SAN DIEGO STATE UNIVERSITY  
DEPARTMENT OF BIOLOGY

**WARNING:** General Education Explorations courses, including Plants, Medicines & Drugs, must not be taken sooner than the semester in which you receive upper division standing (60 units passed). See Graduation Requirements in the General Catalog IV. Explorations, for more information.

The final university DROP or change grading basis date is Feb 2, 2010 at 6:00 pm  
The final university ADD or change grading basis date is Feb 4, 2010 at 6:00 pm

**Posting of Grades:** How do I find out what grade I got on the exams and written assignment?  
**My Grade:** The grades will be posted on Blackboard. You supply the PIN number

**Course:** Plants, Medicines and Drugs  
**Schedule No.** 20347  
**Instructor:** Dr. Bizzoco - Office LS 360 Lab LS 362 (South Life Sciences)  
email: rbizzoco@sunstroke.sdsu.edu  
(619) 594-5396 (Ans. machine) 45396 (on campus)

**Office Hours:** M 1100-1200 and by appointment

Biology 326 Web Site:  
http://www-rohan.sdsu.edu/faculty/bizzoco:description.html

e-mail: rbizzoco@sunstroke.sdsu.edu

Practice exams web site  http://ecr.sdsu.edu/courseindex.asp

**Textbook:** Do Not Purchase this book as several copies are on reserve in the library for optional reading (DO NOT BUY THIS BOOK). Read it at the library reserve room.  
Lewis, W.H. & Elvin-Lewis, M.P.F. Medical Botany, 1977; at present this early edition is the only edition available, although a new edition has been published. There is a good drug reference book in the library reserve desk under my name, Dr. Bizzoco. The book is by Ken Liska, "Drugs and the Human Body."

**Required book:** Mark Plotkin, "Tales of a shaman's apprentice" at KB Books.  
Syllabus available at KB Books.

**Course Description:** This course will present the relationship between plants and medicine. It will explore the origins of knowledge about medicinal plants, the mechanisms by which they bring about an effect in various diseases and finally what approaches are used today to obtain new medicinal plants for diseases such as diabetes, cancer, acne, etc. It is expected that this information will provide a background on medicinal plant, which will be useful for general knowledge and for health sciences. This is an upper division biology course designed for the non-science student with at least one prior college-level biology course. It is the nature and purpose of this course to increase knowledge and awareness of how medicinal plant use developed and how plant medicines and plant drugs and pharmacological agents are utilized for treatment of minor and major diseases.

********** WARNING **********  *********** WARNING **********

You will not receive upper division general education credit for this class unless you have
60 units

completed at the time you register for this class

A student may take explorations courses if 60 units will have been completed by the end of the semester in which she/he takes the course. See the current general catalog under IV. Explorations

*********** WARNING ********** WARNING **********

Course Information:  Biology 326 Classroom - NE 60 (North Education 60)
Time:  M W F  1000-1050
Schedule No. 20347
Final Exam:  Friday, May 14, 2010, 0800-1000
0800-1000 - NE 60 --- North Education 60 at eight o'clock in the morning, not at the regular class time.

Final Exam Web Site
Time listings: http://arweb.sdsu.edu/es/registrar/finalexams/10_spring.html

Class Format:  Lectures, slides, videos, and freshly collected medicinal plants used in and for demonstrations.

Text Assignments:  The textbook reading is required for the Plotkin book only.  The chapter assignments in the Lewis and Lewis, Medical Botany book are keyed to each lecture topic. The assigned material should be read prior to the lecture topic to provide an adequate background for the lecture. Only Chapter 1 reading of the Lewis and Lewis book is mandatory reading. The lectures will consider each topic in depth. One or two library articles are listed for a few lecture topics. If more information on a lecture topic is desired see the library articles, which are listed by lecture topic. If references are needed, see the library list of references for each lecture topic. All library materials and articles are at the reserve desk: Walk into the library dome, then turn right and descend one floor to the checkout/reserve desk. Library articles are not required reading, but they may give up-to-date, and at the least, interesting if not useful information.

Grading and Evaluation:  The two midterm exams are objective. The objective section of the exam consists of multiple choice, matching, and True/False questions. The final exam is also objective and identical in form to the two midterm exams. It covers only the last third of the semester i.e. it is not cumulative. There are 2 lecture exams, a final exam, and an in class writing assignment, included as part of exam 2. The exams and writing assignment are totaled as shown below. Copies of earlier exams appear in the syllabus. Don't ask for the answers, they won't be given to you. You may ask general questions, but not specific ones listed on the exams. You may not ask exam questions by email, or by phone. So, plan ahead!

