BPS 203

Herbal Medicines & Functional Foods

Summer Session II 2025

Course Coordinator & Instructors

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Course Description
Study of traditional medicines, popular medicinal plants, and drugs obtained from plants. Functional foods with medicinal values that provide health benefits beyond basic nutrition.

Introduction
Plants are among the oldest surviving organisms in existence and despite being 'rooted' are able to survive attacks from herbivores, pests, bacteria, fungi, etc. To accomplish these tasks, plants produce secondary metabolites also known as natural products or phytochemicals ('phyto' means plant) for defense and to give themselves a competitive advantage. Phytochemicals exert a wide range of biological effects and therefore, it is not surprising that throughout the ages, humans have utilized plants as the basis of sophisticated traditional systems of medicine. In fact, many pharmaceuticals (drugs) used for treating chronic diseases (e.g. cancer) have been obtained from plants. Moreover, herbal extracts and medicinal foods (functional foods or nutraceuticals) are widely used globally for disease prevention and treatment and the maintenance and promotion of human health.

Course Goals
1. To appreciate why and how plants are utilized as traditional medicines by various cultures.
2. To provide general knowledge of pharmaceuticals/drugs derived from plants and to recognize common functional foods and herbal supplements used for self-treatable ailments.
3. To understand how to research, retrieve, interpret, and critically analyze literature and popular media sources on the global use of natural products for non-pharmacologic self-care treatments.
4. To appreciate and foster student collaboration and teamwork.

Student Learning Outcomes

After taking this course students will be able to:

1. To identify plant drugs and plant extracts (and their chemical constituents) which are used for medicinal purposes.
2. To research/collect, interpret, organize, and review scientific methodology pertaining to the utilization of natural products for human health benefits and disease prevention.
3. To critically evaluate the pros and cons of using natural products for treating diseases.
4. To acquire knowledge of traditional systems of medicine with overlapping medical practices and theories of health and disease.
5. To identify morphological features of popular medicinal plants.
6. To use media and creative methods to apply and communicate (researched) data in written (e.g., monograph) and oral (e.g., PowerPoint) forms.

Course format and structure
This 3-credit course will meet (face-to-face) at 4:00-7:45 PM Tuesday and Thursday (Avedisian 240) with each lecture lasting 1 hour, followed by practical study in the garden, greenhouses, field walks, reading and discussing peer reviewed research and hands-on activities. This course will combine didactic lectures, assignments, guest lectures, and student projects & team presentations (oral and written). Students will identify popular medicinal plants from the College of Pharmacy Medicinal Garden & Greenhouse as well as learn about nutraceuticals and botanical dietary supplements.

Expectations and Course Rules

Cheating and plagiarism
There will be zero tolerance for cheating and plagiarism on class projects and exams. If a student is observed cheating, the exam will be collected, and the incident will be reported to the relevant University and/or College office. The student will receive a zero grade for that examination. Students must adhere to the University's academic integrity policies. All submitted work must be the student's original effort unless collaboration is explicitly allowed. Generative AI use must be disclosed and appropriately referenced if permitted by the instructor (see below).

Talking during class
Apart from relevant discussion or question and answer time, please refrain from talking during presentations as this will send a message of disrespect to the speaker. Points will be deducted for inappropriate behavior.

Attendance, punctuality, and participation
Students are expected to attend class. Absences due to illnesses or health conditions, religious observance, school-approved activities, and family emergencies shall be excused in accordance with the University Manual (Sections 8.51.11-8.51.14). All other absences will be deemed unexcused unless prior approval from the professor is granted. For unexcused absences, no credit will be given for missed class assignments such as, but not limited to quizzes, problem sets, and presentations.

