

**Biology 123**  
**Biology of Food**  
**Spring 2007**  
**Fondren-Jones 151 TU 1:00-2:40, TH 1:00-3:00**

Dr. Daniel (Max) Taub, Dept. of Biology

Office: Fondren-Jones 140 (the new part)

Office hours: Office hours Mon 1-3, Wed 1-3. You are also welcome to drop by anytime.

I am often available, although the best way to be sure that I can meet with you is to schedule an appointment- otherwise you might find that there are others already meeting with me, or that I've had to step out of the office for a moment.

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**Course content and goals:** This course has several major goals:

- To increase students' knowledge of the biochemical foundation of human and animal nutrition
- To improve students' understanding of the intellectual approaches and methods of scholarship used in scientific inquiry
- To give students experience conducting biological experiments
- To introduce students to a variety of little-known, neglected and underutilized crop plants species

**POK and General Education Distribution:** This course satisfies the Natural World, Life Sciences POK requirement and the Natural Sciences Laboratory requirement.

**Course Format:** This course is scheduled to meet on TU and TH afternoons. Although certain of these hours are listed as lecture and certain hours as lab, we will mix lecture and lab as necessary. Because we will be growing plants, and plants need to be cared for, we will spend at least part of the calls period in the greenhouse on most class days. The experiments we perform will involve working with plants, water and soil. So come to class in clothes appropriate for playing in dirt.

**Textbooks:** Levetin, Estelle and McMahon, Karen. (2005) *Plants and Society*, 4<sup>th</sup> edition. McGraw Hill; New York.

Cary, Stephen S. (2004). *A Beginner's Guide to Scientific Method*, 3<sup>rd</sup> edition. Wadsworth/Thomson; Belmont, California

**Class activities and assignments:** There will principally be four types of activities in this class:

Reading, lecture and discussion, based largely on the textbook

There will be a number of lectures tied to readings in the textbook. You will be expected to understand the material covered in detail, and you will be tested on your understanding in two exams.

Lecture and discussion about the philosophy and practice of science

There will be several lectures and discussions about aspects of the scientific approach to understanding and investigating questions. You will submit a paper reflecting on the comparison between scientific approaches, practice and literature and the approaches, practice and literature used in your major or other classes.

Conducting experiments

We will design and perform experiments to examine the germination, morphology and growth of underutilized and neglected crop plant species, as well as to explore techniques used in plant experiments. These experiments will need to be performed with care and you will need to keep a detailed written record for these experiments. Each student needs a notebook to dedicate exclusively as a laboratory record book. Each student will also write a final paper reporting the results of their studies.

Food Experiences

What would be a food class be if we didn't eat? We will sample a variety of foods that will be unfamiliar to most of us. You will submit a paper towards the end of the semester reflecting on the foods you have tried, or on any alternative food crop, or on alternative foods in general.

**Grading**

Grades will be based on the following percentages:

Two exams covering material from the lectures/ readings each)	30% (15%
Paper reflecting on scientific approach	17.5 %
Performance in conducting experiments	15 %
Lab notebook and final experimental results paper	20 %
Food experience/ Alternative foods paper	7.5 %
Contributions to class discussions and atmosphere	10 %

## Attendance

Attendance is expected for all class meetings. Missing days when we are working on the experiments or tending plants will count heavily against the grade for performing experiments. Missing classes will also count heavily against the participation in class discussions part of the grade. If exceptional circumstances require absence from class, arrangements should be made with the instructor in advance. Come prepared for class discussions by bringing a copy of the material we are discussing, as well as a copy of your assignment.

## Honor

All work is covered under the honor code. All suspected violations will be taken seriously and dealt with under the approved procedures found in the Student Handbook. I consider it a violation of honor to lie about reasons for missing class.

## Accommodations for disabilities:

Appropriate accommodations will be made for students with disabilities in accordance with University policy. All students requesting such accommodations must consult with the Office of Academic Services. For special accommodations for exams, students must make arrangements with myself and with Academic Services at least three weeks prior to the exam.

Jan 16	Intro to course, visit to greenhouse, assignment for starting to do experiment, receive list of available species/ reading on reserve/	
Jan 18	Discussion of plant nutrition research/ Discussion of papers Food Experience	Reading on Reserve and Levetin and McMahon: Alternative Foods, beans of the Future pp 222-223, 251-253
Jan 23	Lecture: Fundamentals of chemistry/ Food experience	Levetin and McMahon pp 9-11
Jan 25	Discussion of/ Refinement of research plans	<b>Research Plan due</b>
Jan 30	Lecture: Organic Chemistry	Levetin and McMahon p11-17, also Enzymes, p 59-60
Feb 1	Set up Experiment	
Feb 6	Set up Experiment	
Feb 8	Systematics/ Experience	Levetin and McMahon pp

	with Food/ Tend experiment	123-133
Feb 13	Discussion- Perceptions of Science. Lecture: Scientific Literature/ Tend experiments	
Feb 15	Energy and Nutrient cycles	Levetin and McMahon P55-59 (sections on Metabolism, Energy, Redox reactions and Phosphorylation) p 66 (Cellular respiration,) Table 4.1; p 214-215 (N cycle); 474-477 (Food Chains, Energy Flow) Carbon cycle 478 (Carbon cycle) and Fig 26.7
Feb 20	Discussion: Scientific method/ Tend to experiments	Carey pp. 1-7, 26-42
Feb 22	Lecture: Cells	Levetin and McMahon, ch 2, except for pp 27-30 on cell cycle and mitosis
Feb 27	Discussion: Scientific Method	Carey pp. 52-59, 70-91
Mar 1	Molecular genetics	Levetin and McMahon 113-121
Mar 6	Choose topic for study/ Food Experience/ Tend Experiment	
Mar 8	Lecture: Plant Bodies/ Tend Experiment	Levetin and McMahon: ch 3, Root p 38- first paragraph, and Fig 3.7, vegetables, pp 45-48, chapter 5 Flowers p 74-75, paragraph on inflorescence and fig 5.5 (p 78) Pollination and fertilization, - 84-86, chapter 6 (entire)
Mar 13	Spring Break	
Mar 15	Spring Break	
Mar 20	Human Nutrition I/ Tend to experiments	Levetin and McMahon 159-163, 164-167
Mar 22	Exam I	
Mar 27	Discuss reading/ Tend Experiment	<b>Reading assignment due</b>

Mar 29	Human Nutrition II/ Tend Experiment	Levetin and McMahon proteins 163-164
April 3	No class	
April 5	Human Nutrition III / Tend Experiment	Levetin and McMahon 167-177
April 10	Grasses and legumes/ Tend Experiment	Levetin and McMahon 192-223
April 12	Harvest Experiment	<b>Science Reflection Paper Due</b>
April 17	Weigh Plants, Finish experiment	
April 19	Graphic presentation of data	<b>Data sheets due</b>
April 24	Crop Development and Genetically modified foods	Donaldson and May (1999) Levetin and McMahon 242-246,253-264
April 26	Stats and SPSS	<b>Data sheet for SPSS</b>
May 1	Starchy Staples/ Food Experience	Levetin and McMahon 226-238
May 3	Global Change and Food	Levetin and McMahon 479-482, Handout
May 10	Final Exam, 1 PM	