School for New Learning
DePaul University
SW 216 The Science and Commerce of Coffee and Tea
Spring Term, 2007-8
Oak Forest Campus
Dates: Mondays, 6:30-9:30 p.m.
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Course Description

Some sources claim coffee is the second highest total value commodity produced in the world (after oil). Others merely can't face a morning without a caffeinated hit of java. For many cultures, partaking of tea serves formal social as well as body maintenance needs.

The class will use a variety of readings discussions and activities to explore the science and economics of popular hot beverages. STUDENTS WILL NEED TO FUND THEIR OWN PURCHASE OF BEVERAGES IN COFFEE AND TEA HOUSES. STUDENTS WILL NEED ACCESS TO A STOVETOP OR OVEN FOR HOME ROASTING AND WILL NEED THEIR OWN COFFEE MAKER AT HOME. THEY WILL NEED TO BE WILLING TO SAMPLE BLACK COFFEES AND ESPRESSOS. STUDENTS WILL NEED TIME TO PERFORM VISITS, EXPLORATIONS, INVESTIGATIONS AND ACTIVITIES OUTSIDE OF CLASS. STUDENTS WILL BE ASKED TO BRING IN SAMPLE COFFEES OR TEAS FOR THE CLASS TO TASTE. FINALLY, STUDENTS WILLNEED TRANSPORTATION TO AND FROM SPECIAL CLASS MEETING PLACES.

This class will focus on the science behind growing and brewing coffees and teas (and tisanes) and these beverages affect on the human body. Coffees, in particular, teas and tisane elements less so, are grown in highly specific ecosystems. The class will learn about and compare these ecosystems, earth friendlier alternative ecosystems for these commodities and common forest ecosystems that are found in Northern Illinois.

Any true fan of coffee or tea will have an opinion about how to roast beans, source the best beans and how to brew a great favorite cuppa. While the growing climate and ecosystem provide the basis for flavor, processing, roasting, storage, and brewing do much to reveal or ruin the taste of the final beverage. How complex applications of heat, water, liquors, whiteners and sweeteners to alter the chemistry of the brews, and therefore their flavor will be explored in the class.

Additionally, coffees, teas, and tisanes are complex chemical mixtures that can have a variety of effects on human systems. Sometimes medicinal, often stimulatory, people drink these beverages for more than taste and the class will evaluate their impacts on the body.

The class will also look at the historic and current state of coffee and tea commerce. For much of human history coffee cultivation has gone hand in hand with subsistence farming or slavery. Today, ethical concerns are driving the development of free trade goods with coffee leading the trend. In the West, coffee culture is booming on the growth of large coffee houses such as Starbucks and Caribou Coffee. Small mom and pop coffee shops offer alternatives and entrepreneurial challenges. The class will compare the emergence and running of corporate and small coffee businesses in the US.

The class will include field trips that could include: local orchards, area coffee houses, area organic food stores, teahouses, etc. Some of these trips will be during regularly scheduled class time and others may be assigned as independent student work outside of class. WARNING: Basic taste testing during the class will focus on coffee and tea without additions. While students

will have many opportunities to review popular, flavored coffee and tea drinks, in-class taste tests will focus on unadulterated coffee and tea comparisons. Students must be willing to sample espressos and coffees black.

Faculty Biographical Sketch

Jill A. Joachim is a lifelong learner and is dedicated to the principal that effective instructors lead students to personal discoveries. With a Bachelor degree in Forestry and a Masters in Science focused on business abetted by almost 20 years in operations and human resources management, the instructor has a solid basis of real life experience in business. Additionally, the instructor is a true polymath and actively pursues new learning and experience in a wide range of topics.

Her degree in Forestry keeps her busy diagnosing the horticultural issues of friends and relatives. She makes maple syrup annually in a large maple-beech ecosystem in Northern Indiana. She prefers a perfect espresso to a sweetened cappuccino or mocha alternative. She has worked in a restaurant known for its English style tea and makes a mean cucumber sandwich. Her favorite black tea is Lyons, though Bewley's is acceptable and Barry's does in a pinch. Her favorite mass-market tisane is Tazo Wild Sweet Orange, though for a relaxing respite generic chamomile is her choice. She'd welcome the odd paid sabbatical to learn in situ about Japanese tea ceremonies should anyone feel like sponsoring this endeavor.