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<table>
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<tr>
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<tbody>
<tr>
<td>2 exams</td>
<td>200 Points</td>
</tr>
<tr>
<td>Final exam</td>
<td>100</td>
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<tr>
<td>Total Points</td>
<td>300 Points</td>
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Exams Require:  NCS Large Green Answer Sheet (PO99B) with circles for answers; #2 pencil
All exams will require a green answer sheet (099B) and #2 pencil. In-class writing exam. Pencil or preferably pen. No Make-Up Exams

All course work will be graded by letters. The decimal values of plus and/or minus are used in establishing the final course grade. The grades assigned follow the designations listed below.

- **A** Outstanding achievement, available only for the highest accomplishment.
- **B** Praiseworthy performance, definitely above average.
- **C** Average, awarded for satisfactory performance; the most common undergraduate grade.
- **D** Minimally passing; less than the typical undergraduate achievement.
- **F** Failing.
- **U** Incomplete: failing to take an exam without contacting instructor.

**How to Prepare Your In Class Writing Assignment Exam 2 (30 out of 100 points):**

1. First organize your topic.
2. Second, prepare an outline and detail for yourself the major point(s) you wish to consider in the essay answer.
3. Third, write your essay answer in a coherent fashion by developing sentences and paragraphs, which are designated to make a point that you wish to convey to the reader. Remember, you are writing so you can communicate your thoughts to a reader.
4. Finally, after you have finished your essay, if time permits, proofread it for spelling and grammatical errors.

**Grading Standards for Writing Assignments.** Written essay answers will be graded on the following points: Ideas, significance, organization, coherence of presentation, clarity of thought, creativity, appropriateness of presentation, and impact of overall presentation on the reader.

**In Class Writing Assignment**

**Goal.** The goal of the General Education writing component of this course is to enable students to relate the class experience to everyday life. We seek to provide students with the ability to find value in the traditional healing practices and resources as they relate to the western way of life. Finally, students should be able to appreciate value in such traditional healing practices and communicate this value and their level of understanding in an organized fashion through a written assignment. The written component will offer an opportunity for testing a student's ability to tie together two or more ideas, especially as they relate to the general aspect of the western way of life and medical practice. The class writing assignment is therefore a test of student capacity to synthesize, associate, and apply knowledge presented in the lectures.

**Grading Standards**
The in class writing assignment will be graded on the following points: Originality of ideas, significance of topic, organization of topic, depth of literature search, coherence of presentation, clarity of thought, appropriateness of presentation, impact of overall subject.

All writing grades are by number. The grades assigned follow the designations listed below:

90+   A   Outstanding achievement, available only for the highest accomplishment.
80-89  B   Praiseworthy performance, definitely above average.
70-79  C   Average, awarded for satisfactory performance; the most common undergraduate grade.
60-69  D   Minimally passing; less than the typical undergraduate achievement.
50-60  F   Failing.

CRITERIA FOR GRADING

A writing assignment will have a well thought out introduction with a clear statement of the problem, subject or issue considered. It will relate the context of the problem being studied and will introduce all elements of the problem or question in a logical step-by-step fashion. The writing will be clear, use appropriate words that properly describe the content, context or subject under consideration. There will be few or no spelling errors, or phonetic substitutions.

Further, subject number will match predicate number. There will be no incomplete or run-on sentences; the grammar will consist of practices generally accepted for constructing correct English sentences. Also factoring into grading are 1) Content, as an example, one might discuss the significance of the rainforest. 2) Organization, the idea presented or the structure of the message. By this is meant, does the writer have the reader in mind and does the writer assume that the reader knows the subject, rather than provide the information that the writer wants the reader to have. Is the writer talking to himself, rather than his reader. This is a big mistake. Provide the reader with the information you want the reader to have at their disposal. Do not make any assumptions about the level or state of knowledge of the reader. Provide the necessary information to develop your point of view. 3) Creativity, do you have a fresh interesting subject that you are developing. Some writers simply have offered a summary of the Plotkin book. This represents a minimal output. 4) What is the nature of your message? Is it significant? Has it touched on life in some unique or interesting way? What is the main point of your writing?

The written assignment counts as follows:

30/100 points of exam 2 (30%)
30/300 = 10% of final grade

The writing component is a mandated part of all "Explorations" courses. The specific and mandated requirements of this course include an in-class written assignment. Based on the above calculations students should realize that the writing assignment will significantly affect the letter grade received in this course. Again, this is a CSU faculty senate mandated component of this class.

