2019 Term Project Theme

1. Derive of the forward and inverse kinematics of Cartesian robot, SCARA robot, Delta robot, 6 DOF articulated robot. Each team choose at least two type robot.

2. Derive the dynamic equation of Cartesian robot, SCARA robot, Delta robot, 6 DOF articulated robot.

3. Establish the trajectory planning to follow a circle trajectory and A to B straight line trajectory in Catesian space during given seconds.
(Designer can give a fast moving time to follow the circle and straight line)

4. Design PD controller, PD + Computer torque control algorithm. And simulate the control of the manipulator.

5. Compare the control result when the uncertainty of manipulator' mass and inertia, damper, or change of payload are given by 10%, 20%, and 30%.

6. Design sliding mode control with sliding perturbation algorithm(SMCSPO) and compare the control result when the uncertainty and change of them are given by 10%, 20%, and 30%.

7. Analyze and compare the control performance of three control algorithm.

8. Choose your favorable paper on an intelligent robot and summery, present, and make a report.

2019 Advanced Robotics(I): Term Project I Evaluation Table

Name	Project Title	Complexity, Quality, (50 points)	Kinematics, Dynamics, Control (100 points)	Evaluation by Simulation (50 points)	Analysis of Experiment Result and Completion Rate (100 points)	A general Review (100 points) (Representation, Term Report)	Total

2019 Advanced Robotics(I): Paper Work Evaluation

Name	Paper Title	Complexity, Quality, (30 points)	Understanding (50 points)	Simulation Evaluation (20 points)	Presentation, Overall (30 points)	Total