Finally, the instructor is grateful she had the foresight to finish her education before entering a professional field. She is always appreciative that most SNL students are full time workers, parents and caregivers in addition to being part time students.

Competencies

S-4: Can describe and explain connections among diverse aspects of nature.

1. Describes one or more natural systems.
2. Explains how parts of the system are interconnected.
3. Demonstrates how such connections are found elsewhere in nature.

Students demonstrate this competence by articulating the nature of coffee, tea and other plantation tree ecosystems. The interconnection of soil, plant, animals and insects, bacteria, climate, sunlight, chemicals, and other elements of plantation ecosystems will be explored in readings, fieldwork, and discussion.

S-2-X: Can describe, categorize, and explain the development of flavor in coffee, tea, and tisanes based upon readings, class discussions, and field trips.

1. Articulates the physical and chemical processes by which growing, harvesting, roasting, brewing alter the flavors inherent in coffee beans and beverages.
2. Articulates the physical and chemical processes by which growing, harvesting, drying, brewing alter the flavors inherent in teas and tisanes.
3. Articulates the impacts of storage, additives, decaffeination, and other processes have on the flavor of coffees, teas and tisanes.
4. Recognizes the physical and chemical reasons behind specific flavors when enjoying coffees, teas, or tisanes.

Students demonstrate this competence by observing then articulating the connection between physical processes, chemical processes, and flavors in coffee, tea, and tisanes. The relationship between geographic origin and flavor will also be explored through readings, discussion, demonstrations, and fieldwork.

S-1-B: Can use public experiences of coffee and tea as resources for learning everyday science. Students home brew and visit coffee or tea houses and:

1. Compare the processes (roasting and brewing) of various types of teas and coffees and their impact on flavor and enjoyment of beverages.

2. Assesses the impact of physical process and chemical changes on flavor and taste. Makes consumer choices based on traditional scientific theory married to practical experience.
3. Compares information on the medical value of teas and tisanes from several sources: the internet, USFDA, personnel in health food stores, etc. Assesses the relative reliability of these sources in order to make wise consumer decisions.

Students demonstrate this competence by visiting coffee and brew houses and experiencing flavor and process first hand. First understanding the chemistry of coffee, tea, and tisanes and then observing how it is exploited or abused in coffee houses is the basis for this competence experience. Students will use a standard format to evaluate these visits. Students will also use a variety of public resources to explore the tenuous connection between herbal tisanes and health claims. They will evaluate the quality of the resource and learning experience based on their opinions of claims made.

F-X: Can recognize and articulate historic and current aspects of the commerce of world commodity markets (including crops as diverse as corn and wheat; coffee, tea, and tisanes). Understands and can compare the economics of current and historic pricing and markets. Can compare the economics of private vs. corporate chain coffee houses. Students demonstrate this competence by identifying and articulating in reading, discussion, and class trips:

1. The development of early coffee plantations with a slave based economy.
2. The location and economic impact of prime coffee plantation locations.
3. The transition from slave labor to subsistence farming in coffee and other plantation settings.
4. The economics of profitable farming of commodities such as corn, wheat, etc.
5. The trend toward and economics of fair trade commodities like coffee.
6. The relative attributes and economics of various kinds of contemporary coffee or teahouses.

Students demonstrate this competence by articulating the nature of the coffee, tea and tisane businesses, from both a historic and contemporary point of view. Students will explore and discuss macro-economic issues as well as the business issues of individual coffee and teahouses.

Learning Experience

Activities:

The backbone of class learning will be readings followed by discussion. The concepts of ecosystems, plantations, coffee and tea chemistry, etc. will be mastered in this way. These activities will be supplemented by student (solo) and class trips to coffee and teahouses, a local forest or plantation, health food or free trade stores and some virtual trips via the internet.

In class discussions will reinforce and further explore readings with discussion and demonstrations of scientific concepts. Students will be asked to bring in samples of teas and coffees to experience and compare in class.

Opportunities will arise for extra credit investigations of special issues, upon student request.