Posting of Grades
To obtain your grades after they are available, go to https://blackboard.sdsu.edu/webapps/login
A scale to indicate the letter associated with the % will be posted on the Biology 326 Web Site: http://www-rohan.sdsu.edu/faculty/bizzoco/description.html

Past exams web site: http://ecr.sdsu.edu/courseindex.asp

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**Biology 326 Plants Medicines & Drugs**  
Spring 2010  
**Prerequisites:** biological sciences course  
**Professor:** Dr. Rick Bizzoco  
**Lecture:** Mon Wed Fri  **1000-1050 NE 60**  
**Office:** South LS 360  
**Office hours:** M 11-12:00 and by appt.  
**Office Phone:** (619) 594-5396  
**Email:** rbizzoco@sunstroke.sdsu.edu

**Contacting me:** See or call me during office hours or by appointment. Leave messages, etc., in my Biology Department (LS 104) mailbox, the main biology office, North Life Sciences. Email a message, leave a voicemail.

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**COURSE LEARNING OBJECTIVES**

- After taking this course students should be able to:
  Apply basic concepts from plant biology (plant structure, development, production of medicinal components) to the area of herbal medicine – the use of plant components for healing purposes.

- Analyze the components of labeled herbal products or drugs to address the question – What purpose does a specific plant chemical or drug serve?
• Describe the basic aspects of the several features of healthy oral hygiene and understand how to intervene in order to prevent disorders of the teeth and gums at any age of oral maturity.

• Understand the process of aging and longevity in order to adjust activities to maximize both health and life span.

• Enumerate and comprehend the effects of vitamins, minerals and other supplements needed to support and sustain basic nutrition and health, and to correct health disorders.

• Evaluate the conceptual basis for the development of herbal medicines in the USA vs. the European continent and be able to answer questions about basic medical plant herbology.

• Appreciate the complexity and diversity of medicinal plants, where they come from, how they were discovered and how they differ from poisonous plants and other harmful natural products.

• Identify and distinguish between helpful and harmful plant products in order to appreciate the subtlety of plant medicines and how they can be used to restore or maintain health.

• Understand at a fundamental level the effect of distinct plant medicines on the nervous system and how such medicines bring about their specific effects on the body by means of interactions with the nervous system.

• Demonstrate an understanding of basic plant drug groups organized by their chemical principles or groups.
# Biology 326
## COURSE OUTLINE

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture Topic</th>
<th>Text Source: Medical Botany</th>
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<tbody>
<tr>
<td></td>
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<td>Lewis &amp; Lewis Library Reserve</td>
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<tr>
<td></td>
<td><strong>1. Historical Aspects of Medicinal Plants</strong></td>
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<tr>
<td>Jan 20</td>
<td>Administrative/Introduction: Overview of Class</td>
<td>Chap. 1 (all) required reading</td>
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<tr>
<td>Jan 22</td>
<td>Plants: Visible world</td>
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<tr>
<td>Jan 25</td>
<td>Plants: Invisible world</td>
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<tr>
<td>Jan 27</td>
<td>History of medicinal plants: conceptual elements</td>
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<tr>
<td>Jan 29</td>
<td>History of medicinal plants</td>
<td>Library ECR: Required Reading, John Lust</td>
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<tr>
<td>Feb 1</td>
<td>History of medicinal plants</td>
<td>Herb Book p. 3-6; 10-17;</td>
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<tr>
<td>Feb 3</td>
<td>Physical Properties: color and odor</td>
<td>Doctrine of Signatures</td>
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<td>Feb 5</td>
<td>Growth and preparation of herbal medicines</td>
<td>In-class demonstration</td>
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<td>Feb 2</td>
<td>2 is the last day to drop 6 pm deadline &amp; Feb 4 is the last day to add or change grading basis 6 pm</td>
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<tr>
<td>Feb 8</td>
<td>Growth and preparation of herbal medicines</td>
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<td>Feb 10</td>
<td>Alternative Medicine: Plants vs. Drugs,</td>
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<td>Feb 12</td>
<td>Alternative Medicine: Patent medicine vs. Generic drugs &amp; laws</td>
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<tr>
<td>Feb 15</td>
<td>Poisonous Properties</td>
<td>Chap. 2:11-20</td>
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<tr>
<td>Feb 17</td>
<td>Poisonous Properties</td>
<td>(omit tables and figure)</td>
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<tr>
<td>Feb 19</td>
<td>The nervous system: The action of drugs, (Exam 1 review)</td>
<td>Chap. 3: 64-68, 73-74, 76-78</td>
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<td>Feb 22</td>
<td>Allergy drugs and treatments</td>
<td>Chap. 3: 81-82; 86</td>
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<td>Feb 24</td>
<td>Allergy</td>
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<td>Feb 26</td>
<td><strong>Exam 1 (Friday) _ Weeks 1-5 (Ch. 1, Medical Botany; Herb book, pp. 3-6; 10-17</strong></td>
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<td><strong>2. Toxic and Poisonous Plants</strong></td>
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<td>Mar 1</td>
<td>Plants of Mexico: Aztec Medicinal Plants</td>
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<tr>
<td>Mar 3</td>
<td>Plants of Mexico: Aztec Medicinal Plants</td>
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<td>Mar 5</td>
<td>Medicinal Plants and Tropical rain forests</td>
<td>Read Plotkin Book</td>
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<td>Shaman's Apprentice</td>
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<td>See video: media reserve</td>
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<td>Tales of a Shaman’s Apprentice</td>
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<td>Mar 8</td>
<td>Medicinal Plants and Tropical rain forests</td>
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<td><strong>3. Indian Uses of Medicinal Plants</strong></td>
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<td>Mar 10</td>
<td>Skin</td>
<td>Chap. 14:336-338,340,343,347 (bottom), 353, (top)</td>
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<tr>
<td>Mar 12</td>
<td>Skin</td>
<td>Chap. 14 (see above)</td>
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<tr>
<td>Mar 17</td>
<td>Oral Hygiene (teeth)</td>
<td>Omit Table10-2</td>
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Mar 19  Circulatory System  Chap. 7 (all)
Mar 22  Plants of Witchcraft  Chap. 18:406.416-417, 419-424
Mar 24  Birth Control  Chap. 13:316-321
Mar 26  Birth control

