

## Syllabus of Medicinal Plants BO215 Fall Semester 2007

### Medicinal Plants

Use of medicinal plants by mankind has taken at least three separate paths. The first is historical usage that continues into current times. An example is ancient Chinese medicine using herbs and other methods practiced as always along side of treatments with highly refined pharmaceuticals. The second is the extraction of active principles from medicinal plants in order to optimize a single chemical compound for treatment of diseases. The third and intermediate approach maintains the complexity of a whole herb but subjects it to rigorous testing with double blind placebo controlled clinical trials. This course will explore all three of these approaches in the use of plants for medicine.

Special attention will be focused on plants that have been used for the treatment of human diseases such as cancer, heart disease, nervous system disorders, and other disorders. Also discussed are the historical medicinal and plants and fungi. A review of toxic plants is included because medicinal and toxic plants are so closely related as to be separated by only dose; i.e., the over dose makes the poison. This course will provide a broader perspective to undergraduates intending to enter medicine or medically-related fields including medicinal chemistry, pharmaceutical science, pharmacology, pharmacognosy, ethnobotany or herbal practice.

### Course objectives are as follows:

- To understand the importance of medicinal plants to medicine development
- To understand fundamental concepts of medicinal plants
- To understand basic knowledge of human body and common disorders
- To learn the principle of identifying medicinal plants and understand their medicinal uses
- To understand the fundamentals of phytotherapy
- To learn nervous system stimulant plants
- To understand the relevance between medicines and poisons
- To learn natural prescription for natural cures
- To understand metabolic engineering of natural products in medicinal plants

**Course pack:** Medicinal Plants PB215 edited by Dr. DeYu Xie, which is available in textbook store.

**Course time:** 1:30 -2:20 PM, Monday, Wednesday and Friday

### Instructor: Dr. DeYu Xie

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Tel: 919-515-2129 (office)

Room 4219, Gardner Hall, office hours: 8:00 AM to 5:00 PM Monday through Friday.

Location & Hours Student Health Center Suite 1900 8:00 AM to 5:00 PM Monday through Friday	Mailing Address Campus Box 7509 Raleigh, NC 27695  Phone Numbers Main: 919-515-7653 TTY: 919-515-8830 Fax: 919-513-2840
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## Exams and grades

Categories	Scores
Ten homework assignments	10 X 15 = 150
Four exams	1X150, 2X 100, 1X 50= 400
One in-class presentation	X 50 = 50
Final examination	400
Total points	=1000

The exam questions will be taken from material covered in the lecture and homework. Your final score will be the average number of your total points divided by ten. Grades will be determined by the approximate scale: 100-98 A+; 97-92 A, 91-90 A-; 89-88 B+; 87-82 B; 81-80 B-; 79-78 C+; 77-72 C; 71-70 C-; 69-68 D+, 67-62 D; 61-60 D-; below 60 F (An incomplete will only be given for a documented hardship.). There will be no makeup exams except with a written excuse from a doctor.

### Policy on late homework or in-class presentations:

Before 1 week later, loss of 50%; after 1 week, loss of 100%

### Policy on attendance:

Students are expected to attend lectures. Much of information for exams will come directly from lectures. University policy requires that attendance must be taken in all 100 and 200 level courses. Students who miss classes, with or without a documented excuse, are responsible for obtaining missed handouts and missed class notes. An unexcused absence will result in a deduction of 20 points. Class will start and end on time. Please make every effort to arrive on time to avoid disturbing your classmates with a later arrival. Arrival more than 10 minutes later will result in a deduction of 10 points.

### Academic integrity:

Every student is expected to behave according to the NCSU Code of Student Conduct and Regulation. "Academic dishonesty is the giving, taking, or presenting of information or material by a student with the intent of unethically or fraudulently adding oneself or another on any work that is to be considered in the determination of a grade or the completion of academic requirements". "If a student is in doubt regarding any matter relating to the standards of academic integrity in a given course or on a given assignment, that student shall consult with the faculty member responsible for the course before presenting the work." "All members of the university community share the responsibility and authority to challenge and make known to the appropriate authority acts of apparent academic dishonesty." An honor pledge is given by signing below.

### Disability statement:

Reasonable accommodation will be made for any disable student. The student must provide the instructor with written verification of disability from the NCSU Disability Service for Students.

By signing below, I understand and accept those regulations for BO215 in the fall 2007