Required Texts:

Tea Companion: A Connoisseur's Guide. Jane Pettigrew. Running Press Book Publishers, Sept. 2004 Ed. ISBN 0762421509

Home Coffee Roasting : Romance & Revival. Kenneth Davids. Revised, updated edition, 2003. St. Martin's Press. NYNY . ISBN 0-312-31219-9

Required Electronic Publications:

Michigan State University Extension, Forest Ecology Series:
Forest Terminology & Ecological Systems

Site Conditions & Forest Cover
Soils & Site Productivity
Measuring Site Quality
Tree Parts & Functions
Continuous Change in the Forest @
http://web2.msue.msu.edu/bulletins/subjectsearch.cfm, 7/5/2006
Fruit Crop Ecology and Management @
http://web2.msue.msu.edu/bulletins/subjectsearch.cfm, 7/5/2006.
Trading in Futures, an Introduction for Speculators at
http://www.cbot.com/cbot/pub/page1/1,3248,1060,00.html, 9/8/2006

Communicating the Message: Clarifying the Controversies About Caffeine, Edith Howard Hogan, Betsy A. Hornick, Ann Bouchoux. Nutrition Today 37 no1 28-35 Ja/F 2002 (available online at the DePaul Library)

Making Sense Of Taste , Smith, David v., Margolskee, Robert F., Scientific American, Mar2001, Vol. 284, Issue 3 (available online at the DePaul Library)

Internet Websites
The class may also use Blackboard and rely on a variety of materials available as part of the public domain on the web and be required to access websites weekly and daily for materials.

Special assignments and opportunities for extra credit will require independent use of libraries or the internet to research short topics. STUDENTS HAVE TO BE ABLE TO ACCESS THE INTERNET TO ACCESS CLASS RESOURCES.

Other Sources: TBA

Outcomes: At the end of the class students will be able to associate coffee and tea chemistry with taste, identify probable sources of flavors in coffees, evaluate health claims of herbal products using public domain resources, describe ecosystems, etc.
At the end of the course students will be expected to:

- Describe the history coffee, tea and tisane cultivation
- Understand the state of the coffee house business today
- Articulate the fundamental elements of a coffee plantation ecosystem
- Articulate the basic chemistry of brewing a cup of coffee or tea
- Associate good and bad flavors with various brewing practices
- Evaluate a coffee house based on its practices an d processes
- Use public resources to research and understand the potential health impacts of tisanes
- Enjoy an excellent espresso

Evidence the Students Will Submit
For one or two competencies, requirements will be the same in terms of amount expected. Content should differ by competency.

DISCUSSION AND ATTENDANCE: For all competencies class attendance and discussion is REQUIRED. Greater than one absence will influence final grades. Failure to enter into discussion every week will impact final grades. Students should rely on each other to obtain missed class information

SPECIAL ASSIGNMENTS: There may be specific topics assigned for students to investigate prior to in class discussion. These may include observations of orchards, backyard ecosystems, visit to coffee and or tea houses, sourcing herbal infusion health information, etc. Special assignments may relate specifically to single competencies

CLASS JOURNAL: Students should journal reflections about class experience – which would include commentary on readings, reflections of brewing process and taste, learnings from class activities, etc. relevant to their competencies. A minimum of 36 complete journal entries will be required to be submitted **electronically** within 7 days of the last class meeting. Fewer than 36 complete entries will affect grade. Journal entries should share relevance with individual student competencies (see above) focusing on natural science, the coffee quality/chemistry/taste relationship, reflections on public learning resources or the commerce of coffee and tea. Each entry should explore a thought, reflection, learning entirely but need not be a polished work of prose.

COFFEE/TEA HOUSE REVIEW: Using a standard format prepared by the instructor, each student should independently visit at least two brew houses and prepare a review of how the house makes its products and how the products taste. These reviews will be published collectively as an "Oak Forest Student Guide to Coffee and Tea Houses" for Oak Forest student use. Students will also share their reviews in class. These visits to brew houses may also be used for journal entries.

Grades A through F will be given based on the student's ability to persuasively articulate ideas and concepts. A description of the relative differences between grades at SNL may be found at http://www.snl.depaul.edu/faculty/policies.asp#Grades.

All work done in and for this class must comply with the Academic Integrity Policy as defined in the DePaul Student Handbook (http://www.depaul.edu/~handbook/code17.html). By policy, the instructor cannot and will not tolerate violations of the policy including, but not limited to cheating; plagiarism; fabrication; falsification or sabotage of research data; destruction or misuse of the university's academic resources; alteration or falsification of academic records; and academic misconduct. Conduct that is punishable under the Academic Integrity Policy could result in additional disciplinary actions by other university officials and possible civil or criminal prosecution.

Simply put, students are expected to submit only THEIR OWN original work in their journal, reviews or other works and failure to do so will result in a failing grade these works.

