PURPOSE AND SCOPE

As its name implies, this course is about drugs, what they are, their beneficial and undesirable effects, and how they work. The course is designed to provide students with both academic and real-world knowledge of drugs, including prescription and over-the-counter drugs used in treating disease, recreational drugs (such as hallucinogenic and euphoria-producing drugs), nutritional substances, “natural” substances, and occasionally toxins and poisons. After successfully completing this course, each student should have a much better understanding of a variety of drugs, what they are and how they work, and their beneficial as well as their adverse effects on the body. A central purpose of this course is to enable students to make better informed decisions about drugs that may be prescribed for them or that they may acquire for self-treatment or recreation, as well as to be better informed about drugs, toxins, and other foreign substances that they may wish to avoid. An equally important goal is to assist students in developing skills in oral and written communication. The course is designed to be both challenging and fun (many past students in this course have said that they really enjoyed learning what drugs really are and how they really work).

MAJOR COURSE OBJECTIVES ("OUTCOMES")

For all students, there are three major objectives ("outcomes") for this course:

1) To gain a general knowledge of at least 30 drugs (one drug per student). Specific categories of information will include uses, actions, molecular targets, mechanisms of action, adverse effects, mechanisms of adverse effects, and additional information of interest to the students.

2) To write a paper, about one specific drug in the list of 30, that includes in-depth information about that drug’s uses, actions, molecular target or targets, mechanisms of action in the human body, major adverse effects, mechanisms of adverse effects if known, and additional information about the drug that the student may choose to include.

3) To make an oral presentation to the class, of 10 – 15 minutes, that summarizes the written paper on the drug(s) assigned to that student.

COURSE STRUCTURE

The lecture and presentation part of the course consists of two parts:

1) Instructor presentations. In roughly the first half of the course, the instructor will provide information about the 30 drugs and their mechanisms of action; in other words how each of the 30 drugs works.

2) Student presentations. In the second half of the course, students will give oral presentations based on the papers that they have written about their assigned drug(s).

During presentations given by either the professor or by students, questions and class discussion are strongly encouraged.
SCHEDULE OF LECTURES, PRESENTATIONS, QUIZZES, AND EXAMINATIONS

Part 1: Discussions and Lectures by the Instructor

<table>
<thead>
<tr>
<th>Week</th>
<th>Day</th>
<th>Date</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M</td>
<td>Jun 26</td>
<td>Discussion of course syllabus; <strong>assignment of student drug topics.</strong> Lecture 1: Introduction.</td>
</tr>
<tr>
<td></td>
<td>Tu</td>
<td>Jun 27</td>
<td><strong>Quiz 1; Lecture 2:</strong> Stimulants - cocaine, amphetamines, and caffeine.</td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>Jun 28</td>
<td><strong>Quiz 2; Lecture 4:</strong> Opioid analgesics - morphine, fentanyl, and codeine.</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>Jun 29</td>
<td><strong>Lecture 5:</strong> Non-opioid analgesic drugs - aspirin, ibuprofen, and acetaminophen.</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>Jul 3</td>
<td><strong>Quiz 3; Lecture 6:</strong> Steroids - corticosteroids (anti-inflammatory), male sex steroids (anabolic), and female sex steroids (birth control pills)</td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>Jul 5</td>
<td><strong>Quiz 4; Lecture 7:</strong> Cardiovascular drugs - statins, amlodipine, and dabigatran.</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>Jul 6</td>
<td><strong>Lecture 8:</strong> Antibiotics - amoxicillin, tetracycline, and acyclovir.</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>Jul 10</td>
<td><strong>Quiz 5; Lecture 10:</strong> Recreational drugs part 1: LSD, psilocin, and THC</td>
</tr>
<tr>
<td></td>
<td>Tu</td>
<td>Jul 11</td>
<td>Mid-term examination</td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>Jul 12</td>
<td>Student presentations on cocaine, amphetamines, caffeine, and ethanol</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>Jul 13</td>
<td><strong>Quiz 6:</strong> Student presentations on benzodiazepines, zolpidem, and morphine</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>Jul 17</td>
<td>Student presentations on fentanyl, codeine, aspirin, ibuprofen, and acetaminophen</td>
</tr>
<tr>
<td></td>
<td>Tu</td>
<td>Jul 18</td>
<td><strong>Quiz 7:</strong> Student presentations on adrenal steroids, male sex steroids, female sex steroids,</td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>Jul 19</td>
<td>Student presentations on and statins amlodipine, dabigatran</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>Jul 20</td>
<td><strong>Quiz 8:</strong> Student presentations on amoxicillin, tetracycline, and acyclovir</td>
</tr>
<tr>
<td>5</td>
<td>M</td>
<td>Jul 24</td>
<td><strong>Quiz 9:</strong> Student presentations on insulin, sulfonylureas, and gliptins</td>
</tr>
<tr>
<td></td>
<td>Tu</td>
<td>Jul 25</td>
<td>Student presentations on LSD, psilocin, THC,</td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>Jul 26</td>
<td><strong>Quiz 10</strong> Student presentations on MDMA phencyclidine, and cathinones</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>Jul 27</td>
<td><strong>Final Exam (Midterm examination plus quizzes 2 - 10);</strong></td>
</tr>
</tbody>
</table>

Part 2: Presentations by the students*

3        W   Jul 12 | Student presentations on cocaine, amphetamines, caffeine, and ethanol |
3        Th  Jul 13 | **Quiz 6:** Student presentations on benzodiazepines, zolpidem, and morphine |
4        M   Jul 17 | Student presentations on fentanyl, codeine, aspirin, ibuprofen, and acetaminophen |
4        Tu  Jul 18 | **Quiz 7:** Student presentations on adrenal steroids, male sex steroids, female sex steroids, |
5        W   Jul 24 | **Quiz 9:** Student presentations on insulin, sulfonylureas, and gliptins |
5        Th  Jul 27 | Final Exam (Midterm examination plus quizzes 2 - 10); |

*The powerpoints of the oral presentations must be submitted by e-mail attachment to the instructor, no later than 5 hours before class time on the scheduled due date of the student presentation.

