

BIOL 498T/632E Advanced Topics in Biology: Cellular Neuroscience 2011/4 • Thursdays 18:00-20:15 in CC-314

Instructor

Dr. Christopher Brett • SP 501.15 • ext. 3398 • cbrett@alcor.concordia.ca

Course Summary

The aim of this course is to familiarize students with current research in the field of cellular neuroscience. This course is divided into 4 sections: neural circuitry and brain genomics, neuronal structure and synaptic plasticity, neurotransmission, and prions and neurological disease. Each 3-week section begins with a primer lecture to introduce students to the subject, then students will present scientific articles related to the subject. Each student will present one article and is expected to participate in class discussions.

Class & Student Presentation Schedule 2012*

Week	Date	Section	Student presentations by
01	Jan 05	Introduction	overview & lecture
I. Neurotransmission			
02	Jan 12	I. Neurotransmission	primer lecture
03	Jan 19	I. Neurotransmission	Burdon, Del Vecchio, Martel, Patel (Divya), Tzavaris
04	Jan 26	I. Neurotransmission	Bernos, D'Asti, Marte, Pannu, Seddon
II. Neuronal Structure & Synaptic Plasticity			
05	Feb 02	II. Structure & Plasticity	primer lecture
06	Feb 09	II. Structure & Plasticity	Baistrocchi, Claude, Laverdure, Moumne, Sebak
07	Feb 16	II. Structure & Plasticity	Arion, Charbonneau-Berube, Hussain, Mokhtarian, Rafeh
08	Feb 23	NO CLASS – MID TERM BREAK	
---	Mar 01	Midterm Examination (Take-home) Due at 18:00, CC-314	
III. Neural Circuitry & Brain Genomics			
09	Mar 01	III. Circuits & Genomics	primer lecture
10	Mar 08	III. Circuits & Genomics	Yaksich, Trichas, Sivabalan, De Cicco, Guterman
11	Mar 15	III. Circuits & Genomics	Richard, Antonie, Chahinian, Gasse, Pounder
IV. Prions & Neurological Disease			
12	Mar 22	IV. Prions & Disease	primer lecture
13	Mar 29	IV. Prions & Disease	Patel, Ahmad-Khan, Cartile, Depres-Tremblay, Pham
14	Apr 05	IV. Prions & Disease	Khorasani, Mahvelati, Shiri, Pannu, Tebecherani
---	Apr 12	Final Examination (Take-Home) Due at 18:00, SP 501-15	

*Subject to change depending on enrollment

Office Hours

Office hours with Dr. Brett are held in SP 501.15 on Tuesdays at 16:00-17:30. Students presenting research articles in class on the following Thursday are encouraged to attend. If you wish to discuss the course outside of these hours and class time, please schedule an appointment in advance.

Assignment of Grades

- 20% Student presentation
- 30% Class participation: involvement in discussions and research summaries
- 20% Midterm examination: take-home format (due Mar 01, 2012)[†]
- 30% Final examination: take-home format (due Apr 12, 2012)

[†] Graduate students are expected to write a mock NSERC research grant application in place of the midterm examination (worth 20% of their total grade). Research topics must be approved by Dr. Brett before Feb 02, 2012 and the mock application is due in class on Mar 15, 2012.

Class Format

The course is divided into 4 sections; each covers an advanced topic in the field of cellular neuroscience. Each 3-class section will begin with one class that includes a 'primer' lecture to introduce students to the topic. Each of the following 2 classes will include a brief introduction (by the instructor), followed by 5 student presentations and a discussion (lead by the instructor). Students presenting research articles are expected to setup their digital presentations during the introduction (or, preferably, 10 minutes before class). The last class will end with a course summary and wrap-up lecture given by the instructor.

Student Presentations

Each student will give a 20-25 minute presentation on research articles selected by the instructor. Dates and subjects have been assigned to each student however a student may exchange an assignment with another student with the instructor's permission before Jan 12, 2012. In each section, research articles will be assigned to students in class after the lecture. These research articles (and related reading material) will be posted as pdf files on the Moodle course website on the day each section begins. Presentations must be in PowerPoint, Keynote or Adobe Acrobat format and must include (minimally): photos of the researchers, the background behind the research, all figures (maximum one figure per slide), and a conclusion. Students will present in the order listed in the Class Schedule (see above) and are expected to have their digital presentation ready for display at the beginning of class. Presentations will be scored according to 'Student Presentation Evaluation Form', and each presentation represents 20% of the student's final grade. Students who are not presenting are expected to read and discuss the research articles that will be presented in class.

Examinations

Exams are take-home format and will cover all material covered in class. The midterm exam is worth 20% of the final grade and covers Sections I and II. The midterm exam will be distributed after class on Feb 16, 2012 and collected at the beginning of class on Mar 01, 2012. The final exam is worth 30% of the final grade and covers all Sections (I-IV). The final exam will be distributed after class on Apr 05, 2012 and must be returned to Dr. Brett in his office (SP 501-15) no later than 18:00 on Apr 12, 2012.

Class Participation

To prepare for in-class discussions, students are expected to write – in their own words - a 1/4 page summary for each scientific article to be presented in class (1 page for 4 articles). Plagiarism will not be tolerated. Summaries for articles presented in class are due at the beginning of each class. This policy is in place to ensure students read the articles prior to class. Also, students will evaluate their classmate's presentations. Students will be expected to fill out a 'Student Presentation Evaluation Form' for each presentation in class and the completed forms must be given to the instructor at the end of class.

Recommended Textbook

- Neuroscience 4th Edition, Purves et al.

Other Reading

- Fundamental Neuroscience 3rd Edition, Squire et al.
- From Molecules to Networks An Introduction to Cellular and Molecular Neuroscience 2nd Edition, Byrne & Roberts
- Principles of Neural Science 4th Edition, Kandel et al
- Neuroscience Exploring The Brain 3rd Edition, Bear et al.
- Portraits of the Mind: Visualizing the Brain from Antiquity to the 21st Century (2010) Carl Schoonover
- The Brain That Changes Itself (2007) Norman Doidge
- Animals in Translation: Using the Mysteries of Autism to Decode Animal Behavior (2006) Temple Grandin & Catherine Johnson