Illness-Related Absences
If any of you have symptoms of viral illness (COVID-19, influenza, etc), you should not come to campus or attend in-person classes/events/meetings. Notify me at 874-2849 or Elizabeth_leibo@uri.edu of your status, and we will communicate through the medium we have established for the class. We will work together to ensure that course instruction and work is completed for the semester. The Centers for Disease Control and Prevention have posted simple methods to avoid transmission of illness. These include covering your mouth and nose with tissue when coughing or sneezing; frequently washing or sanitizing your hands; avoiding touching your eyes, nose, and mouth; and staying home when you are sick. For more information please view www.cdc.gov/flu or flu.gov <http://www.cdc.gov/flu%20or%20flu.gov> . URI Health Services web page, www.health.uri.edu <http://www.health.uri.edu> , will carry advice and local updates.

Cell phones, laptops, iPods etc.
Cell phones, laptops, and other devices may only be used for course-related activities. Improper use will result in participation penalties. If your cell phone rings, you will receive a 0 for the day for class participation and receive a warning. If it happens a second time, you will then lose a point from your final grade for each time your cell phone rings during class. In addition, do not use your laptops to 'chat' or 'browse' the internet during class unless specifically instructed to do so for class-related materials.

Required Texts/Readings

Textbooks: No textbook is required for this course. Readings will be provided on Brightspace. However, a recommended textbook is:

1. The American Botanical Council (ABC) Clinical Guide to Herbs by Mark Blumenthal.

Other References and Resources

The library is a great source of general reading materials. Also, PubMed (an online search engine provided by the US National Library of Medicine) is a great resource for you to obtain peer-reviewed journal articles. Other relevant reading materials, including peer-reviewed original research and review articles, book chapters, and materials from trade magazines may be supplied during the course. The College of Pharmacy (COP) Medicinal Garden and Greenhouse are available for you to gain hands-on experience with medicinal plants. Additional time may be arranged in the medicinal garden for extra credit.

Brightspace will be used to post class-related materials, required and supplemental readings, as well as your exam scores. Brightspace should be monitored continuously since new materials may be posted 24 hours before class time.

Student Assessment and Grading

The grade for this course will be based on student performance in each of the following categories:

1. **Assignments (20 points**). Take-home assignments (posted in Brightspace) will be given throughout the session and ***must*** be completed on time and posted in Brightspace to earn full points.

2. **Attendance and Class Participation (5 points)** Students are expected to attend class and activities. Occasionally, students may miss class activities due to illness, severe weather, or sanctioned University events. Students who are absent due to illness should not be penalized by grading or assignment/exam make-up policies. See University Manual sections 8.51.11-8.51.14.
3. **Two Exams: Exam 1 (20 points), Final Exam (20 points).** Exams will be given during the semester which will cover materials from the preceding lectures, class discussions, and/or the 'field' portion of the course.

4. **Medicinal Plant Project (MPP) (20 points).** Student teams (2 per team) will be assigned a medicinal plant from the below list. You will be required to complete a written 'monograph-type' report and a short oral PowerPoint presentation on the designated medicinal plant including reviewing its history of use, identification, summarizing and evaluating clinical trials, explaining the mode of action (if known), contraindications, regulatory status, etc.. Further details on the monograph (50%) and oral presentation (50%) will be provided in class, including example presentations.

List of Medicinal Plants (subject to change).

1) St John's Wort
2) Ginkgo
3) Ginseng (Asian)
4) Green Tea
5) Garlic
6) Ginger
7) Cranberry
8) Saw Palmetto
9) Echinacea
10) Kava
11) Milk Thistle
12) Turmeric (Curcumin)
13) Horny Goat Weed
14) Black Cohosh

15) Pomegranate
16) Green Coffee Bean
17) Aloe
18) Hawthorn
19) Cayenne
20) Valerian
21) Elderberry
22) Papaya
23) Evening Primrose
24) Holy Basil

2. **Herbal Recipe Project (HRP) (15 points).** Student teams (2 per team) will prepare an herbal recipe (functional foods, balms, teas, tinctures, extracts, etc.) using ingredients from at least 2-3 natural products. A video presentation on your project will contribute towards your grade for the HRP.