COURSE RULES

There are only a few rules for this course. All students are required to comply.

1. **No electronic devices are allowed during class time or during examinations.** All students will be required to turn off and put away their cell phones and other electronic devices during class.
2. **Students must come to class on time.** The classes are scheduled in the afternoon, when commuting or parking issues should not arise.

3. **Once students are in class, they need to stay there.** Students should take care of any needs that they might have in advance, before they come to class.

**STUDENT ASSESSMENT AND GRADING**

**Course grading:**

Your grade for the course will be determined by your performance in five categories (see Table below):

<table>
<thead>
<tr>
<th>Assessment Category</th>
<th>Maximum % of course grade*</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 quizzes**</td>
<td>10**</td>
</tr>
<tr>
<td>Midterm examination</td>
<td>15</td>
</tr>
<tr>
<td>Written assignment</td>
<td>25</td>
</tr>
<tr>
<td>Oral presentation</td>
<td>25</td>
</tr>
<tr>
<td>Final Examination</td>
<td>25</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

* Scores reported in sakai will include the % of the course grade for that examination or assignment.

**Each quiz will be worth 1% of the course grade. Calculation of the % of the course grade will be based on the performance on 10 quizzes (see below).

**QUIZZES.** Eleven quizzes of **10 points each** will be administered. **Ten of those quizzes will count toward your course grade.** You will be allowed to miss one of the eleven quizzes without penalty. All other unexcused missed quizzes will be assigned a score of 0. Excused absences are described elsewhere in this syllabus. Any excused missed quiz must be made up within one week; **rescheduling any excused missed quiz is the student’s responsibility.**

**MID-TERM EXAMINATION.** A midterm examination will be administered midway through the semester (see schedule above). The examination will consist of true-false, multiple choice, one- or two-word fill-ins, and matching questions. It will test the students on their retention of the material presented by the instructor in the first half of the course, as listed for Part 1 in the schedule above. The only valid reasons for rescheduling the exam would be **extreme** personal or family emergency or catastrophe, or **severe** illness. **Advance notice and written proof of illness or emergency will be required for consideration of rescheduling.** Advance notice can be given by e-mailing the professor and the TA up to but not including the day of the examination.

**SCHEDULE OF ASSIGNMENTS, EXAMINATIONS, AND PRESENTATION DUE DATES**

<table>
<thead>
<tr>
<th>Date</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tu Jun 27</td>
<td>Quiz 1 covering the course syllabus.</td>
</tr>
<tr>
<td>W Jun 28</td>
<td>Quiz 2 covering Lectures 1, 2, and 3.</td>
</tr>
</tbody>
</table>
M Jul 3  Quiz 3 covering Lectures 4 and 5.
W Jul 5  Quiz 4 covering Lectures 6 and 7
M Jul 10 Quiz 5 covering Lectures 8 and 9
Tu Jul 11 Midterm examination consisting of quizzes 2 - 5 and covering Lectures 10 and 11
Th Jul 13 Quiz 6 covering student presentations on cocaine, amphetamines, and caffeine

First drafts of papers due*

Tu Jul 18 Quiz 7 covering student presentations on benzodiazepines, zolpidem, ethanol, morphine, fentanyl, and codeine
Th Jul 20 Quiz 8 covering student presentations on aspirin, ibuprofen, acetaminophen, corticosteroids, male sex steroids, and female sex steroids
M Jul 24 Quiz 9 covering student presentations on statins, amlodipine, dabigatran

W Jul 26 Quiz 10 covering student presentations for LSD, psilosin, and THC
Th Jul 27 Final examination consisting of the midterm examination and quizzes 6 – 10 and student presentations on MDMA, cathinones, and phencyclidine.
F Jul 28 Final drafts of papers due by 12:00 midnight

WRITTEN ASSIGNMENT.

Each student will be required to write a paper on their assigned drug(s). The paper will be written in two stages: 1. A draft that will be edited and returned to the students during the semester (see schedule on previous page); and 2. The final version of the paper that will be due no later than midnight Friday, July 28 (see schedule on the previous page). Students should submit both the first draft and the final drafts as word files or open PDF files to the instructor. Detailed guidelines for writing the paper, as well as explanations for its assessment, are presented below.

ORAL PRESENTATION. During the later part of the semester, each student will make an oral presentation about the drug based on their written assignment (see the schedule above). Detailed guidelines for the oral presentations, as well as explanations for their assessment, are presented below. The powerpoint for the oral presentation will be due no later than 5 hours before the scheduled class time on the due date of the oral presentation (see schedule on the previous page).

