

SEMESTER AT SEA COURSE SYLLABUS

Colorado State University, Academic Partner

Voyage:	Fall 2019
Discipline:	Food Science + Human Nutrition
Course Number and Title:	FSHN 380A1 Food As Medicine
Division:	Upper Division
Faculty Name:	Mary Harris
Semester Credit Hours:	3

Prerequisites: One (1) introductory biology course is required AND one (1) introductory nutrition course is preferred

COURSE DESCRIPTION

“Let food be thy medicine and medicine be thy food” – Hippocrates.

In this course, we will explore the function of foods beyond their nutritional value. Students will learn about food patterns which promote health and help prevent chronic disease. We will evaluate the effects of the individual components of food used to treat disease. We will examine the cultural origins of food practices as well as the mechanisms through which food components exert health benefits and compare the interpretations of the “Mediterranean” diet in the various Mediterranean countries.

LEARNING OBJECTIVES

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

- Understand the ways in which dietary patterns impact health and chronic disease.
- Contrast and compare various plant-based dietary patterns: Mediterranean, Healthy American Plate and DASH eating styles.
- Discuss the biochemical mechanisms by which plant-derived nutrients and phytochemicals exert beneficial health effects.
- Evaluate the impact of plant and animal based medicine on health and the environment.
- Discuss the evolution of the human diet and evaluate the evidence for the Paleo- and other high protein diet trends on health outcomes.
- Understand the origins and current practices of nutrition related traditional medical practices in the SAS counties we visit.

REQUIRED TEXTBOOKS

None

REQUIRED READINGS (available on the ship's Intranet)

M. Guasch-Ferré, J. Salas-Salvadó, E. Ros, R. Estruch, D. Corella, M. Fitó, M.A. Martínez-González. The PREDIMED trial, Mediterranean diet and health outcomes: How strong is the evidence? *Nutrition, Metabolism & Cardiovascular Diseases* 2017; 27, 624e632

José Abellán Alemán, María Pilar Zafrilla Rentero, Silvia Montoro-García, Juana Mulero, Alfonso Pérez Garrido, Mariano Leal, Lucía Guerrero, Elena Ramos,² and Luis Miguel Ruilope. Adherence to the “Mediterranean Diet” in Spain and Its Relationship with Cardiovascular Risk (DIMERICA Study). *Nutrients*. 2016 Nov; 8: 680. doi: 10.3390/nu8110680

M Christina-Maria Kastorini, Demosthenes B. Panagiotakos Christina Chrysohoou, Ekavi Georgousopoulou, Evangelia Pitaraki, Paolo Emilio Puddu, Dimitrios Tousoulis, Christodoulos Stefanadis Christos Pitsavos. Metabolic syndrome, adherence to the Mediterranean diet and 10- year cardiovascular disease incidence: The ATTICA Study. <https://doi.org/10.1016/j.atherosclerosis.2015.12.025>

Miguel Ángel Martínez-González, Maria Soledad Hershey, Itziar Zazpe, and Antonia Trichopoulou. Transferability of the Mediterranean Diet to Non-Mediterranean Countries. What Is and What Is Not the Mediterranean Diet. *Nutrients*. 2017; 9: 1226. doi: 10.3390/nu9111226

Appel LJ, Moore, TJ, Obarzanek E, et al; DASH Collaborative Research Group. A clinical trial of the effects of dietary patterns on blood pressure. *N Engl J Med*. 1997;336(16):1117-1124.

P. Saneei, A. Salehi-Abargouei, A. Esmailzadeh, L. Azadbakht. Influence of Dietary Approaches to Stop Hypertension (DASH) diet on blood pressure: A systematic review and meta-analysis on randomized controlled trials *Nutrition, Metabolism & Cardiovascular Diseases*.2014; 24, 1253e1261 <https://doi.org/10.1016/j.numecd.2014.06.008>

Nathenson P. The DASH diet: a cultural approach. *Nursing* 2017, 47:57.

