UNLV ME 425/625 – Robotics I
Spring 2022 (last updated 01/14/22)

Week	Topic	
Week 1 01/19/22	Lecture	Introduction
Week 2 01/26/22	Lecture Lab Programming	Simple Machines I: Levers, Shafts and Cranks LEGO levers, shafts and cranks LEGO NXC: hello world, motors and touch sensor
Week 3 02/02/22	Lecture Lab Programming	Simple Machines II: Cams, Springs and Linkages LEGO cams, springs and linkages LEGO NXC: ultrasonic and infrared sensors
Week 4 02/09/22	Lecture Lab	Simple Machines III: Ratchets, Drives and Gearing LEGO ratchets, drives and gearing ML-CAD (or Solidworks)
Week 5 02/16/22	Lecture/Lab Programming Project	Putting it all together: Automata Examples (The Gymnast) Email: Team's proposed Project LEGO NXC: File handling **Teams Work on Automata Project**
Week 6 02/23/22	**Team work on their Automata Projects – No Formal Class**	
Week 7 03/02/22	Due:	**Automata Presentation; Report Due**
Week 8 03/09/22		**Midterm** Part 1 Closed-book (60-min): Fill-in-the-blanks, essays, etc Part 2 Open-book (90-min): Hands-on LEGO construction
Week 9 03/16/22	**Spring Break**	
Week 10 03/23/22	Lecture Programming	Motor Theory LEGO NXC: File handling Timers; Data Acquisition (Motor OL Step Response)
Week 11 03/30/22	Lecture Lab	**Robot Sensing**: ADC: binary, voltage dividers LEGO touch sensor; ohmmeter; potentiometer, voltmeter
Week 12 04/06/22	Lecture Lab	**Robot Actuation**: ADC: operational amplifiers LEGO temperature sensing; DAC power supply; aliasing
Week 13 04/13/22	Lecture Lab	**Robot Communications**: I2C LEGO PCF8574 LEDs, DIPs

Week 14 04/20/22	Lecture Lab **Robot Interfacing**: H-Bridges Relays and Transistors
Week 15 04/27/22	Lecture Project **Robot Interfacing**: H-Bridges **Teams Work on NXT H-Bridge Project**
Week 16 05/04/22	**Study Week Begins (H-Bridge Project Due)**
Week 17 05/11/22	**Finals**