3. **Extra Credits.** There will be opportunities to earn extra credits. Announcements will be made in class.

Final letter grades will be assigned as follows:

Course grade			
93-100%	A	77-79%	C+
90-92%	A-	74-76%	C
87-89%	B+	70-73%	C-
84-86%	B	67-69%	D+
80-83%	B-	60-66%	D
		<60%	F

Students will NOT be eligible for a "make-up" exam in the event of an unexcused absence
Each student is responsible for attending all classes and participating in oral presentations, and examinations. If a student is unable to attend an exam due to an illness or family emergency, the student must contact Dr. Seeram no later than the day before the exam and appropriate documentation must be presented within 24 hours of the missed exam.
NEW ACADEMIC POLICY – Military Service – In December 2023, the URI Faculty Senate adopted a new policy on absences due to military service. See University Manual Section 8.51.12. This new policy stipulates, per federal law, that students may not be penalized for absences due to the United States Armed Forces and/or National Guard duty assignments.
REMINDER REVISED ACADEMIC POLICY – Resolution of Grades of Incomplete: In February 2023, the URI Faculty Senate adopted updated guidelines for the resolution of grades of incomplete. See University Manual sections 8.53.20 – 8.53.24. The revised policy clarifies the temporary nature of the grade of Incomplete, the circumstances under which it is appropriate to assign the grade of Incomplete, and the process for resolution of grades of Incomplete.
DID YOU KNOW? - Students cannot be required to take three final exams on the same day - See 8.51.27 for details.
URI BOOKSTORE ADOPTIONS – Many students want to purchase textbooks and course access codes from the URI Bookstore before the start of the semester using their financial aid. Unfortunately, some faculty haven't submitted their course information to the

bookstore and students must therefore wait for a refund, or use a credit card, to purchase through an outside source. The URI Campus Store has moved to a new software for course adoptions, please check your email for a personalized adoption message from URI@verbasoftware.com to ensure that your course materials are available.

USE OF GENERATIVE AI – Generative AI use is allowed only with prior approval and must be properly cited. Misuse will be considered academic dishonesty. Please visit the Office for the Advancement of Teaching and Learning (ATL) Teaching With ChatGPT and other AI websites for resources related to teaching and AI, including a link to a crowd-sourced compilation of generative AI syllabus policies.

ATL AI EVENT – Everything you always wanted to know about AI but were afraid to ask – Tuesday, February 6, 12-1 (ZOOM) – register here.

Concerned about AI/Chatbot GPT? The Office for the Advancement of Teaching and Learning has created a web resource for faculty interested in learning about AI and how courses and teaching pedagogy can be adapted in light of the rapidly growing use among students and faculty. Dr Stephen Atlas, from the URI College of Business, has written ChaptGPT for Higher Education and Professional Development: A Guide to Conversational AI.

Providing equal access for students with disabilities – Every qualified student with a disability has the right to equal access to educational programs, services, activities and facilities. Documentation-supported accommodations are communicated to faculty through a letter from Disability, Access, and Inclusion (DAI), delivered by the student. Faculty are required by law to provide these accommodations and are encouraged to review the information on the DAI website. The Academic Testing Center is available to support testing accommodation needs.

Disability, Access, and Inclusion Drop-In Hours – Questions about student DAI accommodations? DAI staff are available each weekday from 2-4pm in their webex room: https://rhody.webex.com/meet/DAI or call 874-2098. **DAI leadership also provides special Faculty WebEx Drop-in Hours, for the first month of the Fall and Spring semesters on Wednesdays from 8-10AM, and Fridays from 10am-12pm.** Please also reach out to us at dai@uri.edu if you would like to discuss a **Workshop** for your department or colleagues, we can work with you to tailor this to your individual needs and interests.

Spring 2024 Academic Calendar and Final Exam Schedule – Available here. Classes begin on Monday, January 22. Classes end on Monday, April 29. Spring Break is the week of March 10th.

