

PLANT SCIENCE 1150
AGRICULTURE TECHNOLOGY AND SOCIETY

The numbers:

Class number: 19270 Classroom: Ratcliffe Hicks (RH) 201

Lecture times: Tuesday, Thursday 5:00-6:15 PM

Instructor: Dr. Gerald Berkowitz (Gerry is fine)

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Office: Agricultural Biotechnology Laboratory (ABL) 302C

PLSC 1150 office hours: Tuesday, Thursday, 4-5 PM (or anytime!)

General course outline. The course can be loosely separated into three sections as follows.

- A. **Origins of agriculture.** This section of the course will present information about how agriculture developed around the world. Domestication, development of tools and technologies, influences of agriculture on societal development, how dependence on animals changed societies, as well as how the scientific method is applied to researching agricultural history will be discussed.
- B. **Case studies** of how specific plants and issues of agriculture influenced society throughout history. Focus will be on the doctor/healer/shaman/botanist-wine, distilled spirits, medicinal plants and psychoactive plants
- C. **Ethics and technology.** Influence of agricultural technology on the environment, risk assessment, and effects of agricultural technology ‘revolutions’ on society will be discussed.

Objectives of course: at the end of the semester, students will:

- A. Understand how agricultural technologies were developed; focusing on the technological, societal, and environmental factors underlying the development of plant cultivation and animal husbandry.
- B. Gain an appreciation of the scientific method; how is knowledge about agriculture, impact of technology on society and the environment, and technological advancements generated and evaluated.
- C. Understand how agriculture influenced diversity of society and cultural development as well as how society and cultural development influenced agriculture throughout history.
- D. Be exposed to controversies and ethical issues regarding agriculture-related technologies; e.g., the benefits as well as negative impacts of monoculture, mechanization, biotechnology, ‘organic’ agriculture, the ‘Green Revolution’, the use of psychotropic plant-derived drugs in various cultures, as well as the spice trade will be discussed.

Grading. Grades will be based entirely on examinations, papers, and class assignments as follows:

1. Midterm Exam – 30%.
2. Final Examination- 35%. The final examination for this course will be approximately 80% based on the lectures and handouts from the last half of the course, and 20% cumulative ‘general’ knowledge based on the information presented throughout the semester.
3. Papers and presentations- 20% total. Each student will prepare one paper and one 10 minute presentation during the semester; the grade for each paper or presentation will comprise 10% of the final grade. Students have the option of writing two papers **if they prefer NOT to give a presentation to the class.** The presentation will be a 10 minute lecture to students in the class, about a topic you choose. The topic must be relevant to the course material; either the lecture material, chapters from the text book, or additional topics listed below. Student presentations will be scheduled periodically during the semester; the date of your specific presentation will depend on the topic you choose. The topic of your class presentation must be approved by email. Choose a topic and email the instructor and receive feedback and/or approval of the topic (and a date for presentation) prior to working on your presentation. You must write a one page outline of your presentation and submit it no later

than one week prior to the agreed upon date of your presentation. You may be asked to modify your presentation depending on the evaluation of your outline. Your class presentation can (but does not have to) conform to the requirements of the paper as described below. Once a student has chosen one of the chapters of the text for a presentation, other students will no longer be able to get that chapter approved for their presentation. The topic of the paper will be to briefly summarize and then *compare* two chapters in the text. The focus of the paper should be to a) show a competent understanding of the points presented in two chapters of the text and then compare the issues raised and conclusions presented in the two chapters the student chooses from the text. **The paper should present the student's synthesis of an opinion about points raised in the two chapters.** If you prefer not to give a 10 minute presentation to the class, you can instead write two papers. In this case, each of the two papers must use different chapters in the book. Your paper should be prepared as follows. The length of the paper will be a minimum of five pages. This excludes title, name, references, etc.; this information should be put on a cover page. For a top grade on the papers, the chapter summaries should comprise *no more than half of the total paper*. This means that the synthesis of opinion presented in the paper needs to comprise half of the total. Papers must be generated on a computer. The text of each paper can be double-spaced, and use no greater than 12 pt font, with standard (1" top and bottom, 1.25" left and right margins) margins. Students can use other information (web based, books, journals, etc.) in addition to the textbook for these papers. If outside references are used, please list them as citations (including URL if relevant). The first paper is due by end of class period on February 22. The second paper is due in class period on April 5. Each class period that a paper is late, one half of a grade (i.e. B+ will be graded as a B) will be deducted from the grade for that paper.

4. Class assignments- 15%. During the semester, students are required to turn in short assignments. The assignments require students to generate an exam question based on the previous class lecture. The exam question should be one, or possibly two sentences. The exam question a student generates must address an issue brought up during class lecture/discussion the previous class period. The exam question cannot be solely based on the lecture notes distributed by the instructor; i.e. a student can most properly fulfill the assignment (generate the exam question) by attending the previous class lecture and taking notes during the presentation/discussion. The assignment can be hand-written, but a Word file print out is preferred. There are 28 class periods with lectures during the semester. Students are required to hand in (for full credit on the class assignment portion of the grading) a total of 15 exam questions. Each student can choose, therefore, 15 lectures from which to generate an exam question. A hard copy of the exam question must be turned (make sure you name is on the paper) at the next class period prior to the start of class to fulfill the assignment.

