**UNLV ME729 – Advanced Robotics – Spring 2018 (last updated 1/15/18)**

|  |  |  |
| --- | --- | --- |
| Week | Topic | |
| 1 (01/22/18) | Lecture | Course Intro (class is short; show syllabus, grading, etc) |
| 2 (01/29/18) | Lecture | Homogeneous Transformation |
| Lab | LEGO 2-DOF planar manipulator construction |
| 3 (02/05/18) | Lecture | Forward Kinematics |
| Lab | LEGO 2-DOF planar manipulator - joint space to Cartesian space |
| 4 (02/12/18) | Lecture | Inverse Kinematics |
| Project | LEGO 2-DOF planar manipulator - Cartesian space to joint space |
| 5 (02/19/18) | Washington Birthday – UNLV Holiday | |
| 6 (02/26/18) | Lecture | Singularity and Motion Trajectories |
| Lab | LEGO 2-DOF planar manipulator – trajectory generation |
| 7 (03/05/18) | Project #1 Presentations and Demonstrations | |
| Lecture | Actuators and Sensors |
| 8 (03/12/18) | **Mid-term** | |
| 9 (03/19/18) | Lecture | Robot Dynamics |
| Project | LEGO 2-DOF manipulator variant (offset between Z0 and Z1) |
| 10 (03/26/18) | Spring Break Begins | |
| 11 (04/02/18) | Project #2 Presentations and Demonstrations | |
| Lecture | PID and Linear Control |
| Lab | Matlab and Simulink simulation |
| 12 (04/09/18) | Lecture | Force Control |
| Lab | Matlab and Simulink simulation |
| Project | Wall contact control of LEGO 2-DOF manipulator with a force sensor |
| 13 (04/16/18) | Lecture | Computed-Torque Control |
| Lab | Matlab and Simulink simulation |
| 14 (04/23/18) | Project #3 Presentations and Demonstrations | |
| Lecture | Introduction to useful software tools |
| 15 (04/30/18) | Study Week Begins | |
| 16 (05/07/18) | **Final** | |