

SEMESTER AT SEA COURSE SYLLABUS
University of Virginia, Academic Sponsor

Voyage: Spring 2016

Discipline: Environmental Science

EVSC 2200-101: Plants, People, and Culture

Division: Lower

Faculty Name: Dr. Jim Affolter

Credit Hours: 3; Contact Hours: 38

Prerequisites: No course prerequisites.

COURSE DESCRIPTION

This course will explore the interrelationships between humans and plants. An introduction to basic plant biology including plant anatomy, morphology, physiology, reproduction, and taxonomy will provide a framework for exploring the process of plant domestication and its economic and cultural consequences for humans. We will explore the origin and dispersal of major plants used by humans as food, drink, and medicines, and the use of plants in spiritual and material culture. Major focus will be placed on the importance of plants in cultural history, and the continuing importance of plants in human health. Case studies, including the role of plants in local diets and traditional medicine, will be drawn from countries and cultures visited during the voyage.

COURSE OBJECTIVES

1. to develop an awareness of the impact of wild-collected and domesticated plants on the development of human history and culture.
2. to examine the chemical, physical, biological, and ecological characteristics of these plants.
3. to examine commercial exploitation and current uses of these plants in modern society.
4. to examine the uses of these plants in less technologically developed countries.
5. to consider current issues and conflicts in the use of herbal medicines vs. modern pharmaceutical medicines.

REQUIRED TEXTBOOKS

AUTHOR: Estelle Levetin and Karen McMahon

TITLE: Plants and Society

PUBLISHER: McGraw Hill

ISBN #: 978-0-07-352422-1

DATE/EDITION: 2012, 6th edition

TOPICAL OUTLINE OF COURSE

Depart Ensenada- January 5:

A1- January 7: Course Introduction; Plants in Society, Myth, and Religion

WRITING ASSIGNMENT 1: Initial Thoughts on Plants, People, and Culture (due A2)

In a paper of approximately 500 words (typed, double-spaced) students respond to three questions describing: (1) their formal and informal background in the fields of plant biology, horticulture, and anthropology; (2) what they hope to learn during the course; and (3) the five plant species they think are most important for the survival and well-being of the modern human race (and why).

A2- January 9: Introduction to Botany (Plant Anatomy, Morphology, Physiology, and Reproduction)

Required Readings:

Levetin & McMahon, sections of Chapters 2-6.

Unsicker et al. 2009. Protective perfumes: the role of vegetative volatiles in plant defense against herbivores. *Current Opinion in Plant Biology* 12: 479-485. (<http://www.sciencedirect.com.proxy-remote.galib.uga.edu/science/article/pii/S1369526609000259>)

A3- January 11: Taxonomic Survey of the Plant Kingdom, World Biomes

Required Readings:

Levetin & McMahon, Chapters 8-9.

Honolulu: January 12

A4- January 14: Origins of Agriculture, Biodiversity of the World's Food Crops

Required Readings:

Levetin & McMahon, Chapter 11.

Chun-lin Long et al. 2003. Strategies for agrobiodiversity conservation and promotion: a case from Yunnan, China. *Biodiversity and Conservation* 12: 1145-1156.

A5- January 17: Old and New World Spices, History of the Spice Trade

Required Readings:

Levetin & McMahon, Chapter 17, pages 277-288.

Study Day: January 19

A6- January 20: Mediterranean Culinary Herbs

Required Readings:

Levetin & McMahon, Chapter 17, pages 288-295.

SHORT-ANSWER QUIZ (in class on A6): Students will take a 30 minute quiz based on lectures and required readings through A6.

A7- January 22: The Role of Plants in Traditional Medicine

Required Readings:

“Herbal medicine of India and China,” pages 12-49 in J. L Swerdlow. 2000. *Nature’s Medicine: Plants that Heal*. National Geographic. (ISBN 0-7922-7586-1)

WRITING ASSIGNMENT 2: Attitudes Towards Herbal Medicines (due A20)

Students will be instructed to take advantage of their time on land to learn about local attitudes towards the use of herbal medicines in the countries that we visit during the voyage. When travelling, asking guides, taxi drivers, pharmacy staff, new acquaintances, foreign students, etc. whether they use herbal medicines and why is a good conversation starter, and some of the responses can be surprising. Based on information gathered first-hand during the trip, combined with material presented in class lectures and readings, students will compare and contrast attitudes towards herbal medicines in the countries we visit with attitudes they are familiar with in the United States. Their essays should be approximately 1,000 words (typed, double-spaced) and should include specific information on the types of conditions herbal medicines are used to treat, ways in which herbal medicines are prepared and administered, perceived advantages or disadvantages of herbal medicines relative to pharmaceutical medicines, and evidence presented to demonstrate the efficacy of herbal medicines.

