

# Introduction to Engineering: **Bio-Aerial Locomotion**

**Prof. Lorena A. Barba**



# Socratic **Question**

- ▶ Room 75443

- ▶ True / False (yes/no):

- Is creativity important for being an engineer?

# Socratic **Question**

- ▶ Room 75443
- ▶ True / False (yes/no):
  - Is creativity correlated with intelligence (IQ)?

# Socratic **Question**

- ▶ Room 75443
- ▶ True / False (yes/no):
  - Can you explain how a bird's wing generates the forces to fly?

# Course Blog



- ▶ <http://blogs.bu.edu/bioaerial2012/>
- ▶ First group deadline on **Today**
  - Dennis Ejorh, Dean De Carli, Christopher McNellis, Henry Liang, Joseph Tierney, Earl Lin, Natalie David, Daniel Schwartz
- ▶ 2nd group Friday
  - Maria Fernanda Torres, Matthew Brown, Matthew Kasper, John McCullough, Andres Zubillaga, Jeffrey Zurita, Tony Liang, Emily Coyle

# Course Blog



► <http://blogs.bu.edu/bioaerial2012/>

- Final blog assignment:

► Wed. Oct. 10

► Fri. Oct. 12

► Sun. Oct. 14

# Rehearsal Quiz Report

► on spreadsheet



# Announcement

- We have planned around this

ABOUT

PROSPECTIVE STUDENTS

ACADEMICS

RESEARCH

PEOPLE

RE

## Prof. Barba Selected for National Conference on Innovative Engineering Education

September 20th, 2012

By Mark Dwortzan



Assistant Professor Lorena Barba (ME)

Assistant Professor [Lorena Barba](#) (ME) was selected as one of 72 innovative early-career educators from U.S. engineering programs to participate in the National Academy of Engineering's (NAE) fourth annual Frontiers of Engineering Education (FOEE) Symposium on October 14-17 in Irvine, California. Chosen from a highly competitive pool of applicants, attendees were nominated by engineering deans and NAE members in recognition of their recently implemented educational innovations.

Barba's innovative educational approaches include ["flipping the classroom"](#) and [posting the College of Engineering's first course on iTunes U](#). Along with other young educators representing a variety of engineering disciplines, she will present

a poster describing her research and participate in discussions and workshops. Attendees will exchange their innovative ideas, network with colleagues and learn about best practices that they



# Announcements

- ▶ Mon., Oct. 1st → QUIZ for grade
- ▶ Wed., Oct. 3rd → class via Skype + **famous guest speaker!**
- ▶ Tues., Oct. 9 → Monday schedule, class in ENG 202
- ▶ Wed., Oct. 10 → normal class
- ▶ Mon., Oct. 15 → class led by Anush + **famous guest speaker!**
- ▶ Wed., Oct. 17 → final QUIZ for grade

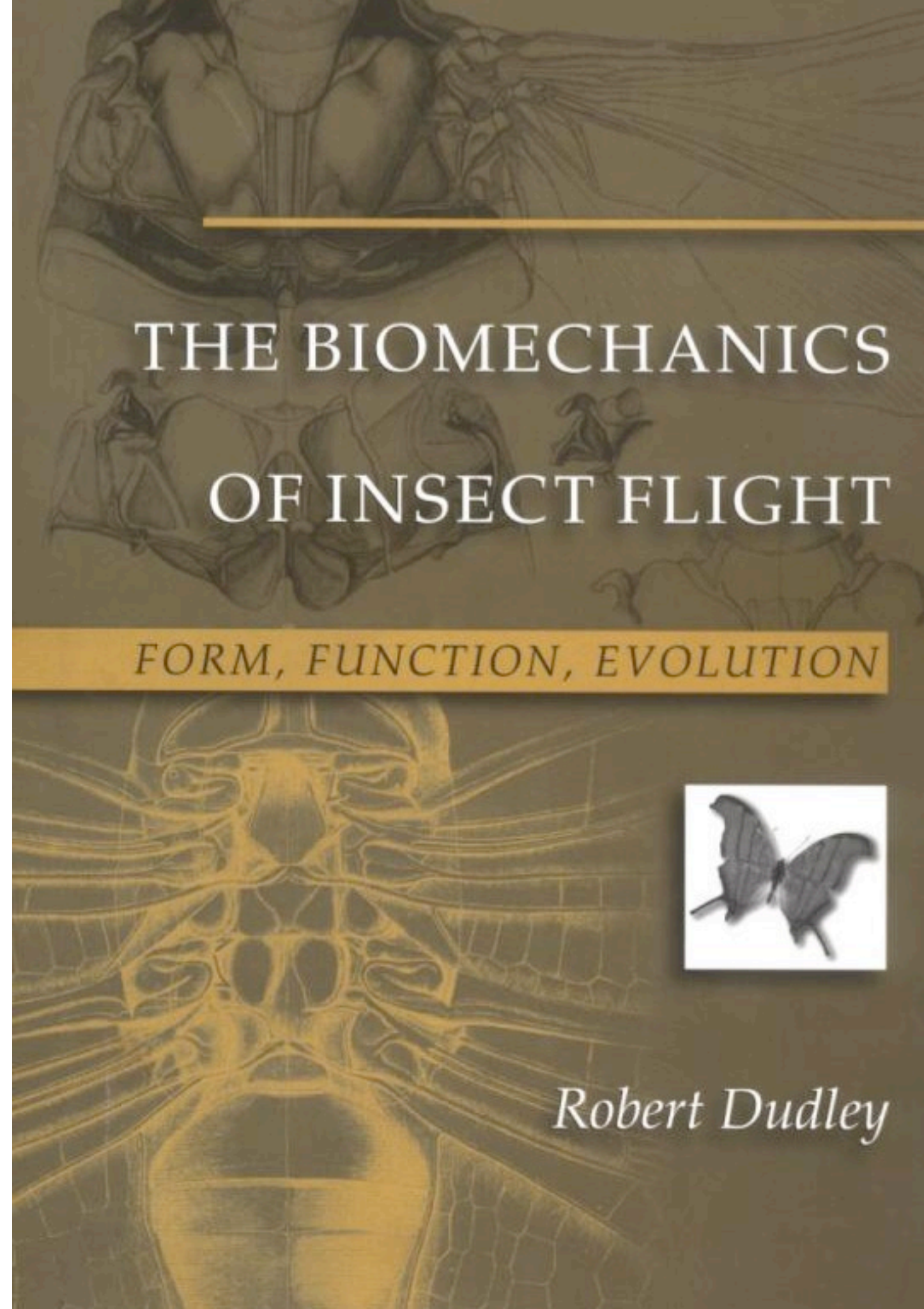


# Guest speaker

## **Prof. Robert Dudley**

Director of the Animal Flight Laboratory

Department of Integrative Biology  
University of California at Berkeley



# Guest speaker

## **Prof. Jake Socha**

Department of Engineering  
Sciences and Mechanics  
Virginia Tech







# Flapping flight Summary

- ▶ **Downstroke** — generates useful forces

- thrust
- most of lift

- ▶ **Upstroke** — complicated, diverse

- Birds:
  - ▶ reduce angle of attack
  - ▶ flex wings
  - ▶ flare tip feathers