Reading material. The text for this course is: Guns, Germs and Steel: The fates of human Societies by Jared Diamond. Additional readings will be given out to students during the semester.

Tips for success in the course. This course is designed in a manner that depends on lectures and discussions for presentation of much of the course content. The textbook does not particularly cover the same material presented in class lectures and discussions. Therefore, it is strongly suggested that students *attend lectures* in order to understand the material presented in the course. Most of the lecture material will be provided to students in outline form as hard copies of Word and PowerPoint files. The hard copies of these outlines that you receive should be put into a 3-ring binder that you purchase and dedicate to the course. Make sure you bring the lecture notes given in class to subsequent class periods until we have finished discussing the course material covered by these lecture outlines. Compiling all the lecture outlines will provide a good overview of course material that will be covered on the mid term exam and the final exam. You should use the Word and PowerPoint file outlines provided to you as a 'framework' or outline for the

lectures and discussions. Having a hard copy of the lecture outline will allow you to take notes during lectures to augment what is presented in the outline. Many students find it convenient to write in notes on the hard copies of the outlines provided. The handouts, with your notes written on the pages, then become your notebook for the course material.

Getting help. Feel free to email or call to make an appointment with the instructor to go over lecture material. Students often times find this especially useful prior to the mid term and final exams. I suggest that if you want to schedule a time to go over the course material, that you first go over the handouts and your notes by yourself. Schedule a time to meet with the instructor. Come to the meeting with notes that you make to highlight information in the lectures that you do not understand.

This course fulfills 3 credits of the requirement for Group Three- ‘Science and Technology’ of the General Education requirements. Definition of Science and Technology for General Education: These courses acquaint students with scientific thought, observation, experimentation, and formal hypothesis testing, and enable students to consider the impact that developments in science and technology have on the nature and quality of life. Knowledge of the basic vocabulary of science and technology is a prerequisite for informed assessments of the physical universe and of technological developments.

Criteria:

Courses appropriate to this category should:

1. Explore an area of science or technology by introducing students to a broad, coherent body of knowledge and **contemporary scientific or technical methods**;
2. Promote an **understanding of the nature of modern scientific inquiry**, the process of investigation, and the interplay of data, hypotheses, and principles in the development and application of scientific knowledge;
3. Introduce students to **unresolved questions in some area of science** or technology and discuss how progress might be made in answering these questions; and
4. Promote interest, competence, and commitment to continued learning about contemporary science and technology and their **impact upon the world and human society**. The course lecture material has been designed to meet the above four criteria; emphasis throughout the course will be on criteria areas in **bold** above.

Presentation lecture topics. The Botany of Desire (Michael Pollan)- apple, tulip, potato, marijuana. Omnivore’s Dilemma (Pollan)- Food sources for animals, Industrial agriculture, King corn, Feedlot verses pasture, Mycelium Running (Paul Stamets)- Mycelium as nature’s intent, Mycorestoration, medicinal mushrooms, growing mushrooms, mushrooms and the environment. Activist food movements. Cheese making. The Little Ice Age and Agric. in Europe and/or US. Psychedelics and non-US and European culture. Ethnic foods and culture. Veganism. The ethics of eating animals. Biodynamic Farming. Politics of organic agriculture. Food folk tales: fact and fiction.

Useful phone numbers.

1. Counseling and Mental Health Services: 486-4705 (after hours: 486-4327). www.cmhs.uconn.edu.
2. Career Services: 486-3013. www.career.uconn.edu
3. Alcohol and other drug services: 486-9431.
4. University Dean of Students Office: 486-3426.
5. College of Agric. & Natural Res. Assoc. Dean for Academic Affairs: 486-2919.

COURSE OUTLINE

What is 'Truth': Scientific method and 'Fake News'

How we study prehistorical agriculture: tools of scientific research

Origins: hunter gatherer societies and life prior to civilization

Domestication of plants: Vavilov vs. Lysenko, truth and science

Domestication of animals: germs and European conquests

Social and cultural consequences of Ag: A stairway to Heaven?

Traditional tools and technologies of agriculture across the ages

Mesopotamia: Rise (writing & ag.) and Fall (salinization) of societies

Case study- how the plow changed through history

Slash & Burn Ag- Developed versus undeveloped countries & global warming

Egyptian Agriculture- Imhotep, the Nile, & taxes

Roman Civilization- Medieval Europe: From slaves to feudalism

Spice Trade & Age of Sea Exploration; Discovery of New World

Wine & Civilization

MIDTERM EXAM

How wine, GMO, and health food labeling are intertwined
whiskey & beer through the ages

Ag in Pre-Columbus America: innovations without animals

Medicinal plants: patents & ethnobotany

The Botanist as healer & science in pre-industrial Europe

Marijuana: Guest lecture from the head of a grow facility (Scott Roth)

Psychoactive drugs: opium, peyote

The Green Revolution: cure or controversy?

Corporate Farming in the U.S.- how 'Big Ag' brings us inexpensive food

Genetic engineering of crop plants- understanding the technology

GMOs: gene editing and the future, public perceptions

Cloning of large mammals: & pharming pharmaceuticals from animals

Organic ag: sustainable practices, Gov. policy, & the true cost of food