse kinematics, Rotations