

**BRAIN, MIND, AND BEHAVIOR - MCB 61**  
**Department of Molecular and Cell Biology - University of California, Berkeley**  
**Winter/Spring Semester 2009**

This course deals with the structure and function of the human nervous system, with an emphasis on how brain physiology and chemistry are related to human behavior. This is a comprehensive introduction to the exciting field of contemporary neuroscience for students of all backgrounds and interests.

Required textbooks:

*An Introduction to Brain and Behavior* by Brian Kolb and Ian Whishaw (2<sup>nd</sup> edition, 2006)

*The Double Helix* by James Watson (1968)

- the Norton Critical Edition (1980), edited by Gunther Stent, is the recommended version of this book, as it contains an outstanding historical synthesis by Stent, as well as many other interesting essays and reviews

These books are available for purchase at campus bookstores. Copies are also available on reserve in the Moffitt Library.

Two Lectures and one Discussion Section meeting each week.

Lecture times: Tuesday and Thursday at 9:30 - 11:00 am - Wheeler Auditorium

Website: <http://mcb.berkeley.edu/courses/mcb61/>

Instructor: David Presti 249 Life Sciences Addition (LSA)  
phone and voicemail: 643 2111 <presti@berkeley.edu>

Office hours: Tuesday 12:30-1:00 pm, Wednesday 1:30-2:00 pm, Thursday 3:00-3:30 pm  
I will also generally be available after each lecture for questions and discussion.

Graduate student instructors (GSIs) and their e-mail addresses:

Ali Ghazizadeh	<alighazizadeh@berkeley.edu>
Chris Rodgers	<chris.rodgers@berkeley.edu>
Daniel Little	<dylittle@berkeley.edu>
Jen Sloan	<jensloan@berkeley.edu>
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Michèle Insanally	<michigas@berkeley.edu>

The GSIs are here to help you get the most from this class. You are encouraged to get to know and talk with your GSI. Your GSI will see you in weekly Discussion Section and will also be available to meet with you during weekly office hours. Don't be shy!

Discussion Sections:

101	Mon	10-11	229 Dwinelle	Chris
102	Mon	9-10	209 Dwinelle	Linh
103	Mon	1-2	109 Dwinelle	Chris
104	Mon	2-3	156 Dwinelle	Daniel
105	Mon	1-2	106 Dwinelle	Daniel
106	Tue	1-2	209 Dwinelle	Michèle
107	Tue	3-4	2 Evans	Maya
108	Tue	1-2	87 Dwinelle	Kevin
109	Wed	9-10	229 Dwinelle	Jen
110	Wed	11-12	209 Dwinelle	Maya
111	Wed	1-2	209 Dwinelle	Maya
112	Wed	3-4	229 Dwinelle	Linh
113	Wed	4-5	229 Dwinelle	Linh
114	Wed	1-2	2032 VLSB	Kevin
115	Thu	2-3	109 Dwinelle	Chris
116	Wed	11-12	105 Latimer	Kevin
117	Fri	10-11	229 Dwinelle	Ali
118	Fri	11-12	209 Dwinelle	Ali
119	Fri	12-1	209 Dwinelle	Jen
120	Fri	2-3	156 Dwinelle	Daniel
121	Mon	10-11	2070 VLSB	Ali
122	Mon	2-3	243 Dwinelle	Michèle
123	Wed	10-11	121 Wheeler	Jen

Topics to be covered are listed below, in approximate order of appearance. The textbook chapters refer to *An Introduction to Brain and Behavior*.

	textbook chapter #
• evolution, brain, behavior, mind	1
• brain and nervous system organization	2
• atoms, molecules, proteins, lipids, DNA, genes, cells, membranes	3
• neurons, channels, action potential	4
• synapse, neurotransmitters, neural circuits	5
• molecular pharmacology, drug effects on behavior	7
• brain imaging	14
• nervous system development	6
• sensory perception, vision	8
• audition, music	9
• taste, olfaction	11
• somatosensory perception	10
• movement, anosognosia	10
• emotion	11
• rhythms, sleep, dreams	12
• learning, memory	13
• cerebral cortical hemispheric specialization	14
• language	9,14
• mind, consciousness	14

**Prerequisites:** There are no University course prerequisites for MCB 61. The only prerequisite is a desire to learn some very interesting things!