Yokohama: January 24-25

In-Transit: January 26

Kobe: January 27-28

A8- January 29: Human Nutrition (Reflections on Japan)

Required Readings:

Levetin & McMahon, Chapter 10.

Shanghai: January 31-February 1

In-Transit: February 2-3

Hong Kong: 4-5

A9- February 6: Food Plants in the Grass Family (Reflections on China)

Required Readings:

Levetin & McMahon, Chapter 12.

Michaleen Doucleff. National Public Radio. May 8, 2014. Rice theory: Why Eastern cultures are more cooperative. (<http://www.npr.org/sections/thesalt/2014/05/08/310477497/rice-theory-why-eastern-cultures-are-more-cooperative>).

Ho Chi Minh: February 8-12

A10- February 13: Food Plants in the Legume Family (Reflections on Viet Nam)

Required Readings:

Levetin & McMahon, Chapter 13

A11-February 15: Starchy Staples

Required Readings:

Levetin & McMahon, Chapter 14.

Yangon: February 17-21

A12- February 22: Feeding a Hungry World (Reflections on Myanmar)

Required Readings:

Levetin & McMahon, Chapter 15.

Folger, Tim. 2013. The Next Green Revolution. National Geographic Magazine. September, 2013 issue. (<http://www.nationalgeographic.com/foodfeatures/green-revolution/>).

A13- February 24: MIDTERM EXAM

Cochin: February 26-March 2

A14- March 3: Stimulating Beverages (Reflections on India)

Required Readings:

Levetin & McMahon, Chapter 16.

Maridakis, Victor et al. 2009. Sensitivity to change in cognitive performance and mood measures of energy and fatigue in response to differing doses of caffeine or breakfast. *International Journal of Neuroscience* 119: 975-994.

Study Day: March 5

A15- March 6: Material Culture: Cloth, Wood, and Paper

Required Readings:

Levetin & McMahon, Chapter 18.

Peters, Charles M., Andrew Henderson, U Myint Maung, U Saw Lwin, U Tin Muang Ohn, U Kyaw Lwin, and U Tun Shaung. 2007. The rattan trade of northern Myanmar: Species, supplies, and sustainability. *Economic Botany* 61: 3-13.

Brosi et al. 2007. Cultural erosion and biodiversity: Canoe-making knowledge in Pohnpei, Micronesia. *Conservation Biology* 21: 875-879.

Port Louis: March 12

A16- March 9: Pharmaceutical Drugs from Plants

Required Readings:

Levetin & McMahon, Chapter 19.

Study Day: March 11

A17- March 12: Strategies for Drug Discovery

Required Readings:

“Plants that Heal,” pages 24-61 in Balick, Michael and Paul Cox. 1996. *Plants, People, and Culture*. Scientific American Library.

Vandana Shiva. 2007. Bioprospecting as sophisticated biopiracy. *Signs* 32(2): 307-313. University of Chicago Press.

Cape Town: March 14-19

A18- March 20: Herb Cabinet 1: A Selection of Useful Herbal Medicines (Reflections on South Africa)

A19- March 22: Herb Cabinet 2: More Useful Herbal Medicines

A20- March 24: Psychoactive Plants

Required Readings:

Levetin & McMahon, Chapter 20.

“Old China, New China,” Chapter 2 (pages 13-35) in Bradley, James. 2015. *The China Mirage: The Hidden History of American Disaster in Asia*. Little, Brown, and Co. (ISBN 978-0-316-19667-3).

“Ayahuasca and the central nervous system,” Chapter 7 (pages 200-220) in Hanson, Bryan A. 2005. *Understanding Medicinal Plants: Their Chemistry and Therapeutic Action*. Haworth Press (ISBN-13: 978-0-7890-1552-5).

Writing Assignment 2 (assigned on A7) is due in class on A20.

Tema: March 26-28

Takoradi: March 29-30

A21- March 31: Conservation and Sustainable Harvest of Useful Plants (Reflections on Ghana)

Required Readings:

Pages 218-228 in Bawa, K.S., R.B. Primack, and M.A. Oommen. 2011. *Conservation Biology: A Primer for South Asia*. Universities Press. (ISBN 978-81-7371-724-6).