FINAL EXAMINATION. At the end of the course, each student will take a final examination. The final examination schedule will be posted on the university’s web site and will also be posted on the Sakai course site. Details of the structure of the final examination are presented below.

IMPACT OF ABSENCES ON THE DAY OF THE FINAL EXAMINATION: Any student who is absent for the final examination will be given a 0 grade for that examination. No makeups or rescheduling of the final examination will be allowed without a valid excuse. Valid excuses for rescheduling the final examination include exceptional circumstances such as unavoidable medical emergencies or deaths in the family (written verification required). Reasons that are not valid for missing the final examination include travel arrangements that conflict with final examination dates, wedding showers or rehearsals, high school class reunions, sleeping late, traffic, forgetting where and when the examination was scheduled, and so on.

All students should consult with the instructor before making any travel or other arrangements to make sure that those plans do not conflict with examination dates. If you have already scheduled a Christmas trip, make sure that it is not in the final exam week. If it is, reschedule the trip.
ASSIGNMENT OF LETTER GRADES

The grading for the course will be according to the guidelines set by the university, and based on the number of points out of a possible 100:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Total Points (out of 100%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>≥ 93.0</td>
</tr>
<tr>
<td>A -</td>
<td>90.0 – 92.9</td>
</tr>
<tr>
<td>B+</td>
<td>87.0 – 88.9</td>
</tr>
<tr>
<td>B</td>
<td>83.0 – 85.9</td>
</tr>
<tr>
<td>B -</td>
<td>80.0 – 82.9</td>
</tr>
<tr>
<td>C +</td>
<td>77.0 – 79.9</td>
</tr>
<tr>
<td>C</td>
<td>73.0 – 75.9</td>
</tr>
<tr>
<td>C -</td>
<td>70.0 – 72.9</td>
</tr>
<tr>
<td>D +</td>
<td>67.0 – 69.9</td>
</tr>
<tr>
<td>D</td>
<td>60.0 – 66.9</td>
</tr>
<tr>
<td>F</td>
<td>≤ 59</td>
</tr>
</tbody>
</table>

The scores for all 5 course components will be added up and the final course average (%) out of a possible 100 % will be determined. The calculated numerical averages will not be rounded up. For example, a course average of 79.99999 % will correspond to a letter grade of C+, but an average of 80.000001 will be a B-. (No matter where lines are drawn, someone will be just below it, and someone will be just above it.)

Students will have the opportunity to monitor their progress during the semester. The mechanism to do this (whether by consultation with the instructor or the TA or on-line postings) will be announced in class.

PLAGIARISM POLICY

Plagiarism can be defined as the use of material produced by others in oral or written presentations and falsely representing it as your own. Often, plagiarism takes the form of quoting sources word-for-word in text, or using copyrighted material in oral or written presentations, without indicating either that the material is quoted or who or what is the source of the quoted material. This course will follow university guidelines on plagiarism (provided in the appendix at the end of this syllabus).

If evidence of plagiarism is found in the draft of the written assignment, the student will be informed of the infraction so that the problem can be corrected. If plagiarism is found in the final version of the written assignment, the student will be given a 0 grade for that assignment.
Penalties for missed deadlines

<table>
<thead>
<tr>
<th>Missed deadline for</th>
<th>Course (%) points deducted*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral presentation</td>
<td>1 % per day late</td>
</tr>
<tr>
<td>Final draft of paper</td>
<td>1 % per day late</td>
</tr>
<tr>
<td>Midterm examination</td>
<td>2 % per day late</td>
</tr>
<tr>
<td>Final examination</td>
<td>20 %</td>
</tr>
</tbody>
</table>

*Permission to miss deadlines must be granted by the professor in advance, and requires a valid excuse in writing.
GUIDELINES FOR WRITTEN AND ORAL PRESENTATIONS

Recall that two major course assignments are writing a paper on an assigned drug and making an oral presentation based on the information gathered in writing the paper.

Written presentation (a sample student paper from a previous year is posted on Sakai). Both the first draft and final draft of the paper should be submitted in a word file, not a PDF.

The sections of the paper are as follows:

1) Title page containing the title of the presentation, the date, the course number and course title, the instructor name, the name of the presenting student, and which draft it is (first or final).

2) Abstract One paragraph consisting of one- or two-sentence summaries each of the introduction, actions, mechanism of action, adverse effects, additional information of interest, and summary/conclusion, for a total of 6-12 sentences. Therefore, the abstract can only be written after the rest of the paper is completed. If the paper is written properly, with appropriate opening sentences for all paragraphs, then the abstract can consist of a collection of one or two paragraph opening sentences (reworded for thoroughness, detail, or clarity as needed) from each of the paper’s sections described below.

3) Introduction (about 1 or 2 paragraphs), stating what the drug is, what it looks like chemically, what the drug is used for (e.g. if a therapeutic drug, what disease or diseases it is used to treat), where it comes from (from a botanical source or synthesized chemically), who markets the drug if applicable, and so forth. This section should include a figure depicting the drug’s chemical structure with a legend (with citation) briefly describing the drug’s chemical structure.

4) Actions of the drug, describing in detail what the major actions of the drugs are on the whole body. For example, an action of amlodipine is to decrease blood pressure.