Dori Steinberg, Gary G. Bennett, Laura Svetkey. The DASH Diet, 20 Years Later *JAMA*. 2017;317(15):1529-1530. doi:10.1001/jama.2017.1628

H Chiara Frazzoli, Guy Bertrand Pouokam, Alberto Mantovani, Orish Ebere Orisakwe. Health risks from lost awareness of cultural behaviours rooted in traditional medicine: An insight in geophagy and mineral intake. *Science of the Total Environment* 566-567; 1465-1471 DOI 10.1186/s12906-017-1886-x

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Dopico E, Maroto JLAF, Garcia-Vasques E. Traditional Medicine in Twenty-first Century Spain. 2008, *Human Ecology*, 36:457. DOI: 10.1007/s10745-008-9164-71

Zewdneh Shewamene^{1,4*}, Tinashe Dune^{2,3} and Caroline A. Smith¹⁰¹⁶. The use of traditional medicine in maternity care among African women in Africa and the diaspora: a systematic review. 2017 *BM Complementary Med* 17:382. DOI 10.1186/s12906-017-1886-x

Andrea Pieroni, Manuel Pardo-de-Santayana, Fabio Firenzuoli, and Cassandra L. Quav
The European Heritage of Folk Medicines and Medicinal Foods: Its Contribution to the CAMs of Tomorrow Evidence-Based Complementary and Alternative Medicine. Volume 2013, Article ID 827521, 2 pages. DOI: <http://dx.doi.org/10.1155/2013/827521>

Zank Sofia and Hanazaki Natalie. The coexistence of traditional medicine and biomedicine: a study with local health experts in two Brazilian regions. *PLoS One* 2017, 12:e0174731
DOI: <https://doi.org/10.1371/journal.pone.017431>

Dulce M. Jiménez-Aguilar & Michael A. Grusak, Evaluation of Minerals, Phytochemical Compounds and Antioxidant Activity of Mexican, Central American and African Green Leafy Vegetables. *Plant Foods Hum Nutr* (2015) 70:357–364. DOI 10.1007/s11130-015-0512-7

Naomi Schoenfeld and Teresa C. Juarbe. From Sunrise to Sunset: An Ethnography of Rural Ecuadorian Women's Perceived Health Needs and Resources. *Health Care for Women International*, 26:957–977, 2005 DOI: 10.1080/07399330500301747

Peter M. Chege, Judith O. Kimiywe and Zipporah W. Ndungu. Influence of culture on dietary practices of children under five years among Maasai pastoralists in Kajiado, Kenya. *Inter. J of Behavioral Nutr, and Phys. Act.* 2015; 12:131 DOI 10.1186/s12966-015-0284-3

Sarika Chaturvedi a, Joanna Raven b and Bhushan Patwardhan. Addressing child under nutrition: can traditional practices offer a solution? *GLOBAL HEALTH ACTION*, 2017; 10: 327255. <https://doi.org/10.1080/16549716.2017.1327255>

Jorge M. Alves-Silva, Abderrahmane Romane, Thomas Efferth and Lígja Salgueiro
North African Medicinal Plants Traditionally Used in Cancer Therapy *Frontiers in Pharmacology* 2017; 8: article 383. DOI: 10.3389/fphar.2017.00383

Peter Giovannini, Melanie-Jayne R. Howes, Sarah E. Edwards, Data on medicinal plants used in Central America to manage diabetes and its sequelae (skin conditions, cardiovascular disease, kidney disease, urinary problems and vision loss) *Data in Brief* 2916; 7:1217-20
<https://doi.org/10.1016/j.dib.2016.03.102>

Fani Tinitana, Montserrat Rios, Juan Carlos Romero-Benavides, Marcelino de la Cruz Rot.
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Costa-Neto, Animal-based medicines: biological prospection and the sustainable use of zootherapeutic resources. *Annals of the Brazilian Academy of Science* 2005 77: 33-43
<https://www.researchgate.net/publication/8039389>