“Protecting medicinal biodiversity and knowledge,” Chapter 9 (pages 181-202) in Sumner, Judith. 2000. *The Natural History of Medicinal Plants*. Timber Press (ISBN -13: 978-0-88192-957-7).

A22- April 2: Traditional Medical Systems vs. Modern Allopathic Medicine

A23- April 4: Cross-country Ethnobotanical Comparisons (Student Presentations)

Required Readings:

Ramirez, C.R. 2007. Ethnobotany and the loss of traditional knowledge in the 21st century. *Ethnobotany Research and Applications* 5: 2456-247 (www.ethnobotanyjournal.org/vol5/i1547-3465-05-245.pdf).

Casablanca: April 6-10

Study Day: April 11

A24- April 24: A Day FINAL EXAM

April 16: Disembarkation Day

FIELD WORK

Experiential course work on Semester at Sea is comprised of the required field lab led by your instructor and additional field assignments that span multiple ports.

FIELD LAB (At least 20 percent of the contact hours for each course, to be led by the instructor.)

Field Lab Title: Visiting an Herbal Pharmacy and a Fresh Produce Market in Hong Kong

Country: Hong Kong, SAR

Idea: Traditional Chinese medicine has been practiced for more than 5,000 years. It relies heavily on plants for the prevention and cure of disease, and it is based on a belief system that differs strikingly from modern Western or allopathic medicine. Students will visit a traditional Chinese pharmacy to observe the tremendous diversity of plants as well as animals used in Chinese formulas, and to learn about their use and preparation. We will also visit a large produce market to view and taste the incredible diversity of tropical fruits, vegetables, herbs, and spices that contribute to Chinese cuisine.

Objectives:

1. Observe the diversity of plant and animal parts used in traditional Chinese medicine, and the manner in which they are prescribed and prepared.
2. Discuss the differences between the belief systems and objectives of traditional medicine and modern Western medicine.
3. Observe and sample examples of tropical fruits, vegetables, root crops, nuts and other plant products available in Hong Kong, and how these plants are marketed.

FIELD ASSIGNMENTS

- Students will write a two page summary following the Field Lab responding to specific questions posed by the instructor prior to the experience. Questions will require students to interpret and evaluate what they see, not just summarize.
- The final day of classes will consist of presentations by pre-assigned teams of students that address cross-country comparisons of one of the major ethnobotanical themes presented in the course (e.g., food crop biodiversity, plants in traditional medicine, herb and spice production, plants in material culture). The presentations must be based on original observations made by the students during the trip, supplemented by subsequent readings and research.

- Although it will not be a required activity, students will be encouraged to photograph local uses of plants for food, shelter, ornament, medicine, etc. during their land excursions, and to share these images with the rest of the class during discussion periods.

METHODS OF EVALUATION / GRADING RUBRIC

The final grade in the course will be computed according to the following formula:

5%	Short-answer quiz
20%	Midterm exam
25%	Final exam
15%	Writing Assignments 1 and 2
20%	Field lab
15%	Final class presentation

RESERVE BOOKS AND FILMS FOR THE LIBRARY

AUTHOR: Michael J. Balick and Paul Alan Cox
 TITLE: Plants, People, and Culture: The Science of Ethnobotany
 PUBLISHER: Scientific American Library
 ISBN #: 0-7167-5061-9
 DATE/EDITION: 1996

AUTHOR: Ben-Erik van Wyk and Michael Wink
 TITLE: Medicinal Plants of the World
 PUBLISHER: Timber Press
 ISBN #: 13: 978-0-88192-602-6
 DATE/EDITION: 2004

AUTHOR: Walter H. Lewis and Memory P.F. Elvin-Lewis
 TITLE: Medical Botany: Plants Affecting Human Health
 PUBLISHER: John Wiley & Sons
 ISBN #: 0-471-62882-4
 DATE/EDITION: 2003/2nd edition

AUTHOR: Bryan A. Hanson
 TITLE: Understanding Medicinal Plants: Their Chemistry and Therapeutic Action
 PUBLISHER: Haworth Press, Inc.
 ISBN #: 13: 978-0-7890-1552-5
 DATE/EDITION: 2005

AUTHOR: Miguel N. Alexiades (ed.)
 TITLE: Selected Guidelines for Ethnobotanical Research: A Field Manual
 PUBLISHER: New York Botanical Garden
 ISBN #: 0-89327-404-6

DATE/EDITION: 1996

AUTHOR: Mark J. Plotkin
TITLE: Tales of a Shaman's Apprentice
PUBLISHER: Penguin Books
ISBN #: 0-670-83137-9
DATE/EDITION: 1993

Segments of these videos and dvds will be shown during class, or placed on the intranet for access:

Whose Plants are they anyway? Plant Wars: A Global View of Natural Medicine. Films for the Humanities and Sciences (A Films Media Group company). DVD. 2006.