**Attendance:** We ask that you attend all lectures and discussion sections, unless special circumstances interfere with your doing so. While the factual content in the course may be learnable by reading and obtaining notes from the lectures, we believe there are very important elements of the material that are best, if not exclusively, communicated or transmitted through in-person contact. Basically, there is more to learning than memorizing facts, even if memorizing facts is important and is also part of what needs to be done in order to pass the exams. Your homework assignments will be turned in to your GSI during discussion section. All assignments must be turned in as paper copy. E-mailed assignments will not be accepted. There will also be exercises and debates in discussion section that contribute to your course grade. We may monitor attendance in the lectures and discussion sections by periodically giving surprise quizzes throughout the semester.

**Grading:** Your grade in the class is based on exam performance (85-90% of your grade) and discussion section assignments (10-15% of your grade). Exams consist of two midterms and a final. The final exam will be longer and cover the entire semester and will be worth more than a midterm exam (although less than both midterm exams together). There may be unannounced quizzes in lecture and discussion section during the semester. If such quizzes take place, they will be factored into the portion of your grade based on exams and the exams will then count for a slightly smaller percentage of your grade. The discussion-section assignment portion of your grade comes from 4 written homework assignments and participation in oral-group debates. For one of the debates you will be graded on your participation as part of a debate team; for the other two debates you will be graded on participation in the class discussion. The exact % contributions of the various exams, quizzes, and assignments will be determined at the end of the semester. I no longer indicate the exact % contributions of the grade components at the beginning of the semester because I wish to discourage the running computation of points and accompanying preoccupation with how well one is doing in the class. The GSIs and I do not wish to hear frequent questions of the form: "how well do I need to do on the final exam in order to get an 'A' in the class?" Our answer to such questions will always be: do as well as you can on all exams and assignments! The task is to enjoy learning the material.

**Although the homework and debate assignments are worth only 10-15% of your grade, it will not be possible to receive higher than a "C-" grade in the class without turning in all four of the written homework assignments and participating on an oral-debate team. If you are taking the course P/NP, you must turn in all of the homework and participate in the debate in order to pass the class. The homework and debate assignments are required in this way because we believe them to be an extremely important component of the learning in this class.**

**Exams:** Exams will consist of multiple choice and short answer questions. Each midterm exam covers the preceding portion of the course and draws from material in lectures, discussion sections, and readings. The final exam is comprehensive and covers material from the entire semester. Study guides will be provided and review sessions will be conducted prior to each of the exams. There will be no surprises or trick questions. Our desire is for you to do well on the exams.

- Midterm Exam I is on **Tuesday March 3** at 9:30 am in Wheeler Auditorium
  - this exam will cover course material from the Lectures of Jan 20 through Feb 26 and corresponding material from Discussion Sections and Textbook
  - this exam will also cover material from *The Double Helix* (edited by Gunther Stent), from the very beginning of the book through page 158
- Midterm Exam II is on **Tuesday April 21** at 9:30 am in Wheeler Auditorium
  - this exam will cover course material from the Lectures of March 5 through April 16 and corresponding material from Discussion Sections and Textbook
- Final Exam (comprehensive) will be **Monday May 18** at 8 am (Exam Group 10)
- we cannot change the days and times for these exams; mark your calendars now
- there will be no make-up exams
  - if you miss an exam, you will receive zero points for that exam
  - if you miss a midterm exam with a credible excuse (e.g., significant medical problem documented with verifiable documentation, submitted in person to course instructor), then your final exam will count proportionally more in determining your course grade
  - if you miss the final exam with a credible excuse, you will receive an incomplete (I) grade for the course (provided you have passing status in the class prior to the exam, otherwise grade = F); it may be necessary to wait until the next time the class is given to resolve the incomplete grade

