

Plants and Human Health

11:776:438 (3 credits)
Spring Semester (yearly)

CONTACT INFORMATION

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COURSE DESCRIPTION

This course is designed to strengthen students skills in critical thinking and analysis, public speaking and individual and group research projects focused on the health and nutritional aspects of foods, spices and medicinal plants/dietary supplements.

COURSE WEBSITE, RESOURCES AND MATERIALS

- Course website: Canvas
- Recommended (not required) texts:
 - The ABC Clinical Guide to Herbs, M. Blumenthal (Thieme, Publishers)
 - Herbs of Choice, Robbers and Tyler (Haworth Press)
 - Foye's Principles of Medicinal Chemistry, Williams and Lemke (Lippincott Williams and Wilkins)
 - Dietary Supplements: A Guide to Health Care Professionals, Talbot and Hughes (Lippincott)
- We also suggest you find a good introductory text on human physiology, human medicine, health, or nutrition for back-up basic information
- Supplemental readings will be posted to eCollege

PREREQUISITE

Prior coursework in nutrition, physiology, chemistry, and medicinal plants or related courses are recommended

COURSE LEARNING GOALS

(Link to Plant Biology Undergraduate Program Goals: <http://plantbiology.rutgers.edu/undergrad/plantbiology/>)

By the end of this course, the student will be able to:

1. Describe how plants are used to improve human health and nutrition
2. Describe the regulatory environment under which medicinal and dietary supplements are marketed, sold and/or prescribed in the USA
3. Recognize the bioactive compounds in plants that are responsible for the medicinal activity and/or provide nutritional benefits to human
4. Recognize that plants, which contain bioactive medicinal compounds, may also have associated toxicity

5. Describe the process by which plants and their natural plant products need to be assessed for efficacy and safety

Each Plant Biology Undergraduate Program Goal is satisfied by each course learning goal.

ASSIGNMENTS/RESPONSIBILITIES AND ASSESSMENT

Grading: In general, students will lead class discussions. Grading is based on the accumulated grades of each homework assignment, research report and presentation, class presentations, attendance, and participation. Weekly assignments and presentations are worth 70% of grade; final research paper and presentation are 30% of grade. Attendance is required.

Grades will be calculated on the following scale:

A = 90-100%; B+ = 85-89%; B = 80-84%; C+ = 75-79%; C = 70-74%; D = 60-69%; F = <60%.

Homework: At the beginning of the semester, students will read and critique both popular articles and movies/films and share a critical analysis both in class and via a written report(s).

Research reports: Each week students will be assigned to read, review, and critique scientific and/or popular articles relating to plants and human health.

Research project: The class will be divided into two groups and assigned two topical research areas. Each student will be required to participate in the larger group project in a specific role.

Learning goals assessment: Assessment of each of the five goals will be accomplished by reviewing the student's presentations, papers/research report and project, which incorporates an understanding of each goal. As grading is based upon the accumulated grades of each homework assignment, research report and presentation, class presentations, attendance and participation, our ability to assess whether the students reached the goals of the class is reflected in their performance of the class assignments. The assignments specifically call for students to address the way plants are used to improve health and nutrition, what is the regulatory environment in the USA under DHEA regulations, to identify selected array of bioactive compounds in the plants they review, to identify any toxic compounds in the plants that they review and in the class projects they are tasked to describe the process by which plant and their natural products are assessed for efficacy and safety. Comments from the instructor on assignments handed in by the students will also address the students understanding of these goals over the course of the semester.

The percentage score on these assessments will determine the level of mastery: >90% outstanding; 80-89% good; 70-79% satisfactory; <69% unsatisfactory.

PARTICIPATION GRADE AND ABSENCE POLICY

Attendance is mandatory. Lack of attendance will lower your grade. Active class participation and contribution to class discussion may, in special circumstances, increase your grade. Laptops are welcome for note taking, but Internet surfing is not permitted. If you cannot attend class for medical or other reasons, notify the instructors prior to the missed class indicating the reason or use the University absence reporting website (<https://sims.rutgers.edu/ssra/>) to indicate the date and reason for the absence. An e-mail is automatically sent to the instructor.

The class is on an honor system – no doctor or parental notes will be requested.

