

Department: PHAR

Course No.: 100

Credits: 3

Title: Drugs: Actions and Impact on Health and Society

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Content Area: CA 3 Science and Technology

Catalog Copy: PHAR 100. Drugs: Actions and Impact on Health and Society Both or either semester. Three credits. Two 1 ½ class periods. Not open to pharmacy students in the Professional Program. *Gerald* Introductory survey of common drugs used medically and nonmedically. Biological emphasis with historical, cultural, social implications. General Concepts: mechanisms of drug action, modification drug response, new drug development. Drugs as Medicines: narcotics, aspirin, stimulants, appetite suppressants, mental disorders, sex hormones, infectious diseases, cancer. Nonmedical Uses: drug abuse, alcoholism, smoking, marijuana, mind-altering drugs, athletic competition, chemical warfare, venoms; drugs in movies and literature.

Course Information:

a. Course description: The course is a general introduction to the scientific study of drugs, chemicals that may be used for disease or for nontherapeutic purposes, their mechanisms of action, intended benefits, and potential risk. Whereas emphasis will be placed on the scientific aspects, the societal impact of drugs, historical aspects of drug discovery, will be considered. The appearance of drugs in entertainment and literature, politics and economics will be interwoven throughout the course.

Exams: Depending upon the class size, exams will either be objective (short answer, multiple choice) or essay.

Reading assignments: No suitable textbook is currently available. I will be preparing extensive written materials (draft chapters of an intended text) which will be made available through WebCT. Students will be assigned readings, to be completed prior to class, which will serve as the basis for the lectures and discussions.

Writing assignment: A 10-15 page term paper will be required of all students and will contribute 25% to their final grade. Based on their major or personal interests, students will be invited to select their own drug-related topic early in the term and submit an outline to me for approval prior to initiating their paper.

c. List the major themes, issues, topics, etc., to be covered.

Part 1. General Concepts

Impact of drugs on health and society: an overview

History of drugs
Nature of drug action
Fate of drugs in the body
Factors that modify drug response
Development of new drugs

Part 2. Drugs as Medicines
Nervous system and neurotransmitters
Opioids (narcotics)
Nonsteroidal anti-inflammatory drugs
Drug treatment of mental disorders
Stimulants and appetite suppressants
Sex hormones and control of fertility
Treatment of infectious diseases and cancer

Part 3. Nonmedical Uses of Drugs
Drug abuse overview
Alcohol and alcoholism
Nicotine and tobacco smoking
Psychotomimetics and marijuana
Drug use in athletic competition
Toxins and chemical warfare
Drugs in movies and literature

Meets Goals of Gen Ed: -1. Become articulate: Based on their readings prior to class, during class periods students will be expected to discuss the impact of drugs on health and society. In many instances, the societal impact is subject to multiple interpretations. Points for class discussion are often derived from recent media reports. Class participation will contribute to the final grade.

2. Acquire intellectual breadth and versatility: Since it assumed that students possess minimal post-secondary preparation, essential background concepts in biology, chemistry, and disease states will be presented. When discussing the impact of drugs on society, background and tangential material in history, domestic and international healthcare systems, movies and literature, etc. will necessarily be discussed.

3. Acquire critical judgment: Students will learn that there are potential risks associated with the use of all drugs; this represents a fundamental concept in the course. They will be asked to critically evaluate the benefits-to-risks of such drugs.

4. Acquire moral sensitivity: Discussions on clinical trials in new drug development will include the concept of informed consent and when is consent to participate in a clinical trial truly voluntary. The use of prisoners and the illiterate will be considered.

5. Acquire awareness of their era and society: Drugs are not equivalently available to all members of this society or other societies.

6. Acquire consciousness of the diversity of human culture: The differential response to drugs, based upon our racial (genetic) differences will be considered.

7. Acquire a working understanding of the processes by which they can continue to acquire and use knowledge: The course provides an introductory vocabulary, concepts, and foundation to understand the drugs they, their family members, and friends are taking for medical or nonmedical purposes. With our discussion of the general concepts and more specific information on the disease and drug class, they will be prepared to be more rational users of drugs, appreciate common disease states, and better understand new drug discoveries as they are presented in the media.

CA3 Criteria: 1. Explore an area of science or technology by introducing students to a broad, coherent body of knowledge and contemporary scientific or technical methods: Utilizing a biological orientation, students will be introduced to the scientific study of drugs, in particular, the mechanisms by which drugs produce their desirable and undesirable effects, their intended benefits if used as therapeutic agents, and potential risks. Since the course is not intended to prepare healthcare professionals who requires comprehensive knowledge of drugs, only selected drug classes will be included for consideration that are of greatest interest to students or that can be used to illustrate general scientific concepts. The study of drugs is extremely dynamic. On an ongoing basis, new classes of drugs are being developed and new information is being uncovered about older drugs necessitating that the course be presented on a contemporary basis.

2. Promote an understanding of the nature of modern scientific inquiry, the process of investigation, and the interplay of data, hypotheses, and principles in the development and application of scientific knowledge: One entire block in the course will be devoted exclusively to the subject of the rational development of new drugs, which incorporates the concepts of hypothesis development based upon scientific knowledge with the testing of such hypotheses in animal and human subjects utilizing appropriately controlled experiments. Another block deals with the factors that modify our individual response to drugs. When considering the general concepts describing the nature of drug action, we shall examine dose-response and time-response relationships. All these topics will be reinforced throughout the course. In addition, because of my personal interest in the history of drug development, the background surrounding the development of different drug classes and individual drugs will be considered. As noted above, the course has a biological orientation that does not lend itself to extensive data analysis. I have used an analogous orientation in a general introductory pharmacology text I authored and in pharmacology courses I have taught to professional pharmacy students for over 30 years. I am confident that the orientation and emphasis of the proposed course will readily satisfy the University's objective to expose all UConn graduates to a rigorous introductory scientific didactic experience.

3. Introduce students to unresolved questions in some area of science or technology and discuss how progress might be made in answering these questions: The course will emphasize that for many diseases safe and/or effective drugs are not available; the mechanisms by which some drugs produce their effects is not well understood; the potential risks associated with the use of drugs for nonmedical (i.e., recreational) purposes has not been clearly established. We shall consider reasons for this paucity of information and approaches by which these knowledge gaps can be filled.

4. Promote interest, competence, and commitment to continued learning about contemporary science and technology and their impact upon the world and human society: The primary objective of the course is to provide students with a foundation for and an interest in lifelong learning about pharmaceuticals and other chemicals that produce effects in living organisms including those that will be used by themselves and members of their family. This background will provide them the basis to become more rational users of drugs.