HNRS LS2040 - What a Plant Knows - Spring 2015

Prerequisites: none
Meeting: TR 9:00-10:15
Instructor: Dr. Harley  Office: SL409M
Office hours: MTR 10:30-11:50 or by appointment
Phone: 801-626-7434 (my office), 801-626-6174 (department office) e-mail: sharley@weber.edu

How do plants know up from down? How do they tell time? How can they tell if they have neighbors? How does a Venus flytrap know when to spring its trap? Over the past 20 years or so, we’ve come to appreciate that plants are not a static green background. Rather, they are dynamic actors in their environments. Plants monitor myriad information inputs, weigh the relative importance of each, and respond in some fashion – bend to grow around an obstacle, produce flowers, increase levels of leaf chemicals that deter herbivores, etc. From the studies by Charles and Francis Darwin in 1880 to the most recent research today, this class will explore the science of plant behavior.

Course Topics (subject to change)
1. Introduction: The Nature of Science/The Science of Nature
2. “Nothing in biology makes sense except in light of evolution.” Theodosius Dobzhansky
3. Genes: ATGC and beyond
4. What a Plant Sees
5. What a Plant Smells
6. What a PlantFeels
7. What a Plant Hears
8. How a Plant Knows Where It Is
9. What a Plant Remembers
10. Plants Are Plastic
11. How a Plant Knows Friend From Foe
12. Conclusion: The Intelligent Plant

Required texts
What a Plant Knows: A Field Guide to the Senses by Daniel Chamovitz
Other readings: Will be posted on the course site on Canvas. Most will be the primary research papers referenced by Chamovitz in his book or used for material for the topics not in his book.
Instructions for lab activities: Will be posted on the course site on Canvas

Recommended text
Botany For Dummies by René Fester Kratz

General Education and Honors Program
This course is designed to meet the Natural Sciences and Life Sciences Learning Outcomes and the Honors Program Learning Outcomes.
http://weber.edu/Honors/outcomes.html
Students With Disabilities
Any student requiring accommodations or services due to a disability must contact Services for Students with Disabilities (SSD) in room 181 of the Student Services Center, online at http://www.weber.edu/ssd, or by e-mail (ssd@weber.edu). SSD can arrange to provide course materials in alternative formats, if necessary.

Student Behavior
This class meets in a laboratory room. Therefore, food and drink (including water) are prohibited. Feet must be in enclosed shoes. Your clothing must cover your lap when you are seated. Safety glasses are required for lab activities in which you handle chemicals. Additional safety information will be covered as needed.

You are expected to meet the Botany Department Statement of Expectations of Students. The text of this statement can be found at http://www.weber.edu/botany/Student_Resources.html.

WSU subscribes to TurnItIn.com, an electronic service that verifies the originality of student work. Enrollment in this course may require you to submit some or all of your assignments to TurnItIn. Documents submitted to TurnItIn.com are retained, anonymously, in their databases. Continued enrollment in this course constitutes an understanding of and agreement with this policy.

Your course grade will be based on the following:
65% = Written Assignments: Based on either the lab activities or the primary literature articles. Some of these will be in class.
20% = Essay: You are to write a 1200-1600 word essay on a plant behavior topic for a general audience. Your tone should match the one that Chamovitz uses throughout his book. You will need at least one reference from the primary research literature. In addition to turning in the written essay, you will read or otherwise present the essay to the class.
15% = Class Participation: You must be present in order to participate in the class by contributing to class discussions, working with a partner or team in lab, etc.

All grading will be done on a four point scale that matches the scale used for GPA: 4.0 = A, 3.7 = A-, 3.3 = B+, 3.0 = B, 2.7 = B-. 2.3 = C+, 2.0 = C, 1.7 = C-, 1.3 = D+, 1.0 = D, 0.7 = D-, 0 = E.