Rômulo RN Alves and Irecê L Rosa. Why study the use of animal products in traditional medicines? *Journal of Ethnobiology and Ethnomedicine* 2005 1:5
<https://doi.org/10.1186/1746-4269-1-5>

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[doi:10.1186/1746-4269-3-14](https://doi.org/10.1186/1746-4269-3-14)

Rozzanna Esther Cavalcanti Reis de Figueirêdo, Alexandre Vasconcellos, Iamara Silva Policarpo and Rômulo Romeu Nóbrega Alves. Edible and medicinal termites: a global overview *Journal of Ethnobiology and Ethnomedicine* (2015) 11:29 DOI 10.1186/s13002-015-0016-4

Jennifer \H A Paul and Compton Saeforth/ Harmful Plants in Caribbean folk medicine. *G\Focus on Alternative and Complementary Therapies*, 2011;16 261-265 DOI 10.1111/j.20427166.2011.01123x

The World Summit of Harmonization on Traditional, Alternative and Complementary Medicine (TACM) in Lima, Peru Gustavo F. Gonzales, Jose Aguilar and Martha Villar. *CAM* 2010;7(2)271–275 doi:10.1093/ecam/nen042

Rômulo RN Alves, Helenice N Lima, Marília C Tavares, Wedson MS Souto, Raynner RD Barboza and Alexandre Vasconcellos. Animal-based remedies as complementary medicines in Santa Cruz do Capibaribe, Brazil. *BMC Complementary and Alternative Medicine* 2008, 8:44 doi:10.1186/1472-6882-8-44

Dufour, DL, Goldman, AH and Peltó, GH, eds3ND, Eds. *Nutritional Anthropology*
Chapter 7 Paleolithic Nutrition: A Consideration of Its Nature and Current Implications
UNIT VII Food As Medicine pages 256-258
Chapter 29 The Pharmacology of the Exotic

TOPICAL OUTLINE OF COURSE

Depart Amsterdam, The Netherlands — September 9

A1—September 11: Welcome to the Course
Course Objectives
What is Health?
World Views on Health and Disease
The Central Role of Diet in Health Promotion
Discussion: What is your view of health?

A2—September 13: Food is Medicine for the Prevention of Chronic Disease
Film: Food Matters

Gdansk, Poland — September 15-20

A3—September 21: Summary of Port Experiences with Food and Nutrition
Fermented Foods for Health

A4—September 23: Plant- Based Diets for Health
Traditional Mediterranean Diet Pattern
Comparison to US Dietary Guidelines and the Healthy American Plate

A5—September 25: The Scientific Evidence to Support Health Benefits of Plant Based Diets

Lisbon, Portugal — September 26-28

Cadiz, Spain — September 29 - October 1

A6—October 3: Summary of Port Experiences with Food and Nutrition;
Is there more than one “Mediterranean Diet Pattern?”

Functional Foods – What is a Functional Food?
What Are Phytochemicals?
Health Benefits of Phytonutrients from Fruits and Vegetables
Conjugated Linoleic Acids from Dairy
Health benefits of Olive Oil and Garlic

A7—October 5: Regional Food Practices – Croatia
Health Benefits of Fish and Seafood – Omega-3 Fatty Acids
Fish and Seafood as Basis of Coastal Dalmatian Cuisine
<https://www.youtube.com/watch?v=TOK2VQMnlzk>

Dubrovnik, Croatia — October 6-10

A8—October 12: Summary of Port Experiences
Comparison of Traditional Medicine: Eastern Europe and Africa

A9—October 14: Malnutrition - Consequence of Hunger and Inadequate Nutrient Intake

Casablanca, Morocco — October 15-20

A10—October 22: Summary of Port Experiences
Green Leafy Plant Antioxidants in Africa and Central America

A11 October 25: Exam I Covers material and readings in classes 1 - 10

A12—October 27: Traditional Medicine in Ghana
Geophagia – friend or foe?

Tema, Ghana – October 28-30
Takoradi, Ghana – October 31 – November 1

A13—November 3: Summary of Port Experiences
Coexistence of Traditional and Allopathic Medicine.

