Phytochemicals in Fruits and Vegetables to Improve Human Health

Autumn 2013

FDSCTE 7810

http://agrilife.orgphytochemicals/

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Lecture: Tuesday and Thursday, 3:00 to 4:30 P.M.

Location: Parker Building, Room 120

This course will be offered simultaneously on TTVN (Trans Texas Video Network) to OSU.

Lecture Dates: August 27 through December 3

Office Hours: Arranged by appointment through phone and email.

Course Description: FDSCTE 7810. Science of Foods for Health. 2 credits. This course provides students with current scientific knowledge about the role of phytochemicals in diet, and increases the knowledge and awareness of successful cost effective integrated approaches to reduce the burden of chronic disease. The course is administered using a combination of conventional and distance education technology.

Prerequisite: Approval of Instructor.

Course Outline:

1. Introduction

2. Nutrition
   a. Biomedical Agriculture: A new approach to developing crops for health (1.5 lectures)
   b. Case studies of fruits and vegetables and their role in human health- challenges and opportunities (1.5 lectures)
3. Biologically active compounds
   a. Analysis of phytochemicals (1.5 lectures)
   b. Potential of myristicin, a constituent of parsley, in chemoprevention (1.5 lectures)
   c. Altering the calcium and metal contents in plants (1.5 lectures)
   d. Molecular interactions of turmeric with cancer chemotherapy (1.5 lectures)
   e. Phytochemicals and eye health (1.5 lectures)
   f. Antioxidant health benefits of phytochemicals: the in vitro and in vivo evidence (1.5 lectures)
   g. Carotenoids, bioavailability and health benefits (1.5 lectures)
   h. The importance of micronutrients, phytochemicals, and calorie management in the prevention of cancer and other chronic diseases (1.5 lectures)
   i. Biochemical insights into health-promoting properties of phytochemicals

4. Optimizing phytochemicals through agricultural practices
   a. Bioactive components in citrus and onion and their relation to cancer and chronic disease prevention (3 lectures)
   b. Plant breeding strategies to enhance phytochemicals (1.5 lectures)
   c. Effects of processing on phytochemicals in fruits and vegetables (3 lectures)

5. Disease prevention
   a. Bioactive food components-micronutrients (1.5 lectures)
   b. Challenges and opportunities for using the “omics” to define functional foods (1.5 lecture)
   c. Chemical modifications of phytochemicals to give new mechanism based anticancer drugs (1.5 lectures)
   d. Diet and colon cancer (1.5 lectures)
   e. Phytochemicals in cancer prevention (1.5 lectures)
   f. Potential targets of phytochemicals in the prostate (1.5 lectures)

Guest Lectures: Topics are presented by recognized authorities in the various topics.

Text: No specific text book; however, the instructor will provide information in web page.

Exams and Grading

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<th>Percentage</th>
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<tr>
<td>Web and class discussion</td>
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<td>Mid-term exam</td>
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<td>Final exam</td>
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<td>Term paper and presentation</td>
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<td>Total Points</td>
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Grading Scale:

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Final Exam: December 10, 2013, 3:30-5:00 PM

Make-Up Exams:
Make-up exams and changes in due dates will be only allowed for official university excuses. Instructor must be informed within 48 hours of missing the exam due date. All make-up exams must be completed within 7 days of the originally scheduled date of the exam or the student will receive a grade of zero.

Late Assignments:
Late assignments/term papers are penalized at a rate of 10% loss in points per day late including weekends.

Changes in Schedule:
The instructor reserves the right to change the order and content of lectures as necessary. Exam dates (assignment/term paper due dates) (excluding the final) may be changed by the instructor, but notice of at least 5 days will be given.

Attendance:
Students are expected to attend all classes, complete term papers and presentation on time, and participate in class discussions. Participation in online discussion is mandatory. Violations will be handled in accordance with the Ohio State regulations governing academic integrity.

Academic Misconduct:
Academic misconduct is defined in the Code of Student Conduct (3335-23-04, http://studentlife.osu.edu/pdfs/csc_12-31-07.pdf) and the Rules of the University Faculty (3335-31-02, http://trustees.osu.edu/rules/university-rules.html). Some examples of misconduct are:
1. Using someone else’s work without proper citation of the source – plagiarism
2. Using an assignment from a previous course to meet an assignment in this course
3. Copying another student’s homework, exam or quiz.
Any misconduct will result in the work being graded as a “0”.

Ohio State University Disability Services:
Any student who may need an accommodation based on the impact of a disability should contact me to discuss your specific needs as soon as possible. The Office for Disability Services assists faculty in verifying the need for accommodations and developing accommodation strategies. If you have not done so, you are encouraged to contact the Office for Disability Services at 614-292-3307 in 150 Pomerene Hall to register your disability.