

CEDAR CREST COLLEGE

NEU 330 - Neuropharmacology

Fall, 2009 Syllabus

Instructor: Dr. Kent Fitzgerald, Miller 27, x3609, kkfitzge@cedarcrest.edu

Course Meets: Mon, Wed, Fri, 10:00-10:50 AM (3 credits), Science Center 139

Prerequisite: Neuroscience 200 or PSY 229

Required Texts: Robert M. Julien (2005) A Primer of Drug Action: A Comprehensive Guide to the Actions, Uses, and Side Effects of Psychoactive Drugs (10th ed). Worth, New York, NY. (*PDA*)

Mark F. Bear, Barry W. Connors, and Michael A. Paradiso (2006) Neuroscience: Exploring the Brain (thurd ed). Lippincott, Williams & Wilkins, Baltimore, MD. (*NEB* - *This is the same text used for NEU 20 and PSY 229*).

Home Page: www.cedarcrestonline.net

Important

This course is designed to educate students about a number of psychiatric and neurological diseases and treatments. However, the instructor of this course is not a medical professional. The information contained in this course, while believed to be correct and current, should not be regarded as medical advice, and should not be used for diagnosis or treatment.

Course Description

The focus of the course will be using primary research literature to address six questions in neuropharmacology:

- What biological changes account for the (delayed) therapeutic action of antidepressant medications?
- Are "new generation" antipsychotic medications an improvement in treatment of negative symptoms of schizophrenia?
- What is the best practice for management of ADHD in children and adults?
- What molecular mechanisms are common denominators of dependence on different substances?
- Two more to be determined by the class.

Students in the course will actively participate in selection, reading, and discussion of research literature. In preparation for discussion, students will use the online discussion to ask and reply to each other's questions.

Lectures will provide background for the research topics being discussed, and will reinforce students' understanding of fundamental material.

Objectives

The objectives for students in this course are to:

- Reinforce their understanding of the principles of electrical and chemical signaling in the nervous system
- Understand the normal chemical and behavioral functions of major neurotransmitter systems
- Understand the pathological features, neurochemistry, and drug treatments of common psychiatric and neurological disorders
- Understand the biological, human, and societal issues of drug use and abuse
- Learn to interpret and critique research papers from the neuropharmacology literature

Course Outcomes

Upon successful completion of the course, students will:

- Demonstrate the ability to engage in scientific and quantitative reasoning by applying the concepts of neurophysiology and pharmacology to psychiatric and neurological illness and treatment, and by engaging in critical discussion and interpretation of experimental data and research papers.
- Demonstrate oral communication ability through participation in literature discussions and written communication ability in the drug research project.
- Demonstrate understanding of the political and social issues surrounding substance use and abuse and the perceptions and treatment of the mentally ill.

Assessment

The outcomes described above will be assessed through:

- Written exams: scientific / quantitative reasoning, written communication ability
- Literature discussions: scientific / quantitative reasoning, oral communication ability, information literacy
- Short assignments: scientific / quantitative reasoning
- Class participation: oral communication ability

Student Responsibilities

Readings: Assigned text readings will be most useful if they are read before class.

Attendance: It is strongly recommended you attend class, as material may be covered that is not in your text. You are responsible for class material even if you are absent. If you miss an exam or quiz due to documented illness or emergency, you must contact the instructor as soon as possible to arrange a make-up exam. Make-up exams will not be given for any other reason. Your obligations for this course include attendance at the final exam, on the day and time scheduled by the Registrar's Office. You should not make travel arrangements until the final exam schedule is published; if you must make plans early, you should schedule your travel after the last final exam day.

Scholarship and Integrity: I fully support the Cedar Crest College Honor Code and the Classroom Protocol code as stated in the Customs Book.

You are required to abide by the Honor Code and by accepted practices of scholarship and integrity. All writing and other material that you submit must be your own, original work, unless otherwise acknowledged.

- Material that is quoted from another source must be clearly indicated as a quotation and must be followed immediately by a citation to the original source.
- Paraphrasing is not acceptable as original work; editing someone else's writing does not make it your own work.

If you have any questions about these issues, please discuss them with the instructor. Cheating or plagiarism will result in a grade reduction or grade of zero for the assignment, or a grade of F for the course, at the instructor's discretion. Incidents of academic dishonesty will be reported to the Provost and the Dean of Academic Affairs.

Classroom protocol: The Honor Code states, "Appropriate classroom behavior is implicit in the Cedar Crest Honor Code. Such behavior is defined and guided by complete protection for the rights of all students and faculty to a courteous, respectful classroom environment. That environment is free from distractions such as late arrivals, early departures, inappropriate conversations and any other behaviors that might disrupt instruction and/or compromise students' access to their Cedar Crest College education."