5) Mechanisms of the major mechanism (or mechanisms) of action, describing how the drug exerts those actions on the cellular level, what its main molecular target is, and whether its mechanisms can at least partially explain its therapeutic or recreational effects. This section should include a figure depicting the drug’s mechanism of action with a legend (with citation) briefly describing the drug’s mechanism of action.

6) Major adverse effects of the drug, selecting those that are most common, most severe, or both.

7) Mechanisms of major adverse effects of the drug if known. For example, an adverse effect of amlodipine is edema. The mechanism of that adverse effect is extrusion of fluid from capillaries as a result of dilation of arterioles, the mechanism of the therapeutic action of the drug to reduce blood pressure.

8) Any other information about the drug that the student wishes to include out of interest (e.g., legal and ethical aspects, socioeconomic or cultural issues surrounding the drug and its use, etc.).

9) Summary and Conclusions: This section should be a brief summary of the main points of the paper, together with an assessment of whether the benefits of the drug outweigh its risks.

10) List of references or sources of information that the student used to prepare the oral presentation. The references must be in the proper format (as described below). They must also be cited in the text by number in parentheses, and those numbers should correspond to the numbered citations in the reference list.

Students will write their papers in two stages, a first draft version and a final draft version. The due dates for the first draft are indicated on the course schedule above. The due dates for the final version is the same as the days that each student is scheduled to give his or her oral presentation. Only the final version of the paper will be graded. Both the first and final drafts should be word files, submitted to the professor and the TA no later than 5 hours prior to class time on the due date of the oral presentation.
Details of expectations for assigned papers will be discussed in class. An example of an edited first draft of a student-written paper from a previous semester is posted on sakai (titled "sample first draft"). It illustrates proper format, common errors in grammar, how to cite references in the text and reference list, figures and legends, and other criteria. You should consult this sample paper while you are writing your first draft.

Page requirements: Students often ask how many pages the final draft of the paper should be. The total number of pages should be as many as are necessary to convey all of the required and optional information. No minimum page numbers will be specified, but if papers are deemed to be too short by the instructor, then they will be graded accordingly.

How to cite references for the paper:

Sources of information are cited first by number (in parentheses) in the text and then listed in numerical sequence, by the same number, in the bibliography. Do not cite references any other way. Do not use footnotes, “op.cit.”, “ibid.”, or any citation format other than the one described in this syllabus.

REFERENCE LISTS CONSISTING ONLY OF INTERNET LINKS ARE NOT ACCEPTABLE.

The bibliography (reference list at the end of the paper) should consist of at least 6 sources of information, at least 4 of which should be from scientific publications. **Wikipedia can be used as a place to start, but should not be among the cited articles in the text and the paper’s reference list.** However, six citations is a bare minimum; students are encouraged to find and cite as many sources as they wish; there is no limit to the number of citations in the text and reference list. Articles from scientific journals, books, and other sources (scientific journals or lay publications) would be preferred.

Each reference should be cited by number in parentheses. All references should be cited in numerical order in the text. Then they should be listed in the same numerical order in the Bibliography section at the end of the paper. Once references have been cited for the first time, they keep that number if they are cited again.

Example of a text citation: “Cocaine is a central nervous system stimulant that works in the brain to alter perception and mood (1). **Note that the reference number is placed in parentheses and the period is placed after, not before, the reference citation.** That citation would be listed first, as number 1, in the Bibliography."

Citation formats

Research article, e.g.:


   This citation applies to articles from scientific journals. The sequence should be: author or authors, year, title of article, journal, journal volume, and pages.

Other source categories might include:

Book chapters, e.g.:

Internet sources, e.g.:


When citing internet sources, do not simply copy the web address and paste it into the bibliography. Use the format for internet sources illustrated above that include authors (when possible), title, organization or publication, posting date, and date of access.

GUIDELINES FOR THE PREPARATION OF THE FINAL DRAFT OF THE STUDENT WRITTEN ASSIGNMENT (DRUG PAPER)

When writing your paper, consult the "sample first draft" and "final draft kit" on sakai.

Title page: This should include the title of the paper, the student’s name, date of submission, course name, course number, course section, instructor name, and which submission it is (first or final draft).

Abstract: 1 paragraph. A paragraph-length summary of the paper consisting of one or two sentences summarizing each of the subsequent sections of the paper; i.e., one or two sentences each summarizing what the drug is, how it is used, its mechanism or mechanisms of action, the major adverse effects and their mechanisms if known, any additional information considered by the student to be important or interesting, and a conclusion which includes an opinion on the drug's safety, i.e., whether the benefits outweigh the risks). The abstract should be single-spaced and indented, even if the rest of the paper is double-spaced.

Introduction: At least 1 paragraph, but preferably more. What the drug is (e.g. stimulant, sedative-hypnotic, antibiotic, etc.) and how it is used (e.g. recreationally, clinically, etc.), and interesting historical information (discovery, source, etc.). This section should include a figure with legend and citation of source, depicting the drug’s chemical structure.

Actions: At least 1 paragraph but preferably more. All of the drug’s major effects on the body that explain its use, and where in the body those effects take place.

Mechanisms of action: At least 2 paragraphs, preferably more. Cellular actions of the drug, receptors or other molecular targets, whether it is an agonist or an antagonist on the receptor or what its actions are on other molecular targets. This section should include a diagram of the drug’s mechanism of action with legend and citation.

Adverse effects: At least 1 paragraph, preferably more. All major adverse effects and mechanisms, if known, should be highlighted here. When adverse effects are related to the mechanism, they should be discussed in more detail.