Mar 29  Spring Recess
Mar 31  Spring Recess

Apr  2  Spring Recess

Apr  5  Aphrodisiacs (Exam 2 Review)
Apr  7  Aphrodisiacs (Aphrodisiacs will be on Final exam, not Exam 2) Chap. 13:324; 326-327,331-332
Apr  9  Exam 2 (Friday)  Weeks 6-10

Apr 12  Vitamins
Apr 14  Vitamins
Apr 16  Longevity

Apr 19  Longevity

5.  Psychoactive Plants

Apr 21  Psychoactive Plants: panaceas & cure-alls  Chap. 16: 372-373, 376
Apr 23  Psychoactive Plants: Depressants  Chap. 19:437-442

Apr 26  Psychoactive Plants: Depressants
Apr 28  Psychoactive Plants: Stimulants
Apr 30  Psychoactive Plants: Stimulants

May  3  Psychoactive Plants: Hallucinogens  Chap. 18:406.416-417,
May  5  Psychoactive Plants: Hallucinogens  419-424
May  7  Anesthetics: Xylocaine, Cocaine, etc. & Final Exam Review  Chap. 17:381-381

May 10  Headaches and headache drugs
May 12  Headaches and headache drugs
May 14  FINAL EXAM (Friday) Weeks 11-17  0800-1000

May 14  FINAL EXAM (Friday) in NE 60  0800-1000

The final exam begins at 0800 (eight o’clock)

Explanation of reading sources:  All library articles are listed under Biology 326 in the library reserve room which is at the checkout desk in the library.  The library reading is helpful, but only Chapter 1 of the Lewis & Lewis, Medical Botany book and all of the Mark Plotkin book, Tales of a
Shaman’s Apprentice, and the Herb Book and Doctrine of Signatures (ECR document) are required reading.
The pages that apply for optional readings in the Medical Botany book also appear on the class web site: http://www-rohan.sdsu.edu/faculty/bizzoco/description.html

The library electronic reserves with exams or articles can be accessed through a link on the web site for this class. You will need an Adobe PDF reader (www.adobe.com) and the password is available in class or from the instructor.
Practice exams at library Electronic Class Reserve ECR web site: http://ecr.sdsu.edu/courseindex.asp
Videos are in the Video Reserve room in the basement of the library under the dome. There are several videos on reserve, including the Plotkin video, Tales of a shaman's apprentice.

All text book pages are in Lewis and Lewis, Medical Botany and are resource reading. Material in (1) CHAPTER 1 and other readings, (2) Herb Book and (1) Doctrine of Signatures, are assigned reading and appear on exam 1. Look at the specific page assignments on the class web site. See above for the ECR URL, the so-called uniform resource locator/universal resource locator. http = hyper text transfer protocol.