COURSE SCHEDULE

Week	Topic
1	Class overview, objectives, and expectations 1. Therapeutic use of phytomedicines and their distinction between pharmaceuticals drugs 2. The regulatory environment, the FDA, classification of dietary supplements, and role of patents on development of herbal drugs 3. Office of Dietary Supplements and the National Center for Alternative and Complimentary Medicine 4. The National Botanical Centers and their research Students sign-up for their class presentations (using Google Tool)
2	1. Natural plant products chemistry: a primer into bioactive compounds in plants, issues of standardization and quality control considerations 2. Linking health and nutrition to chemistry of foods 3. Traditional medicine from primary health care to modern therapy
3	Student-led discussions on popular press articles and movie critiques
4	Student presentations and class discussions on: 1. Plants used to address respiratory tract problems
5	Student presentations and class discussions on: 1. Plants used to aid digestive system problems 2. Plants used for kidney, urinary tract, and prostate problems
6	Student presentations and class discussions on: 1. Plants used for weight loss 2. Plants used for endocrine, metabolic syndrome, diabetes, blood sugar control, obesity
7	Student presentations and class discussions on: 1. Plants used for cardiovascular system problems 2. Research Project discussion
8	Student presentations and class discussions on: 1. Plants used for nervous system problems 2. Plants used for depression and mood elevation
9	Spring recess Student presentations and class discussions on: 1. Plants used for age related diseases (eye health, bone retention, aging process; and should we be using plants as natural estrogenic sources?)
10	Student presentations and class discussions on: 1. Plants used to improve immune deficiencies
11	Student presentations and class discussions on: 1. Herbs used to enhance sexual performance and fertility 2. Plants used to enhance energy and stamina
12	Group meetings about assigned research projects Student presentations and class discussions on: 1. Plants used for arthritic and musculoskeletal problems 2. Plants used to support bone and joints and in sports supplements
13	Group meetings about assigned research projects Group 1: Student research presentations and class discussions on: Developing a new plant based remedy for Alzheimer's and cognitive memory or for diabetes
14	Group 2: Student research presentations and class discussions on: Developing a new plant based cosmetic as an anti-wrinkle/anti-aging skin agent
	Research paper due

FINAL EXAM/PAPER DATE AND TIME

There is no final exam for this course.

ACCOMODATIONS FOR STUDENTS WITH DISABILITIES

Please follow the procedures outlined at <https://ods.rutgers.edu/students/registration-form>. Full policies and procedures are at <https://ods.rutgers.edu/>

ACADEMIC INTEGRITY

The university's policy on Academic Integrity is available at <http://academicintegrity.rutgers.edu>

The principles of academic integrity require that a student:

- Properly acknowledge and cite all use of the ideas, results, or words of others.
- Properly acknowledge all contributors to a given piece of work.
- Make sure that all work submitted as his or her own in a course or other academic activity is produced without the aid of impermissible materials or impermissible collaboration.
- Obtain all data or results by ethical means and report them accurately without suppressing any results inconsistent with his or her interpretation or conclusions.
- Treat all other students in an ethical manner, respecting their integrity and right to pursue their educational goals without interference. This requires that a student neither facilitate academic dishonesty by others nor obstruct their academic progress.
- Uphold the canons of the ethical or professional code of the profession for which he or she is preparing.

Adherence to these principles is necessary in order to ensure that:

- Everyone is given proper credit for his or her ideas, words, results, and other scholarly accomplishments.
- All student work is fairly evaluated and no student has an inappropriate advantage over others.
- The academic and ethical development of all students is fostered.
- The reputation of the University for integrity in its teaching, research, and scholarship is maintained and enhanced.

Failure to uphold these principles of academic integrity threatens both the reputation of the University and the value of the degrees awarded to its students. Every member of the University community therefore bears a responsibility for ensuring that the highest standards of academic integrity are upheld.

STUDENT WELLNESS SERVICES

Just In Case Web App <http://codu.co/cee05e>

Access helpful mental health information and resources for yourself or a friend in a mental health crisis on your smartphone or tablet and easily contact CAPS or RUPD.

Counseling, ADAP & Psychiatric Services (CAPS)

(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901/ www.rhscaps.rutgers.edu/

CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

Violence Prevention & Victim Assistance (VPVA)

(848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901 / www.vpva.rutgers.edu/

The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

Disability Services

(848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / <https://ods.rutgers.edu/>

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.

Scarlet Listeners

(732) 247-5555 / <http://www.scarletlisteners.com/>

Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.