Mechanisms of adverse effects: At least one paragraph. If possible, discuss mechanisms of the adverse effects if known.

Additional information: Any additional information that the student wishes to include.
Conclusion: At least 1 paragraph. Can include opinions or evaluation regarding the safety, usefulness, effectiveness, and risks of using this drug.

List of references: At least 6 citations, at least 2 of which should be scientific journal articles or scientific review articles One review article on your drug, that you may use as a starting point and include in your paper, is provided on sakai under the heading "Drug PDFs". Emphasis will be placed on whether the sources were cited by number properly in the text, and whether they were listed by the same number in the reference list at the end of the paper in the proper format (described above).

Spelling, Grammar, and style. You should thoroughly proofread both the first and final drafts, to make sure that all words are spelled correctly, the text is free of grammatical errors, and that there is no plagiarized material (you have not copied anything in the text without quoting it and giving the source). A file containing examples of common grammatical errors is posted on sakai.

The first draft of the paper will be edited by the professor. An example of an edited first draft from a previous semester is provided on sakai. You should read it to help you minimize mistakes when writing your first draft. The final draft of the paper will be assessed by the professor according to the checklist shown below.

Compliance: Was each draft submitted on time? (penalty of percentage one point per day late, out of a total possible of 25% of the course grade).

Total: 100 points (25% of course grade). Only the final draft will be graded.
CHECKLIST FOR THE ASSESSMENT OF THE FINAL DRAFTS BY THE INSTRUCTOR

Student name: ___________________________
Date of submission: ________________________

Title page (5):
____ All required information present
Comments: __________________________________________

Abstract (5):
____ Placed before the introduction
____ Single-spaced and indented
____ Summarizes all sections of the paper
Comments: _______________________________________________________________________

Introduction (10):
____ Includes use or uses of the drug.
____ Includes information on history and source of the drug.
____ Includes Figure
____ Depicts structure of drug clearly
____ Includes legend and citation of source of the figure
Comments: _______________________________________________________________________

Actions (10):
____ Clearly and thoroughly describes all of the drug’s major actions in the whole body
____ Clearly and thoroughly describes all of the drug’s major actions on important organs and cell types
Comments: _______________________________________________________________________

Mechanisms of action (15):
____ Identifies the drug’s major molecular target or targets (receptor, enzyme, etc.) on or in its target cells.
____ Includes Figure
____ Depicts drug’s mechanism of action on its major target cell.
____ Includes legend
Comments: _______________________________________________________________________

Additional information (5):
______________________________________________________________________________

Adverse effects (10):
____ Describes important adverse effects of the drug (not just a list)
____ Includes discussion of incidence, severity, and risk of major adverse effects
Comments: _______________________________________________________________________

Mechanisms of adverse effects (5):
____ Attempts to describe and explain mechanisms for the important adverse effects if known.
Comments: _______________________________________________________________________

Summary and Conclusions (5):
____ Adequately and concisely summarizes the main points and highlights of the paper
____ Includes a discussion of whether the benefits of using the drug outweigh the risks.
Comments: _______________________________________________________________________

References list (10):
____ References cited properly, in numerical sequence, in the text
____ References listed properly, in numerical sequence and in the proper format, in the Bibliography
____ Sufficient number of references (minimum of 6)
Comments: _______________________________________________________________________

Grammar and style (20):
____ Grammatical errors, noted on the edited first draft, corrected.
____ Syntax and other errors, noted on the edited first draft, corrected.
Comments: _______________________________________________________________________

Total: _____ of 100 X 0.01 X 25 = _____ of 25% of the course grade.

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Oral presentation

Each student will be required to make a 15-minute presentation on the drug that was the topic of their paper. Three presentations per day will be scheduled for the second half of the course. Guidelines for the presentations are as follows:

1. The presentations should be a summary of the content of the paper. Accordingly, it should be organized in a way that reflects the content of the paper, including:
   - Title slide with the same information as that of the title page of the paper.
   - Introduction slides that summarize the drug’s uses (therapeutic, recreational, or both), its origin or source (such as the manufacturer if it is a therapeutic drug or its botanical origin if it is a natural product, etc.). A slide depicting the drug’s chemical structure should be included in this section.
   - Additional slides that depict actions (effects) of the drug and how those effects are produced (cellular mechanisms of action), the major molecular target of the drug, important adverse effects of the drug and, wherever possible, explanations of how the drug produces those adverse effects (mechanism of important adverse effects).
   - (Optional): Additional slides that convey items of interest to the presenter such as cultural, legal, social, economic, or other issues surrounding the use of that drug.
   - A summary slide that includes an assessment or judgment by the presenter as to whether the benefits of the drug’s use outweigh the risks.
   - The last slide should be the reference list as presented in the paper.

2. Students should try their best to speak from the slides or directly to the audience using a laser pointer, and to avoid reliance on flash cards or notes as much as possible. Simply reading from the paper should be absolutely avoided.

3. Whenever possible, all presentations should be made using Powerpoint slides. Students are required to e-mail their Powerpoints to the instructor no later than 5 hours prior to class time of the scheduled day of the presentation. This will allow time for the instructor to notify the student if there are any compatibility issues (if the powerpoint can be loaded onto the instructor's computer for the presentation), and to make changes if necessary.

