APPENDIX I: TIMELINE
EW402 - 4 Credits - Spring AY2020

Week (M)		Note	Planned Activities	Actual Hrs
1	Jan 6	Begins Tues (M sched)	**Programming** • Continue work in ROS and Python. • Clone git repository for Crazyflie control with ROS onto linux machine catkin workspace. **Simulation** • Refine simulation by adjusting PD control gains. • Give quadrotor initial velocity tangent to desired path to see if this minimizes error. • Re-test trajectories for error relationship with speed.	5
2	J 13		**Hardware/Autonomous Flight** • Get Crazyflie to hover autonomously using ROS. • Execute a hover-in-place • Repeat hover exercise using OptiTrack for position information.	10
3	J20	M = MLK Leave Wed. on MO	**Simulation** • Test geometrically dilated trajectory that fits in lab space and calculate error.	2
4	J27		**Control Design** • Model new linearization region to control different parts of the dive (~45-60 degrees of pitch). **Autonomous Flight** • Execute waypoint flying on Crazyflie. • Log flight data with OptiTrack.	7
5	Feb 3		**Simulation** • Implement new controller for specific stages of flight. • Calculate errors. Is it better than before?	7
6	F 10		**Autonomous Flight** • Test scaled hummingbird trajectories in lab at extremely slow speeds (~1/25 speed or slower) with original position controller. • Results plotted in MATLAB and analyzed. • Adjust gains to obtain less error.	7
7	F 17	M = Pres Day 6 wk grds W	Determine max speed in simulation for RMS (root mean square) error of less than 10cm using most successful control method. Achieved through running iterations of the simulation with increasing speed until error becomes too great.	5
8	F 24		Test Hummingbird trajectories in lab at speeds close to max simulated speed. Obtain error from data collection.	5
9	Mar 2	M = Columbus	Adapt controller gains in lab experiment to maximize speed through trial and error.	5
SB	M 9			
10	M 16		**Buffer** (complete any outstanding tasks, or compile all experimental results)	5
11	M 23		**Buffer**	5

12	M 30	Ac Reserve	My 12 week deliverables are: • Final controller implementation. Fully functional simulation. Max quadrotor speed determined with suffering less than 10cm root mean square error in the trajectory.	
13	Apr 6	12 wk Grades T	• Demonstration of hardware capabilities. • Share draft poster with adviser for comments. Use template.	7
14	A 13		• Work on report. Compile all findings. • Submit poster to MSC for printing.	7
15	A 20		• Share draft report with adviser for comments. Use template. • Capstone day	5
16	A 27	T= last day of class	• Schedule technology transfer with adviser • All work saved in google drive, and code uploaded to Git.	2