BCH 249 Sustainable Human Ecosystems

Tentative Syllabus and Schedule

Instructor:
Dr. Ron Pardini
ronp@cabnr.unr.edu
Office: Howard Medical Science (HMS) 156
Office Hours: TBA

Location/Meeting time: Room TBA; 2 hours/week (2 units)

A. Course Description, Objectives and Requirements

This course will provide an introduction to the study of global food/hunger insecurity, and science based strategies to improve and sustain human food production into the future, preserve and improve environmental quality and promote human health. It will explore science-based solutions to current and emerging issues impacting humans and their ecosystems. Questions to be explored are: Global Hunger and Agricultural Research: what can we do? Nutritional Diseases: is our diet healthy? Agriculture and the Environment: are they compatible and sustainable? Global Climate Change: what will the impact be on agricultural production and the environment and can we mitigate the negative effects? Wildfires: is it possible to reduce the incidence and impact? Drought: can we mitigate the negative effects?

Class Structure: Lectures, classroom discussions/debates, student presentations and reports, field lab visits and white paper.

Prerequisites: ENG 102; Recommended: BIOL 190/191

This course satisfies Silver Core Objective CO9:

Core Objective 9 (Science, Technology & Society): Students will be able to connect science and technology to real-world problems by explaining how science relates to problems of societal concern; be able to distinguish between sound and unsound interpretations of scientific information; employ cogent reasoning methods in their own examinations of problems and issues; and understand the applications of science and technology in societal context.

Student Learning Outcomes

Upon completion of the course, students will be able to:

1. Articulate how research advancements have and will impact global food security, environment sustainability and human health. This objective addresses. Students will be evaluated on their ability to identify and evaluate research that has a global impact through participation in classroom discussion and completion of a case study.

2. Distinguish between sound and unsound interpretation of science. Students will learn about scientific interpretation during in class discussions. (CO9)

3. Demonstrate the ability to critically evaluate the validity of information that commonly appears in the lay public, i.e. newspapers, magazines, social media, electronic communications, radio and television. Students will learn how to evaluate lay communications through written reports and in class student presentations and discussions. (CO9)

4. Describe how agricultural science and technology affect human ecosystems in a local, national and international context. Students will learn the connection between local research and contemporary global issues.

5. Work effectively in a group setting. Students will be evaluated on their ability to work as a group to discuss and debate contemporary issues in agriculture and human and environmental health.
6. Share knowledge and opinion using verbal, written and electronic forms of communication. *Students will be evaluated in communication for their participation in class discussions, the written case study, evaluation of lay media communications, preparation of white paper and participation in debate.*

**Requirements (Expectations and Assessment)**

- To be successful in this class it is necessary that all students read all assignments carefully and critically, attend all classes and show familiarity with the topics during class discussions.
- Each student will identify 3 lay communications relating to the course content and prepare a written report and oral presentation of the article including a summary of the article, a critical evaluation of the article and the conclusions presented. Include scientific citations to support the evaluation. This is an opportunity to explore areas of the course of specific interest to you. Classroom presentation and discussion may be accomplished individually or in small groups (20% of grade)
- Each student will identify a Land Grant University research program/success that has an impact on global society and prepare a written summary of the work, evaluate the conclusions (20% of grade)
- Each student will participate in oral presentations/debates employing scientific methods to critically discuss and evaluate contemporary societal issues relating to food/agriculture and health. At the beginning of the semester, teams will be formed and topics selected for discussion/debate. i.e. GMO’s vs organic food production, dietary fat and human health, production agriculture and the environment etc. (20% of grade)
- White paper and classroom debate on the topic of a contemporary global societal issue relating to food/agriculture and human and environmental health. In white paper, author should discuss both sides of an issue and present an argument for one side (40% of grade)

**Due Dates for student projects:**
- Week 2: LGU contribution to global society written report
- Week 5: Evaluation of lay communication on nutrition and health written report
- Week 7: Student presentations/discussion on LGU contribution to global societal issues and lay communications evaluation
- Week 10: Evaluation of lay communication on food security, written report.
- Week 15: Evaluation of lay communication on biodiversity, written report.
- Week 16: White paper and group debate/discussion.

**B. Accommodation and Academic Dishonesty**

**Accommodation:** Success in this class is important. If you have a disability or particular circumstance that may have an impact upon your work in this class, please contact the instructor as soon as possible so that we can work together to adapt assignments to meet your needs and the requirements of the course. Any student with a disability needing academic adjustments or accommodations is also requested to speak to the Disability Resource Center (Thompson Building Suite 100) as soon as possible to arrange for appropriate accommodations.

**Academic Dishonesty:** Academic dishonesty (e.g., cheating on exams, plagiarism) is a serious offense. All work submitted in this class must be your own. Each student is responsible for being familiar with UNR's policies on academic dishonesty. Any student engaging in academic dishonesty in this course will receive a 0 on the assignment in question. In more severe cases, e.g., extensive plagiarism of other people's work, the case may be turned over for prosecution by the proper university authorities.
C. Course Materials

The readings for each class will be posted on WebCampus and will include original peer-reviewed scientific articles, scientific reviews and current publications from the media.

D. Course Outline

WEEK 1- INTRODUCTION to COURSE: Overview and history of agriculture and the role of the Land Grant University System (LGU) in providing solutions to the world food and health challenges: Food Security, Human Health, Climate Change, and Environmentally Sustainable Agriculture

Week 2- NUTRITION AND HEALTH: Overview and historical perspective of the relationship of diet to disease LGU contribution to global society written report due

Week 3- NUTRITION AND HEALTH: Introduction of clinical and population based trials that evaluate diet impact on human health; evaluate the credibility of lay publications/social media: Science and evidence based approaches

WEEK 3 & 4- NUTRITION AND HEALTH: Introduction and discussion of the role of diet in cardiovascular disease, diabetes and obesity TBD

WEEK 5 & 6 NUTRITION AND HEALTH: Introduction and discussion of the role of diet in cancer Written report/evaluation of lay communication on nutrition and health due

WEEK 7- Student presentations and discussion on lay communications and LGU contribution to global societal issues Field lab tour subject to availability

WEEK 8-FOOD SECURITY: Overview and history of agriculture and of global food Security

WEEK 9 & 10- FOOD SECURITY: Plant based agriculture: Precision Agriculture, Genetic Manipulation of Crops, Genetically Modified Organisms (GMOs), plant breeding and organic food production. Worldwide controversy on the use of GMOs. Producing nutritious foods, fuels Written report/evaluation of lay communication on food security due

WEEK 11 & 12- FOOD SECURITY: Animal based agriculture: Producing sustainable and healthy animal foods and sustaining the environment

WEEK 13 & 14- BIODIVERSITY: Overview and Food production

WEEK 15- BIODIVERSITY-Medicines from nature Written report/evaluation of lay communication on biodiversity due

WEEK 16- CONTEMPORARY ISSUES IN AGRICULTURE/NUTRITION/HEALTH. Student Team Debates/ Presentations on pre-selected current topics and evaluate the scientific basis of the topic. White papers on pre-selected topics due

Guest Speakers On The Following Topics:

- Global hunger and agriculture
- Nutrition and health overview
- Animal production from pasture to plate
- Precision Farming/Genetic Modification of crops, plant breeding, mutation control (GMO)
- Sustainable Range Livestock Production
- Biodiversity