4. Slides consisting of text only should be lists of no more than six brief bullet points of a few words each, and should not be complete sentences. They should serve as talking points for the presenter. Students should try their best to use the bullet points as cues for discussing each point directly to the audience, rather than read the points verbatim. The type size should be large so that students in the back of the room can easily read them.

5. Figure slides depicting such things as the actions and mechanisms of action of the drugs should be as clear as possible. Some of the figures can be identical to ones used in the student’s paper, but inclusion of additional figures is encouraged, to allow elaboration of history, mechanisms, and other topics in the presentation that might be of interest to the student.

The instructor will evaluate the presentation using the checklist presented below.

These presentations are an opportunity for students to explore and to share their interest in the drug. Students are encouraged to include whatever additional material, such as videos, that they think would enhance audience interest.
**CHECKLIST FOR THE ASSESSMENT BY THE PROFESSOR OF ORAL PRESENTATIONS**

**Presenter:** ____________________________

**Topic:** ____________________________

**Section:** ______

**Date:** ____________________________

<table>
<thead>
<tr>
<th>Section</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1) Content</strong></td>
<td>65</td>
</tr>
<tr>
<td>___ Title slide (all information present)</td>
<td>5</td>
</tr>
<tr>
<td>Introductory slides</td>
<td></td>
</tr>
<tr>
<td>____ Chemical structure of the drug</td>
<td>5</td>
</tr>
<tr>
<td>____ Actions of the drug</td>
<td>5</td>
</tr>
<tr>
<td>____ Uses of the drug</td>
<td>5</td>
</tr>
<tr>
<td>____ History or development of the drug</td>
<td>5</td>
</tr>
<tr>
<td>Mechanism of action slides</td>
<td></td>
</tr>
<tr>
<td>____ Cellular site of action</td>
<td>5</td>
</tr>
<tr>
<td>____ Receptor or other molecular target</td>
<td>5</td>
</tr>
<tr>
<td>____ Action on receptor or other molecular target</td>
<td>5</td>
</tr>
<tr>
<td>Adverse effect slides</td>
<td></td>
</tr>
<tr>
<td>____ Important adverse effects included</td>
<td>5</td>
</tr>
<tr>
<td>____ Mechanism of adverse effect slide</td>
<td>5</td>
</tr>
<tr>
<td>Conclusion slide</td>
<td></td>
</tr>
<tr>
<td>____ Some addressing of risks vs. benefits of this drug</td>
<td>5</td>
</tr>
<tr>
<td>____ List of references</td>
<td>5</td>
</tr>
<tr>
<td><strong>2) Presentation</strong></td>
<td>35</td>
</tr>
<tr>
<td>____ Text slides were well-designed, without too much information</td>
<td>7</td>
</tr>
<tr>
<td>____ Graphic slides could be clearly seen or read by audience</td>
<td>7</td>
</tr>
<tr>
<td>____ Spoke clearly to audience and did not rely heavily on notes</td>
<td>7</td>
</tr>
<tr>
<td>____ Summarized the talk well</td>
<td>7</td>
</tr>
<tr>
<td>____ Interacted with audience and answered questions well</td>
<td>7</td>
</tr>
</tbody>
</table>

Total _____ points X 0.01 X 25 = _____ % out of a maximum of 25% of the course grade.

**Comments:**

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________
QUIZZES, MID-TERM EXAMINATION, AND THE FINAL EXAMINATION

Quizzes

Students will take 11 quizzes throughout the semester, roughly one quiz per week starting the second week. **Quiz 1 will be on the Introduction and Lecture 1, quizzes 2 – 5 will be on Lectures 2 - 10, and quizzes 7 – 11 will be on the student presentations.** The dates of the quizzes are on the topic and exam schedule (above in this syllabus and in the word file on sakai). The material that each quiz will cover is also specified on the course schedule and in the topics list file on sakai. Each quiz is worth 10 points. Only the highest 10 quiz scores will count; the lowest one will be dropped. If the student misses one quiz, then that quiz will be dropped (no makeups). If the student misses more than one quiz, then he or she will receive a 0 for that quiz. In rare circumstances, students may be allowed to make up a second missed quiz with a valid excuse (as specified elsewhere in this syllabus). **Three or more missed quizzes will be assigned a zero with no provision for makeups (whether the absences are excused or not).** Only athletes are exempted from this provision, but they must submit their road schedules early in the course to be exempted and are responsible for scheduling the makeup within three days of their return. Quiz answers will be discussed briefly in class. The quizzes will not be handed back to the students, but students are free to examine their quizzes with the TA and ask any question they wish about any quiz (by e-mail or in person before or after class). Quiz scores for each student will be posted on sakai (the TA will do that because the professor is a dinosaur).

The 10 counted quizzes will be worth a total of 100 points, and 10% of the course grade. Therefore, each quiz will be worth 1% of the course grade.

Mid-term examination

**The mid-term examination will consist of exactly the same questions that were on quizzes 2 through 6.** The instructor will simply load all 5 quizzes into a new file, re-number the questions, and change the headings. Therefore, on the mid-term exam students will have a second chance to do well on all but the first quiz given prior to the mid-term exam. The mid-term examination will also be worth 100 points, normalized to a maximum of 15% of the course grade: Raw score (out of 100) X 0.01 X 25% = score as % of course grade. Mid-term scores for each student will be posted on sakai.

