NJIT BIOLOGY

Course Syllabus

SPRING 2020

BIOLOGY 498-002: BIO-INSPIRED ROBOTICS

INSTRUCTOR:	Dr. Brooke Flammang	**EMAIL:**	flammang@njit.edu
OFFICE:	428K Central King Bldg.	**OFFICE HOURS:**	By appointment only (Email)
COURSE SCHEDULE:	W: 11:30AM – 2:20PM ▪ CKB 212	**COURSE WEBSITE:**	https://canvas.njit.edu/

COURSE DESCRIPTION:

This course emphasizes interdisciplinary design collaboration and incorporates studying primary biological literature, videoconferencing with scientists building bioinspired robotics, and design and construction of a device based on biological and physical principles. This exposes the students to the precise experimental methods and detailed recording-keeping practices that are needed to produce high-quality scientific data. Experience with coding is beneficial but not required.

COURSE PREREQUISITES: Hum 102, BIOL or R120: 201/202, and BIOL or R120: 205/206 and BIOL 321/610

CLASS POLICIES:

Cell Phones: The use of cell phones during class or exam times is prohibited.

Makeup Exam Policy: There will be no makeup exams, except in rare situations where the student has a legitimate reason for missing an exam, including illness, death in the family, accident, requirement to appear in court, etc. The student must notify the Biological Sciences office and the Instructor that he/she will miss an exam. In all cases, the student must present proof for missing the exam TO THE DEAN OF STUDENTS OFFICE, e.g., a doctor's note, police report, or court notice, etc., clearly stating the date and times.

Academic Integrity: Students are reminded of the Honor Code each one has agreed to abide by (at Rutgers or NJIT). Violations of Academic Integrity will be dealt with according to the guidelines indicated in the NJIT Academic Honor Code (https://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf). Please re-read Article III of the Honor Code (page 4), which describes conducts that are considered unacceptable (cheating, violating the US Copyright law, etc). Rutgers has similar rules (http://www.ncas.rutgers.edu/oas/ai).

GRADING POLICY:

COMPONENT	PERCENT
Participation	20%
Project pitch and schedule	20%
Paper Draft	20%
Robot Project	20%
Final Paper	20%
TOTAL	**100%**

GRADING SCALE	
A	88-100
B+	81-87
B	74-80
C+	67-73
C	60-66
D	50-59
F	0-49

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LEARNING EXPECTATIONS AND ASSESSMENT:

This course is designed to introduce students to the physical mechanisms that biological organisms have evolved to interact with their environment. Bioinspired robotic models are becoming increasingly useful in both experimental biology and applied technologies when engineered to take advantage of the biological phenomenon found in nature. Students will be expected to read the assigned primary literature and be actively involved in discussions on their content. Each student will have to play an active role in project design, development, and implementation, as well as writing the proposal and paper.

By the end of the course students are expected to have selected a biological mechanism and produce a 7-10 page paper (TNR 12 pt, double spaced, 1" margins; not including references or figures) about the biological phenomenon of interest and the design features that could be applied to a new technology. In addition to the paper, students must include a physical model of how they think it would work.

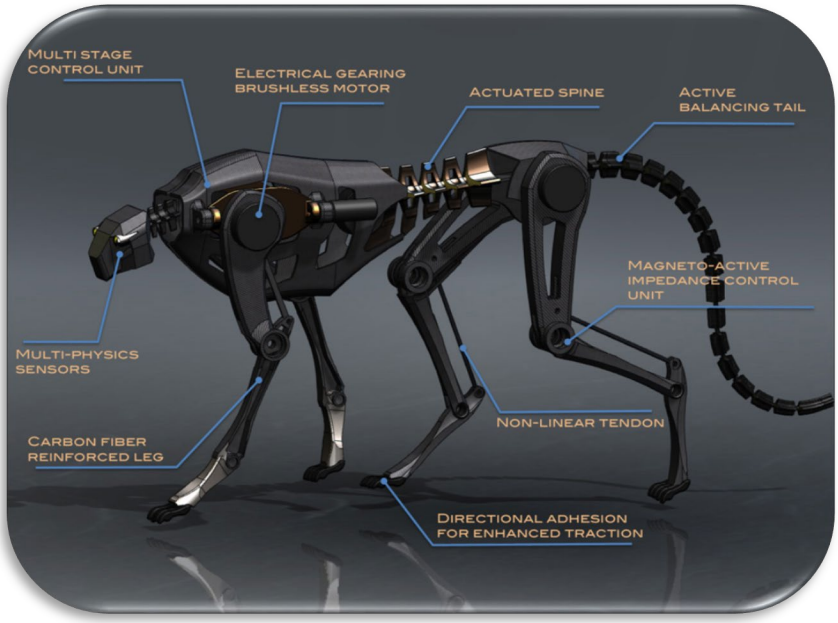
At the end of this course students should have the necessary skills to:

1.) analyze and interpret scientific data.

2.) give an effective scientific presentation.

3.) communicate biology through writing.

4.) find and evaluate scientific literature relevant to their interests.



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COURSE OUTLINE:

Dates	Topics	Assignments
W 22 Jan	Entrance Exam	
W 29 Jan	Intro to Arduino and electronics	**Read papers, choose 3 favorites**
W 5 Feb	What are BioInspired Robotics	**Confirm teams and projects**
W 12 Feb	3D-modeling and printing	**Prepare project pitches and summaries**
W 19 Feb	Project pitches	**Outline tasks and schedule**
W 26 Feb	Project Workshop	
W 4 Mar	Project Workshop	
W 11 Mar	Project Workshop	**Draft of biological mechanism due**
W 18 Mar	*Spring Break – No Class*	
W 25 Mar	Project Workshop	**Prototype presentation**
W 1 Apr	Project Workshop	
W 8 Apr	Project Workshop	
W 15 Apr	Project Workshop	
W 22 Apr	Project Workshop	
W 29 Apr	**Final Presentations**	**Bioinspired Design Project Due**

* Do not schedule travel during the Final exam period.