Advancement for Teaching & Learning (ATL) Resources – As you develop your courses and syllabi, please take advantage of the faculty development resources offered through the Office for the Advancement of Teaching and Learning, including the syllabus development, course design, and assessment design resources. Visit the ATL website for upcoming programs and their library of web-based resources, including the ATL Teaching Strategies and Techniques quick links - https://web.uri.edu/atl/teaching/teaching-strategies-techniques/.

ITS Teaching and Learning Services – Visit the ITS-TLS web site for educational technology support and training. See the full calendar of ITS training and support options here: https://its.uri.edu/training/

- **New to Brightspace?** Take the self-paced Basic Brightspace Training Course.
- **Captioning and ADA Accessibility Resources –** visit https://its.uri.edu/tls/ada/ for information on live and post-production captioning.

- **Faculty Spotlight:** Faculty interviews about innovative implementation of instructional technologies: https://its.uri.edu/tls/ed-tech-faculty-spotlight/.

Writing Across URI - Writing retreats; support for faculty writers; consultations on designing effective writing assignments; support for integrating Eli Review in any course. Contact cywhite@uri.edu or visit https://web.uri.edu/writingacrossuri/ for more information.

Academic Testing Center (ATC) –The ATC offers a dedicated facility and professional proctoring support for faculty and students. Faculty are invited to submit requests for exams and quizzes for students with approved testing accommodations, excused absences, and culturally responsive assessments. Visit https://web.uri.edu/atc/faculty/ for more information. Faculty, colleges, and departments interested in ATC services, unique needs, or expanded partnerships can contact Lisa Macaruso, lmacaruso@uri.edu, for a consultation.

Anti-Bias Statement. We value diversity and inclusion. Any bias incidents should be reported to URI's Bias Resource Team at web.uri.edu/brt.

COURSE OUTLINE

The below course outline is provided as a **general guide** only and may be subject to change. Guest lecturers may also be invited during the semester.

Class 1 6/24 Lecture 1: Introduction to Pharmacognosy, Pharmaceuticals from plants, Botanical Drugs, Regulatory Framework, Dietary Supplements Phytochemistry, History of the Youngken Garden
Tour of Garden
Activity: Botanical Latin Scavenger Hunt
Activity: Botany Leaf structure and arrangement
Closing Circle: Assignment #1

Class 2 6/26 Lecture 2: History of Herbal Medicine: TCM, Ayurveda, Kampo/Jamu, Homeopathy, Eclectic, Western Herbalism, Native American Herbalism
Activity: Sensory Garden Exploration
Activity: Flavor in Herbal Medicine: Tea making and drinking
Closing circle: Assignment #2
Assign Plants and Teams for MPP assignments

Class 3 7/1 Lecture 3: Botany, Taxonomy, Identification with a key, iNaturalist, NE Plant Directory
Flower Lab: collect flowers from garden, dissection lab, observe under microscope
Field Trip North Woods
Closing Circle Assignment #3

Class 4 7/3 Lecture 4: Herbal Medicine Making. Culinary herbs and their medicinal uses.
Herbal Medicine Making Lab
Journal Club Discussions: Elderberry, Echinacea, Vitamin C Peer Reviewed Study Critique
Closing Circle Assignment #4

Class 5 7/8 Lecture 5: Phytochemistry & Evolution
pH Lab
Field Trip: Medicinal Plants in the Landscape/ Visit Tewksbury Biocontrol Lab
Closing circle Assignment #5

Class 6 7/10 Lecture 6: Functional Foods
Fire cider Making Activity
Review For Exam One
Closing circle : Assignment #6

Class 7 7/15 Exam One
Class Discussion of Peer Reviewed Studies: Resveratrol and the Health Claims for Red Wine
Field Trip and ID of Japanese Knotweed, Tincture Making
Closing Circle: Assignment #7

Class 8 7/17 Final Presentations: MPP

Class 9 7/22 Final Presentations : MPP

Class 10 7/24 Final Presentations: HRP
Final Exam