Students with Disabilities: Students with documented disabilities who may need academic accommodations should discuss these needs with their professors during the first two weeks of class. Students with disabilities who wish to request accommodations should contact Academic Services.

Assignments

Exams (two exams, 20% each, final exam 25%)

There will be three exams: two 1-hour in-class exams and a final exam, covering materials from the lectures and discussions. Each exam will consist of short answers and multiple choice questions, and will also require drawing and interpreting diagrams and graphs.

Literature Discussions (30%)

An important part of this course will be seminar-style discussion of primary literature papers. Papers will be distributed in class, and you are responsible for *thoroughly* preparing the paper prior to discussion. This includes doing any necessary background reading on the system studied, looking up unfamiliar terms, understanding the figures, and participating in online discussion.

Short Assignments (5%)

Several short problem-solving type assignments will be given throughout the semester.

Class participation (+/- 5%)

This includes regular attendance, preparation for class, contribution to class discussions, and adherence to the classroom protocol.

Grading

Your course average will be rounded to the nearest 0.1%, and grades will be determined as follows:

Grade Scale										
A	A-	B+	B	B-	C+	C	C-	D+	D	F
93.0-100%	90.0-92.9%	87.0-89.9%	83.0-86.9%	80.0-82.9%	77.0-79.9%	73.0-76.9%	70.0-72.9%	67.0-69.9%	60.0-66.9%	< 60.0%

Course Schedule

UNIT 1: Fundamentals

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|---|-------------------|-------------------------------------|
| 1 | Mon, Aug 24 | 1 Introduction and objectives |
| 2 | Wed, Aug 26 | 2 Pharmacokinetics |
| 3 | Fri, Aug 28 | 3 Tolerance and sensitization |
| 4 | Mon, Sep 31 | 4 Ligands, agonists and antagonists |
| 5 | Wed, Aug 2 | 5 Receptors |
| 6 | Fri, Sep 4 | 6 Second messenger systems |
| | <i>Mon, Sep 7</i> | <i>Labor Day: no class</i> |

UNIT 2: Depression and its treatment

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| 7 | Wed, Sep 9 | 1 Symptoms, diagnosis, history |
| 8 | Fri, Sep 11 | 2 Non-pharmacological treatment |
| 9 | Mon, Sep 14 | 3 Pharmacological treatment |
| 10 | Wed, Sep 16 | 4 Lit disc: background |
| 11 | Fri, Sep 18 | 5 Lit disc: methodology |
| 12 | Mon, Sep 21 | 6 Lit Disc: results & implications |
| 13 | Wed, Sep 23 | EXAM: Units 1 & 2 |

UNIT 3: Psychosis and its treatment

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| 14 | Fri, Sep 25 | 1 Psychodiagnosis, history |
| 15 | Mon, Sep 28 | 2 Pharmacological treatment |
| 16 | Wed, Sep 30 | 3 Mental illness and society |
| 17 | Fri, Oct 2 | 4 Lit disc: background & methodology |

18	Mon, Oct 5	5 Lit disc: results & implications
		UNIT 4: Attention deficit disorder
19	Wed, Oct 7	1 Symptoms and diagnosis
20	Fri, Oct 9	2 Epidemiology
	<i>Mon, Oct 12</i>	<i>Fall Break: no class</i>
21	Wed, Oct 14	3 Treatment and controversies
22	Fri, Oct 16	4 Lit disc: background & methodology
23	Mon, Oct 19	5 Lit disc: results & implications
		UNIT 5: Substance abuse
24	Wed, Oct 21	1 Definitions of abuse
	<i>Fri, Oct 23</i>	<i>CCC Presidential Inauguration - no class</i>
25	Mon, Oct 26	2 Substances of abuse
26	Wed, Oct 28	3 Substances of abuse, continued
27	Fri, Oct 30	4 Lit disc: background
28	Mon, Nov 2	5 Lit disc: methodology
29	Wed, Nov 4	6 Lit Disc: results & implications
30	Fri, Nov 6	EXAM: Units 3, 4, 5
		UNIT 6: tbd
31	Mon, Nov 9	1
32	Wed, Nov 11	2
33	Fri, Nov 13	3
34	Mon, Nov 16	4
35	Wed, Nov 18	5
36	Fri, Nov 20	6
		UNIT 7: tbd
37	Mon, Nov 23	1
	<i>Wed, Nov 25</i>	<i>Thanksgiving break: no class</i>
	<i>Fri, Nov 27</i>	
38	Mon, Nov 30	2
39	Wed, Dec 2	3
40	Fri, Dec 4	4
41	Mon, Dec 7	5
42	Tue, Dec 8	6
	Exam period	FINAL EXAM