Student signature \_\_\_\_\_ Date \_\_\_\_\_

Printed name \_\_\_\_\_

**PB215 Medicinal Plants in fall 2007, Room 2211, Gardner Hall  
Dr. DeYu Xie**

<b>Date</b>	<b>Topics</b>
8/22 (W)(1:30-2:20 PM)	Introduction of Medicinal Plants
8/24 (F)	Introduction of Medicinal Plants
8/27 (M)	History of Medicinal Plants and Ethnobotany
8/29 (W)	History of Medicinal Plants and Ethnobotany
8/31 (F)	Introduction of Human Body (Cell, tissues, and systems)
9/03 (M)(Labor Day)	<b>Holiday (University closed)</b>
9/05 (W)	Introduction of Human Body (Nervous system)
9/07 (F)	<b>Exam 1</b>
9/10 (M)	Introduction of Human Body (Nervous system)
9/12 (W)	Introduction of Human Body (Cardiovascular system)
9/14 (F)	Introduction of Human Body (Cardiovascular system)
9/17 (M)	Principle of Identifying Medicinal Plants
9/19 (W)	<b>Exam 2</b>
9/21 (F)	Principle of Identifying Medicinal Plants
9/24 (M)	Examples of Medicinal Plants---Student's presentation
9/26 (W)	Examples of Medicinal Plants---Student's presentation
9/28 (F)	Examples of Medicinal Plants---Student's presentation
10/01 (M)	Examples of Medicinal Plants---Student's presentation
10/03 (W)	Examples of Medicinal Plants---Student's presentation
10/05 (F)	Examples of Medicinal Plants---Student's presentation
10/08 (M)	Examples of Medicinal Plants---Student's presentation
10/10 (W)	<b>Exam 3</b>
10/12 (F) (Fall break)	<b>Holiday</b>
10/15 (M)	Fundamentals of Phytotherapy
10/17 (W)	Fundamentals of Phytotherapy
10/19 (F)	Fundamentals of Phytotherapy
10/22 (M)	Medicinal Mushroom- <b>Dr. Dennis Drehmel</b>
10/24 (W)	Medicinal Mushroom- <b>Dr. Dennis Drehmel</b>
10/26 (F)	Fundamentals of Phytotherapy
10/29 (M)	Hallucinogenic Plants
10/31 (W)	Hallucinogenic Plants
11/02 (F)	Hallucinogenic Plants
11/05 (M)	Hallucinogenic Plants
11/07 (W)	<b>Exam 4</b>
11/09 (F)	Phytotherapy of Medicinal plants
11/12 (M)	Phytotherapy of Medicinal plants
11/14 (W)	Phytotherapy of Medicinal plants
11/16 (F)	Phytotherapy of Medicinal plants
11/19 (M)	Phytotherapy of Medicinal plants
11/21 (W) -11/23 (F)	<b>Holiday (University closed)</b>
11/26 (M)	Toxic Plants
11/28 (W)	Toxic Plants
11/30 (F)	Phytotherapy in USA
12/03 (M)	Metabolic Engineering of Plant natural products
12/04 (W)	Metabolic Engineering of Plant natural products
12/07 (F)	Functional food party
12/12 (W)	<b>Final Examination 1-4:00 PM. #2211 Gardner Hall</b>

## **Student presentation**

**Objective:** the objective of student presentation is to help students acquire medicinal plants and their use through their own preparation and presentation.

**Team work:** each student has to find 2 teammates to present one medicinal plant listed on pages 148 to 151. Three students are asked to work as a team to finish their project through searching information about their chosen medicinal plants.

### ***Contents of presentation:***

- Plant name, family, and description of morphology
- Plant growth conditions and biogeography
- The medicinal use of the plants including the history of their use (ethnobotany)
- What parts used for medicinal purposes
- Medicinal uses
- Principles of the use of plants including active natural products
- Recommendation and others
- Reference required (only information from internet search is unacceptable) including peer-reviewed research papers and review papers

**Presentation:** students need to write the presentation on a CD and present their project using PowerPoint format. Note: please don't forget to bring your CD by your presentation. Please write group name on CD and hand in to Dr. DeYu Xie

**Hardcopy:** One hardcopy of 2 pages of descriptive summary need to be given to Dr. DeYu Xie.

**How to grade:** the grade will be given by DeYu Xie.

**Preparation:** when the course starts on Aug. 22, 2007, students need to find their teammates in the first week and then prepare their presentation.

### **Honor credit (elective): Medicinal Plants of North Carolina**

One hour credit of Medicinal Plants of North Carolina is established to affiliate Medicinal Plants course. This honor project requires recruited students (limited to 5 students) to identify two local medicinal plants from North Carolina, then to study its history of medicinal use, its current use, growth habit and propagation. Before the end of the semester, recruited students need to write a 5-page report (letter size paper) of their research, including the following contents:

Title

Botanic description of the medicinal plants

Ethnobotany

Active natural products from the medicinal plants

Medicinal uses and warning

Propagation, cultivation and plants

Others

## Reference Books

### *Human body and diseases:*

Introduction of Human Body-the Essentials of Anatomy and Physiology by Gerard J. Tortora and Sandra Reynolds Grabowski

Human Anatomy & Physiology by Donna Van Wynsberghe, Charles R. Noback, and Robert Carola

Human Anatomy by Frederic H. Martini, Michael J. Timmons, and Robert B. Tallitsch

### *Ethnobotany:*

Plants of the Gods by Schultes Hofmann

The Natural History of Medicinal Plants by Judith Sumner

### *Medicinal Plants:*

Encyclopedia of Natural Medicine by Michael Murray and Joseph Pizzorno

Encyclopedia of Herbal Medicine by Andrew Chevallier, Fnimh

Medicinal Plants of the World by Ben-Erik van Wyk and Michael Wink

Fundamentals of Phyarmacognosy and Phytotherapy by Michael Heinrich, Joanne Barnes, Simon Gibbons, and Elizabeth M. Williamson

Prescription of Natural Cures by James F. Balch and Mark Stengler

Principles and Practice of Phytotherapy-Modern Herbal Medicine by Simon Mills and Kerry Bone

A Colored Atlas of The Chinese Meteria Medica Specified in Pharmacopoeia of The People's Republic of China (in both Chinese and English) by Damu Yao, Jingbao Zhang, et al.

Zhong Yi Ji Chu Xue (Fundamentals of Traditional Medicines) by Huaji Chi and Shaoshui Liu

Yao Yong Zhi Wu Yu Yi Liao Bao Jian by Yunying Jia, Junpu Zhang, and JingLe Su et al.