A14—November 6: Traditional Medicine in South America

A15—November 8: Traditional Practices in Maternal and Reproductive Medicine
Oral Presentations I

Salvador, Brazil – November 10-15

A16—November 16: Summary of Port Experiences
Dual Burden: Malnutrition and Overnutrition in South and Central America

A17—November 18:
Chronic Diseases Associate with Affluence (Obesity, Type 2 Diabetes and Cardiovascular Disease – How Diet Can Change the Risks
Discussion of Film: Forks Over Knives

A18—November 20: DASH Diet, Salt Intake and Hypertension, T2 DM and Cardiovascular Risk Factors.

A19—November 23: Traditional Medicine in Caribbean Islands- Comparisons and Contrasts
Oral Presentations II

Port of Spain, Trinidad and Tobago – November 24

A20—November 26: Nutraceuticals - Plant Based Medicines

A21—November 28: Nutraceuticals - Animal Based Medicines
Oral Presentations III

A22—December 1: How Are Food, Medicine and the Environment Related?

Guayaquil, Ecuador – November 24

A23—December 9 Summary of Port Experiences
Oral Presentations IV

Puntarenas, Costa Rica – December 11-15

A24—December 16 Going Back Home
How Far Have We Come? From Paleo to Vegetarian Eating.
Integrative Nutrition (CAM) in the US

A25—December 19: Final Exam covers material and readings from classes and A11 - A24

Arrive San Diego, California – December 23

FIELD WORK (20%)

Semester at Sea field experiences allow for an unparalleled opportunity to compare, contrast, and synthesize the different cultures and countries encountered over the course of the voyage. In addition to the one field class, students will complete independent field assignments that span multiple countries.

Field Class & Assignment

The field class for this course will take place on **October 1st in Cadiz, Spain.**

Field Class attendance is mandatory for all students enrolled in this course. Do not book individual travel plans or a Semester at Sea sponsored trip on the day of your field class. Field Classes constitute at least 20% of the contact hours for each course, and are developed and led by the instructor.

Cooking for Health – the Secrets of the Mediterranean

Site: Cadiz, Spain

Take a 1 day cooking class beginning with a market tour which emphasizes the healthy Mediterranean cuisine. Experience the wonderful flavors while discussing the health benefits of the various components used in cooking Mediterranean style foods.

Outcomes: Students will develop an appreciation for the flavor and complexity of phytonutrients for health involved in the Mediterranean diet pattern.

Evaluation: Students will prepare by participating in class discussion and viewing course materials related to Portugal and Spain. They will be graded on two outcomes. 1) Participation and engagement with local guides and 2) A 2-3 page essay on how culture and society influence food sources, selection, preparation practices, and traditions. Include up to 5 photos.

Independent Field Assignments (20%)

Experiences in port will enhance course material by allowing you to experience local food and food customs. As you are eating and drinking in country, be sure to sample local cuisine, observe local food habits, and talk to locals about food sources, choices, and customs. Visit a local market in one of our ports – Ghana, Brazil, Ecuador or Trinidad and find a plant which has medicinal value. Take a picture and find out everything you can about the plant from the local vendor. Write a report on the active ingredients and purported functions and prepare a short (4-5 minute) power point presentation.

METHODS OF EVALUATION

Exam 1 (20%)

To include material from classes 1-12, their readings, and class discussions

Final EXAM (20%)

To include classes 14-22, their readings, and class discussions

Class Participation (10%)

You are expected to prepare for each class by reading the assigned chapter or paper, viewing the video clip assigned, and/or reflecting on recent port visits.

Oral Presentations (10%)

Student groups will lead discussions one time each during the semester.

EVALUATION SUMMARY

20% Field Class	20 points
20% Independent Field Assignments	20 points
20% Exam 1	20 points
20% Exam 2	20 points
10% Class Participation	10 points
<u>10% Class Presentation</u>	<u>10 points</u>
	100 points

GRADING SCALE

The following Grading Scale is utilized for student evaluation. Pass/Fail is not an option for Semester at Sea coursework. Note that C-, D+ and D- grades are also not assigned on Semester at Sea in accordance with the grading system at Colorado State University (the SAS partner institution).