#### Homework:

- homework assignment 1 is a description and analysis of an article which you find from the news media
  - due in discussion section the week of **February 2-6**
- homework assignment 2 is drawn from your reading of *The Double Helix*
  - due in discussion section the week of **February 9-13**
- homework assignment 3 is on writing questions appropriate for an exam in MCB 61
  - due in discussion section the week of **April 6-10**
- homework assignment 4 is haiku composition about brain, mind, or behavior
  - due in discussion section the week of **April 27 - May 1**
- detailed instructions for the homework will be provided in class
- homework assignments must be turned in as paper copy; e-mailed assignments will not be accepted
- Assignments turned in up to one week after the due date will receive half-credit. Assignments turned in 1-2 weeks after the due date will receive zero points but will be credited as being turned in. Assignments received more than 2 weeks late will not be accepted. Note that this becomes a serious matter, since, as stated above, you need to receive credit for all four of the homework assignments in order to receive better than a C- grade (for a letter grade) or a passing grade (for a P/NP grade). Thus, be sure to complete your homework on time. This is not an arbitrary rule, but is done to encourage completion of the homework in the way in which we believe it to be most useful.
- Homework assignments are meant to be interesting, informative, and enjoyable!

#### Debates:

- there will be three debates conducted in discussion section, with one-third of the class directly involved each of the debates
- the first debate will be during the week **February 16-20**, the second will be during the week **March 9-13**, and the third will be during the week of **March 30-April 3**
- debate topics and instructions will be provided in class
- we do our best to choose topics that will make for very interesting debates, where strong arguments can be made for both sides of the issue
- if ideas occur to you that would be interesting to consider as a debate topic, please let us know; we may actually be able to use your suggested topic this semester!

**Grade Philosophy:** Your letter grade in the course will be determined according to absolute standards of performance, which hopefully relate to your acquisition of knowledge and understanding of the material. You will not be competing against fellow students in the sense that we do not force letter grades to conform to a predetermined distribution. If everyone does extremely well, everyone could receive an "A" grade. If everyone does poorly (highly unlikely), then everyone could get a low grade. Rather than devoting energy to worrying about where grade cut-offs are, if you are truly interested in this subject and in getting the most from this class, we urge you to study seriously from the beginning, do the readings, and truly make an effort to learn the material. You will be rewarded with deep knowledge and understanding of some really fascinating topics. Good grades will be a natural side effect.

In past years the percentage of students earning an "A" or a "B" in this class has generally been between 60 and 70%. Thus, the majority of students do well in this class. However, in order to do well in the class you do have to learn a bunch of stuff. It is also easy to get a "C" or even lower grade in the class, if you don't put in sufficient effort.

Do not make the mistake of not keeping up with the material and then trying to negotiate a last-minute deal to improve your grade. Over the years I have received many desperate e-mails asking, sometimes begging, to do extra-credit assignments, write papers, volunteer in a laboratory, etc. in order to improve one's grade. Usually these requests are received at the end of semester, often after grades have been posted. I recommend that you not get yourself into the position of needing to make such requests. I no longer respond to e-mails of this nature (see section below on e-mail). Note that I do not offer extra credit or make other arrangements to boost grades. If you want a good grade, you must learn the course material in a timely manner. It is as simple as that.

**Cheating:** Anyone caught cheating on a quiz or exam will receive an "F" in the course and will also be reported to the University Office of Student Conduct. In past years, there have been situations in which students failed the class for talking to one another during the final exam. In order to guarantee that you are not suspected of cheating, please keep your eyes on your own materials and do not converse with others during the quizzes and exams.

**E-mails:** I prefer in-person contact to e-mail for most communications. Toward this end, I hold office hours three days a week and am generally available following each lecture for brief questions and discussion. Questions of importance or ones that require detailed answers must be addressed in person. In particular, in most circumstances, I am unlikely to respond to e-mail inquiries concerning grades. Most questions about grades need to be addressed in person. E-mail is a wonderful tool and very convenient. However, it is not a substitute for direct personal contact, especially when such contact is easy.

• important astronomical dates and days of ancient ritual:

New Moons: January 25, February 24, March 26, April 24, May 23, June 22, July 21, August 20

Full Moons: January 10, February 9, March 10, April 9, May 8, June 7, July 7, August 5

Spring Equinox: March 20      Beltane: May 1      Summer Solstice: June 20

• reference for lunar and solar information:

- <[aa.usno.navy.mil](http://aa.usno.navy.mil)> Astronomical Applications Department of the US Naval Observatory
- <[sunearth.gsfc.nasa.gov/eclipse/OH/OH2009.html](http://sunearth.gsfc.nasa.gov/eclipse/OH/OH2009.html)> NASA Eclipse Information for 2009
- awesome websites!

Best wishes for a very enjoyable semester together!