Final examination

**The final examination will consist of exactly the same questions and answers that were on quizzes 2 through 11 during the semester.** In other words, it will be the midterm examination again along with quizzes 7 – 11 strung together and renumbered. Therefore, on the final examination, the students will have a third chance to do well on quizzes 2 – 6 and a second chance to do well on quizzes 7 through 11. Like the mid-term examination, the final examination will be worth a total of 100 points, normalized to 25% of the course grade. The day and time of the final examination will be posted on the URI website as well as on sakai.

The 10 best quizzes, the mid-term examination, and the final examination will be worth a combined 60% of the course grade. The other 40% will be the scores on the final draft of the paper (20%) and the oral presentation (20%).
Examples of the types of questions that will be on the quizzes (and therefore on the midterm and final): [Some questions or parts of questions presented below are not applicable to this semester’s course].

True or false

___ An analgesic drug is one that relieves pain.
___ Narcotics are illegal drugs such as amphetamines and cocaine.
___ Drugs such as cocaine, ethanol, and amphetamines can alter both brain function and brain structure.
___ Many hallucinogenic drugs share a phenyl-ethyl-amine-based chemical structure.
___ Nicotine first acts as an agonist, then as an antagonist, on neural nicotinic receptors.
___ A common effect of cocaine is to produce bradycardia (slowing of the heart rate).
___ THC (Δ-9 tetrahydrocannabinol) imitates effects of 2-arachidonyl glyceride (2-AG) on neuronal CB1/CB2 receptors.

Matching

Match each drug on the left with the best description of its molecular target on the right, by writing the letter for that choice in the blank provided in the left-hand column. Select each choice in the right-hand column only once.

<table>
<thead>
<tr>
<th>Drug</th>
<th>Molecular target</th>
</tr>
</thead>
<tbody>
<tr>
<td>___ sertraline (Zoloft)</td>
<td>a. neuronal NMDA receptors</td>
</tr>
<tr>
<td>___ lamotrigine (Lamictal)</td>
<td>b. neuronal GABA&lt;sub&gt;A&lt;/sub&gt; receptors</td>
</tr>
<tr>
<td>___ phencyclidine (PCP)</td>
<td>c. neuronal serotonin (5H-T&lt;sub&gt;2&lt;/sub&gt;) receptors</td>
</tr>
<tr>
<td>___ amphetamine</td>
<td>d. neuronal µ receptors</td>
</tr>
<tr>
<td>___ diazepam (Valium)</td>
<td>e. neuronal serotonin reuptake transporters</td>
</tr>
<tr>
<td>___ morphine</td>
<td>f. neuronal dopamine or norepinephrine reuptake transporters</td>
</tr>
<tr>
<td>___ LSD</td>
<td>g. neuronal membrane monophosphatase enzyme</td>
</tr>
<tr>
<td>___ lithium</td>
<td>h. neuronal sodium and calcium channels</td>
</tr>
</tbody>
</table>

Multiple choice (all 4-choice questions with only one correct answer)

Quetiapine (Seroquel):

a. Inhibits norepinephrine reuptake transporters on neurons in the brain.
   b. Blocks serotonin (5H-T<sub>2A</sub>) receptors on neurons in the brain.
   c. Blocks dopamine (D2) receptors on neurons in the brain.
   d. All of the above.

Fill-in (usually limited to one or two words)

1. What is the word that describes a drug that activates (rather than inhibits) its receptor upon binding to it? (one word only, spelled correctly)
I will comply with the following course rules:

- I will turn off all electronic devices and put them away and during class.
- I will make every effort to remain in class unless there is an emergency situation declared by university staff. I will make sure that I have attended to all of my needs outside the classroom before I enter it.
- I understand that excused and unexcused absences are described in the course syllabus, and I will abide by them. I also understand that the final authority as to what constitutes excused or unexcused absences in this course will be the professor, and not the student.
- I understand that the days and times of the quizzes and examinations, including the final examination, will not be changed.
- I understand that neither the assigned topics for, nor the days and times of, the student presentations will be changed.
- I understand that the university definition of and policy on plagiarism is included in the course syllabus, and I will abide by that definition and policy. I understand that if the instructor finds that any of my written or oral presentations contain plagiarized material, I will be given a warning and instructions to correct them. I also understand that if I do not correct plagiarized material on any final version of written or oral assignments after I have been warned once, then I am subject to dismissal from the class and will likely receive a failing grade for the course.
- I will not engage in any form of cheating on any assignment, quiz, or examination. The professor, not the student, will be the final authority on what constitutes cheating and whether cheating had occurred. Criteria include, but are not restricted to, looking at other student’s answers on exams, copying other student’s assignments, or bringing information into class to be used for answers to examinations. I understand that if I have been found to cheat on any quiz, examination, or assignment, I will be warned by the instructor and I will be re-seated during subsequent quizzes and examinations. If I am found to cheat on any subsequent quizzes or examinations, I may be dismissed from the course, assigned a failing grade, or both.

BY SIGNING THIS CONTRACT, I VERIFY THAT I UNDERSTAND AND AGREE WITH ALL OF THESE RULES, EXPECTATIONS, AND PENALTIES, AND WILL ABIDE BY ALL OF THEM. IF I DO NOT AGREE WITH ONE OR MORE OF THESE RULES, EXPECTATIONS, OR PENALTIES, THEN I WILL WITHDRAW FROM THE COURSE PRIOR TO THE DROP DATE.