Incomplete grades will be available only for the written portion of student work (for obvious reasons). The student who wishes to receive the grade of IN must formally request in writing that the instructor issue this grade. This request must be made before the end of the quarter in which the student is enrolled in a course. The student must notify the instructor by e-mail of the request for an incomplete within one week of the last class meeting. More information on DePaul's Incomplete Policy can be found at http://condor.depaul.edu/~snl/service/useful2.htm.

Attendance is mandatory in SNL courses. For further information on SNL's attendance policy, please see the SNL website www.snl.depaul.edu/ba.

Criteria for Assessment:

Students will be assessed on attendance, discussion, reviews, and journals. Each of these four elements contributes to 25% of the final grade.

- Attendance: Two absences drop the attendance grade from an A to a C. Three absences drop the attendance grade to an F.
- Participation in class discussions and activities: Generally frequent, on-point, creative, insightful, persuasive contributions exceed expectations. Attendance influences the frequency and continuity of contributions and so may also influence this portion of the grade. Students must also complete out of class assignments (like pre reading, roasting and tasting coffee beans and brews at home, visiting establishments, observing natural environments, etc.) in order to participate effectively.

- Journal: The journal is evidence that that student has mastered fundamental concepts and formulated personal opinions. Excellent journals explain concepts in the students own words. Excellent journals explain a student's own experience of science or business in practice. Journals should contain a minimum of 36 entries that do this. Journals must be submitted electronically and must be original work or they will result in a failing grade for this part of the course.
- Reviews and special assignments: Coffee and teahouse reviews will follow a prepared format. They must be complete, honest, and original work or will result in failure for this part of the course. They must also be submitted electronically by the end of the class period.

Date	3/31	4/7	4/14	4/21	4/28	5/5	5/12	5/19	5/26	6/2
CLASS	1	2	3	4	5	6	7	8	9	10
Major topic	Intro	Plantation	Forest	Recognizing flavors	Chemistry	Economics	Tea		Herbs and Claims	Wrap-up
Topics	Ground rules Class intro Prep for next week	Coffee tree botany Coffee plantation ecology	Forest Ecology 101	Flavors and Countries of Origin Common tasting terms House assessment form explanation and use Cupping intro	Coffee Chemistry Caffeine and the human system Decaffeination demystified Processing Roasting Home Roasting	Coffee Economics Coffee house economics	Tea botany and chemistry Tea Economics	Tea vs. coffee Economics Futures markets Giants of the business	Herbal infusions and Tisanes	Social aspects of coffee and tea cultures Review and conclusion
Visit	None	Orchard	Forest - on own	None	Chain house/s	Mom and pop houses	Coffee House	Tea house	Visit an herb store on own	TBA
Activity		Forest slides Looking at beans		Cupping different beans	Tasting different coffee makers, one bean	Generate a coffee house business plan, FX students begin coffee trading	Taste some teas	Play the coffee future market	Report on herb tea claims - stores, vs.. internet vs. USDA/USFDA	High Tea
Student Note			Visit a FOREST before this class	Look at coffees available in your favorite store before this class	BYO Coffee maker	Need some cash for this one. Bring in beans, if you like	Need some cash for this one	Bring a calculator to class	Prepare short presentations on your herb	

Pre reading	Davids, pp.70-86 MSU Fruit Crop Ecology and Management Optionally, supplement this reading by looking at web publications on coffee plantations at The International Coffee Association (http://www.ico.org/botanical.asp), National Geographic Online (http://www.nationalgeographic.com/coffee/main.html), etc.	MSU series on Forest Ecology	Davids pp. 51-69, 87-102, 107-122 Scientific American article	Davids pp. 9-12, 35-37, 69-87, 123-194 (this last chunk lightly) Nutrition Today article Optional reading on espresso at http://www.sweetmarias.com/espresso-crema.html. Optional other reading at SCAA at http://www.scaa.org/, The National Coffee Association at http://www.ncausa.org/i4a/pages/index.cfm?pageid=1 or http://www.coffeescience.org/, etc.	CBOT publication, optional reading at http://www.dailyfutures.com/softs/ or other	Pettigrew pp. 10-42	Pettigrew, remainder of book, lightly	Student chosen	TBA
Instructor prep	Locales!		Cups, water source, spoons, beans	Cups, water source, spoons, beans	Locales	Locales Pre assign herb topics	Get market data	Cups, water source, spoons, beans	

Draft