Medicinal Plants and a New Alliance. Plant Wars: A Global View of Natural Medicine. Films for the Humanities and Sciences (A Films Media Group company). DVD. 2006.

ELECTRONIC COURSE MATERIALS

“Plants that Heal,” pages 24-61 in Balick, Michael and Paul Cox. 1996. *Plants, People, and Culture*. Scientific American Library.

Pages 218-228 in Bawa, K.S., R.B. Primack, and M.A. Oommen. 2011. *Conservation Biology: A Primer for South Asia*. Universities Press. (ISBN 978-81-7371-724-6).

“Old China, New China,” Chapter 2 (pages 13-35) in Bradley, James. 2015. *The China Mirage: The Hidden History of American Disaster in Asia*. Little, Brown, and Co. (ISBN 978-0-316-19667-3).

Brosi et al. 2007. Cultural erosion and biodiversity: Canoe-making knowledge in Pohnpei, Micronesia. *Conservation Biology* 21: 875-879.

Michaleen Doucleff. National Public Radio. May 8, 2014. Rice theory: Why Eastern cultures are more cooperative. (<http://www.npr.org/sections/thesalt/2014/05/08/310477497/rice-theory-why-eastern-cultures-are-more-cooperative>).

Folger, Tim. 2013. The Next Green Revolution. *National Geographic Magazine*. September, 2013 issue. (<http://www.nationalgeographic.com/foodfeatures/green-revolution/>)

“Ayahuasca and the central nervous system,” Chapter 7 (pages 200-220) in Hanson, Bryan A. 2005. *Understanding Medicinal Plants: Their Chemistry and Therapeutic Action*. Haworth Press (ISBN-13: 978-0-7890-1552-5).

Chun-lin Long et al. 2003. Strategies for agrobiodiversity conservation and promotion: a case from Yunnan, China. *Biodiversity and Conservation* 12: 1145-1156.

Maridakis, Victor et al. 2009. Sensitivity to change in cognitive performance and mood measures of energy and fatigue in response to differing doses of caffeine or breakfast. *International Journal of Neuroscience* 119: 975-994.

Peters, Charles M., Andrew Henderson, U Myint Maung, U Saw Lwin, U Tin Muang Ohn, U Kyaw Lwin, and U Tun Shaung. 2007. The rattan trade of northern Myanmar: Species, supplies, and sustainability. *Economic Botany* 61: 3-13.

Ramirez, C.R. 2007. Ethnobotany and the loss of traditional knowledge in the 21st century. *Ethnobotany Research and Applications* 5: 2456-247 (www.ethnobotanyjournal.org/vol5/i1547-3465-05-245.pdf)

“Protecting medicinal biodiversity and knowledge,” Chapter 9 (pages 181-202) in Sumner, Judith. 2000. *The Natural History of Medicinal Plants*. Timber Press (ISBN -13: 978-0-88192-957-7).

“Herbal medicine of India and China,” pages 12-49 in J. L Swerdlow. 2000. *Nature’s Medicine: Plants that Heal*. National Geographic. (ISBN 0-7922-7586-1)

Unsicker et al. 2009. Protective perfumes: the role of vegetative volatiles in plant defense against herbivores. *Current Opinion in Plant Biology* 12: 479-485. (<http://www.sciencedirect.com.proxy-remote.galib.uga.edu/science/article/pii/S1369526609000259>)

Vandana Shiva. 2007. Bioprospecting as sophisticated biopiracy. *Signs* 32(2): 307-313. University of Chicago Press.

HONOR CODE

Semester at Sea students enroll in an academic program administered by the University of Virginia, and thus bind themselves to the University’s honor code. The code prohibits all acts of lying, cheating, and stealing. Please consult the Voyager’s Handbook for further explanation of what constitutes an honor offense.

Each written assignment for this course must be pledged by the student as follows: “On my honor as a student, I pledge that I have neither given nor received aid on this assignment.” The pledge must be signed, or, in the case of an electronic file, signed “[signed].”