

Syllabus for Biomimetics
Fall 2006

Instructor: William E. Conner (Rm. 030) Winston, Telephone 5315, conner@wfu.edu

Meeting Time: 10:00a.m. through 10:50a.m. in Seminar Rm. 221

Text: Cats' Paws and Catapults by Steven Vogel (Required)

Website: [FA2006 First Year Seminar FYS100 Sec D](#)

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| Aug. | 23 | Introduction to seminar and student projects
Text: Chapter 1 |
| Aug. | 25 | Defining the problem: Case study (you will need a pencil) |
| Aug. | 28 | Two schools of design
Text: Chapter 2 |
| Aug. | 30 | Oral Presentations: Defining the problem (Cortney, Laura, Julia) |
| Sept. | 01 | Library tour (you will need your Thinkpad) |
| Sept. | 04 | Size is not a small matter
Text: Chapter 3 |
| Sept. | 06 | Oral Presentations: Defining the problem (Patrick, Adam S., Billy, Cassie) |
| Sept. | 08 | Student paper presentations (Jannah, Billy) |
| Sept. | 11 | Surfaces, angles, and corners
Text: Chapter 4 |
| Sept. | 13 | Oral Presentations: Defining the problem (Cannon, Kristy, Emily, Jannah) |
| Sept. | 15 | Student paper presentations (Emily, Joon) |
| Sept. | 18 | Stiff and soft
Text: Chapter 5 |
| Sept. | 20 | Oral Presentation: Defining the problem (Chris, Adam M., Joon, David S, David B.) |
| Sept. | 22 | Student paper presentations (Kristy, Cortney) |
| Sept. | 25 | Two routes to rigidity
Text: Chapter 6 |
| Sept. | 27 | Writing assignment due – Inventive Genius: A Biography (10 pages) |
| Sept. | 29 | Student paper presentations (Patrick, Laura) |
| Oct. | 02 | Pulling vs. pushing
Text: Chapter 7 |
| Oct. | 04 | Virtual Interview: A Biomechanist's View (David S., Patrick, Emily, Cassie) |

- Oct. 06 Student paper presentations (Julia, Kirsten)
- Oct. 09 Engines for the mechanical worlds
Text: Chapter 8
- Oct. 11 Virtual Interview: A Biomechanist's View (Chris, Billy, Julia, Adam M.)
- Oct. 13 Student paper presentations (Cannon, Adam S.)
- Oct. 16 Putting engines to work
Text: Chapter 9
- Oct. 18 Virtual Interview: A Biomechanist's View (Kristy, Joon, Jannah, David B.)
- Oct. 20 NO CLASS
- Oct. 23 About pumps, jets, and ships (Quiz)
Text: Chapter 10
- Oct. 25 Virtual Interview: A Biomechanist's View (Courtney, Adam S, Cannon, Laura)
- Oct. 27 Student paper presentation (Adam M., Chris)
- Oct. 30 Making widgets (Kristy, David S.)
Text: Chapter 11
- Nov. 01 Writing Assignment Due – *Science News* Article (5 pages)(Joon, Billy)
- Nov. 03 Student paper presentation (Cassie, David B.,)
- Nov. 06 NO CLASS – JURY DUTY
Text: Chapter 12
- Nov. 08 Brainstorming – Adam M.
- Nov. 10 Student Paper Presentation (David S. and David B.)
- Nov. 13 Contrasts, Convergences, and Consequences
Text: Chapter 13
- Nov. 15 Brainstorming
- Nov. 17 Brainstorming
- Nov. 20 No Class
- Nov 27 Course evaluations
- Nov. 29 Presentation – Innovation Based on Nature (2)
- Dec. 01 Presentation – Innovation Based on Nature (2) Final Paper (5 pages)

Assignments:

Oral Presentation – Defining the problem **5%**

In this 10 minute presentation you will describe the diversity of ways in which Nature has solved the problem that you have been assigned.

Student Paper Presentation **10%**

Here you will choose a paper from the primary literature to present to your colleagues. It will be about a recent breakthrough in science that might lead to innovation. You must get your paper approved by me and provide copies (electronic or otherwise) to your colleagues during the lecture period before your presentation.

Virtual Interview **15%**

For this assignment you will interview a practitioner of biomimetics (biomechanics) by e-mail or telephone. You will give a presentation on your findings to the class.

Paper 1 – Inventive Genius: A Biography **15%**

This paper will be a scientific biography of an inventor of your choosing. The topic person must be approved by me.

Paper 2 – *Science News* Article **10%**

For this assignment you will write an article about a scientific discovery that you believe will be of interest to the general public. It will be in the form of an article for the journal *Science News*.

Paper 3 – Final paper – Your Discovery **20%**

For this assignment you will describe a scientific principle that you believe has the potential to lead to innovation. You will describe the principle and the innovations that you foresee.

Final Presentation – Innovation Based on Nature **15%**

For this assignment you and three of your colleague will give a presentation to the class illustrating a scientist principle and convincing us that the principle can lead to innovative products.

Class participation, quizzes, and attendance **10%**

I expect you to be in class and to participate at every meeting.