Name (print) _________________________________________________________
e-mail or other contact information ________________________________________

Signature _____________________________________________________________

Date _______________________________
Appendix: University policy on plagiarism.

3/8.27.10 Cheating and Plagiarism. Students are expected to be honest in all academic work. Cheating is the claiming of credit for work not done independently without giving credit for aid received, or any unauthorized communication during examinations.

8.27.11 A student's name on any written exercise (theme, report, notebook, paper, examination) shall be regarded as assurance that the work is the result of the student's own thought and study, stated in the student's own words and produced without assistance, except as quotation marks, references and footnotes acknowledge the use of other sources of assistance. Occasionally, students may be authorized to work jointly, but such effort must be indicated as joint on the work submitted. Submitting the same paper for more than one course is considered a breach of academic integrity unless prior approval is given by the instructors.

8.27.12 In preparing papers or themes, a student often needs or is required to employ sources of information or opinion. All such sources used in preparing to write or in writing a paper shall be listed in the bibliography. It is not necessary to give footnote reference for specific facts which are common knowledge and have obtained general agreement. However, facts, observations and opinions which are new discoveries or are debatable shall be identified with correct footnote references even when restated in the student's own words. Material taken word for word from the written or oral statement of another person must be enclosed in quotation marks or otherwise clearly distinguished from the body of the text and the source cited. Paraphrasing or summarizing the contents of another's work usually is acceptable if the source is clearly identified but does not constitute independent work and may be rejected by the instructor.

8.27.13 Notebooks, homework and reports of investigations or experiments shall meet the same standards as all other written work. If any work is done jointly or if any part of an experiment or analysis is made by someone other than the writer, acknowledgment of this fact shall be made in the report submitted. Obviously, it is dishonest to falsify or invent data.

8.27.14 Written work presented as personal creation is assumed to involve no assistance other than incidental criticism from others. A student shall not knowingly employ story material, wording or dialogue taken from published work, motion pictures, radio, television, lectures or similar sources.

8.27.15 In writing examinations, the student shall respond entirely on the basis of the student's own capacity without any assistance except that authorized by the instructor.

8.27.16 Instructors shall have the responsibility of insuring that students prepare assignments with academic integrity. Instructors shall do all that is feasible to prevent plagiarism in term papers or other written work.

8.27.17 Instructors shall have the explicit duty to take action in known cases of cheating or plagiarism. The instructor shall have the right to fail a student on the assignment on which the instructor has determined that a student has cheated or plagiarized. The circumstances of this failure shall be reported to the student's academic dean, the instructor's dean, and the Office of Student Life. The student may appeal the matter to the instructor's dean, and the decision by the dean shall be expeditious and final. The Vice Provost for Urban Programs shall be considered the instructor's dean only in cases of courses offered exclusively through the Alan Shawn Feinstein College of Continuing Education (e.g. courses with the code BGS).

8.27.18 If the violation warrants more severe censure, the instructor may recommend additional action to the instructor's dean. Upon this recommendation the dean may authorize the instructor to fail the student in the course. The student or instructor may appeal the dean's decision to the Provost and Vice President for Academic Affairs whose decision on the appeal shall be final.

8.27.19 Either the instructor, the instructor's dean or the student's dean may request judicial action (see 9.21.10 -31) on an allegation against a student for cheating or plagiarism. Any of the judicial sanctions listed in sections 9.22.10-18 may be imposed after a finding of guilty. If the request comes from an instructor it shall be accompanied by a statement of position from the instructor's dean (see 9.20.10 and 9.21.10).

8.27.20 Students accused of academic dishonesty within the drop period may be denied the opportunity to drop the course. This requires permission from the instructor’s dean. If the accusation is not upheld in an appeal, the student will be given the same options available before the end of the drop period without penalty.

8.27.21 Any record of scholastic integrity infractions where actions have been taken (i.e., assignment of an "F" on an assignment and notification of the student's dean, dean's authorization to assign an "F" for the course, referral to the University Board on Student Conduct) will be forwarded to the Office of Student Life. A cumulative file will be maintained in that office. The Dean of Students shall notify the student's dean of subsequent infractions and may initiate conduct action against the student.
Report of Cheating or Plagiarism (to be filled out by the instructor)

In cases of cheating or plagiarism, fill out this form and send copies to your dean, the student’s dean, and the Dean of Students, Office of Student Life. Before acting, refer to the legislation on cheating and plagiarism in the University Manual (see 8.27.10 – 8.27.21). Always notify the student(s) involved and it is recommended to inform your Department Chair.

Today’s Date: _____________________ Faculty Member: __________________________
Phone: __________________________

Course (section): ____________________
Meeting Time: ________________
Name(s) of Student(s): __________________________
ID#: __________________________
Date of Infraction: __________________________

Nature of Infraction:
(Separate sheet if necessary)
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Action Taken: (See 8.27.10-8.27.21 in University Manual)
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Grade of “F” issued for assignment in question? Y____ N____
Conferrered with Dean and issued grade of “F” for course? Y____ N____
Conferrered with Dean and requested judicial action? Y____ N____
Copied Instructor’s Dean? Y____ N____
Copied Student’s Academic Dean? Y____ N____
Copied Dean of Students, Office of Student Life? Y____ N____