ENGN/BIOL 267
Bioinspired
Design

Winter 2020 Weekly Schedule [updated 29 Mar 2020]

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Note: This schedule was significantly altered starting in March 2020 due to corona virus

DATE	TOPIC/TO DO
Week 0 **Jan 09-10**	Intro to Bioinspired Design: Physiology, Form-Function; and Engineering designs
Weeks 1 & 2 **Jan 13 - 24**	Kinematics of Swimming: Jellyfish-inspired swimming robots 14 Jan – jet propulsion model 16 Jan – motion tracking workshop (kinovea + matlab) 21 Jan – jellyfish-inspired robots, emphasis on actuators and materials 23 Jan – finish robot review; vortex dynamics and thrust theory
Week 3 & 4 **Jan 27 – Feb 07**	Neural System and Circuits: Hybrid-Insect Robots 28 Jan – interfacing biobots and human hardware 30 Jan – Building the RC circuit model for neurostimulation 04 Feb – Solving the RC circuit model 06 Feb – Current spikes and neurobiology; physical implementation Research project brainstorm end of business Friday 07 Feb.
Week 5 **Feb 10-14**	Emergent Behavior – Swarm Dynamics 11 Feb – Couzin Model of Emergent Behavior; Matlab simulations 13 Feb – Topological vs. Metric Distance in Swarming Behavior Project Proposals due end of the week
Week 6 **Feb 17-21**	17 Feb - Select Design Project Topics & Teams: Bill of Materials Due By Thurs Feb 20 20 Feb - Optics: Mimic Octopus and Mantis Shrimp (time permitting)
Feb Break **Feb 24-28**	
Week 7 **Mar 02- 06**	Begin work on design project
Week 8 **Mar 09-13**	Continue work on design project
Mar 16-27	*Courses suspended due to COVID-19*
Week 09 **Mar 30-Apr 03**	Bio-inspired Optics: 31 Mar – Color-changing octopus (Iridophores and Bragg gratings) 02 Apr – IR reflection technology inspired by cephalopods PS 5

Week 10 **Apr 06-10**	07 Apr – Mantis Shrimp Eyes see Polarized Light…and inspire Cancer-identifying cameras (Eye Structure and Form Birefringence) 09 Apr – Brainstorm/Share/Select ideas for Choose Your Own Adventure Final Project
Week 11 **Apr 13-17**	Work on Choose your Own Adventure! Develop a module of your choosing Apr 14, 18: Individual team meetings with instructor
Week 12 **Apr 20-22**	21 Apr – Student presentations based on choose your own adventure topic 23 Apr – Final written and video presentations due
Apr 23-25	Finals week (Thurs-Sat) [there is NO final for this course]