Pluses and minuses are awarded as follows on a 100% scale:

<u>Excellent</u>	<u>Good</u>	<u>Satisfactory/Poor</u>	<u>Failing</u>
97-100%: A+	87-89%: B+	77-79%: C+	Less than 60%: F
93-96%: A	83-86%: B	70-76%: C	

90-92%: A-

80-82%: B-

60-69%: D

ATTENDANCE/ENGAGEMENT IN THE ACADEMIC PROGRAM

Attendance in all Semester at Sea classes, including the Field Class, is mandatory. Students must inform their instructors prior to any unanticipated absence and take the initiative to make up missed work in a timely fashion. Instructors must make reasonable efforts to enable students to make up work which must be accomplished under the instructor's supervision (e.g., examinations, laboratories). In the event of a conflict in regard to this policy, individuals may appeal using established CSU procedures.

LEARNING ACCOMMODATIONS

Semester at Sea provides academic accommodations for students with diagnosed learning disabilities, in accordance with ADA guidelines. Students who will need accommodations in a class, should contact ISE to discuss their individual needs. Any accommodation must be discussed in a timely manner prior to implementation.

A letter from the student's home institution verifying the accommodations received on their home campus (dated within the last three years) is required before any accommodation is provided on the ship. Students must submit this verification of accommodations to academic@isevoyages.org as soon as possible, but no later than two months prior to the voyage.

STUDENT CONDUCT CODE

The foundation of a university is truth and knowledge, each of which relies in a fundamental manner upon academic integrity and is diminished significantly by academic misconduct. Academic integrity is conceptualized as doing and taking credit for one's own work. A pervasive attitude promoting academic integrity enhances the sense of community and adds value to the educational process. All within the University are affected by the cooperative commitment to academic integrity. All Semester at Sea courses adhere to this Academic Integrity Policy and Student Conduct Code.

Depending on the nature of the assignment or exam, the faculty member may require a written declaration of the following honor pledge: "I have not given, received, or used any unauthorized assistance on this exam/assignment."

RESERVE BOOKS FOR THE LIBRARY

AUTHOR: Wildman

TITLE: Nutraceuticals and Functional Foods

PUBLISHER: CRC Press

ISBN #:0 8493-6409-4
DATE/EDITION: 2007/2nd

AUTHOR: Shibamoto
TITLE: Functional Foods and Health
PUBLISHER: Am. Chemical Soc (Oxford Press)
ISBN:
DATE:2008

AUTHOR: Bagchi, Preuss and Swaroop
TITLE: Nutraceuticals and functional foods in human health and disease prevention
PUBLISHER: CRC Press
ISBN #: 91-4822-3721-0
DATE/EDITION:2016

AUTHOR: Rotblatt M and Zimet I
TITLE: Evidence-based herbal medicine
Publisher: Hanley and Belfus Medical
ISBN:1-56053-447-8
DATE/EDITION: 2002/1

FILM REQUEST

Title of Film: Food Matters
Distributor Amazon (24.95)

Title of Film: Like Water for Chocolate
Distributor: Touchstone Home Video

Title of file (Documentary): A Place at the Table
Distributor: Amazon Prime

Film: Forks Over Knives
Distributor: Amazon

ELECTRONIC COURSE MATERIALS

Videos:

Dalmatian Cuisine <https://www.youtube.com/watch?v=TOK2VQMnlzk>

Journal Articles:

M. Guasch-Ferré, J. Salas-Salvadó, E. Ros, R. Estruch, D. Corella, M. Fitó, M.A. Martínez-González. The PREDIMED trial, Mediterranean diet and health outcomes: How strong is the evidence? *Nutrition, Metabolism & Cardiovascular Diseases* 2017; 27, 624e632

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ADDITIONAL RESOURCES

None