

Term Information

Effective Term Spring 2016

General Information

Course Bulletin Listing/Subject Area Psychology
Fiscal Unit/Academic Org Psychology - D0766
College/Academic Group Arts and Sciences
Level/Career Graduate, Undergraduate
Course Number/Catalog 5622
Course Title The Development of Brain and Behavior
Transcript Abbreviation Devt Brain Behav
Course Description This course explores the process of brain development from conception through adulthood. The course will cover the basic processes of central nervous system differentiation, how the brain continues to change in infancy, childhood and adolescence, and how environmental variables and experiences shape brain development and program behavior throughout life, in human and animal models.
Semester Credit Hours/Units Fixed: 3

Offering Information

Length Of Course 14 Week, 7 Week, 4 Week (May Session), 12 Week (May + Summer)
Flexibly Scheduled Course Never
Does any section of this course have a distance education component? No
Grading Basis Letter Grade
Repeatable No
Course Components Lecture
Grade Roster Component Lecture
Credit Available by Exam No
Admission Condition Course No
Off Campus Never
Campus of Offering Columbus

Prerequisites and Exclusions

Prerequisites/Corequisites Psych 2220 and 2300; and either Psych 3313 or Neuro 3000
Exclusions

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code 42.0101
Subsidy Level Doctoral Course
Intended Rank Junior, Senior, Masters, Doctoral

Requirement/Elective Designation

The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes

- Students will learn the basic steps and mechanisms inducing brain differentiation
- Students will learn the brain changes that occur during infancy, childhood, and adolescence
- Students will learn the role of various factors, including genetics, hormones, stressful experiences, or other environmental perturbations in shaping brain development
- Students will learn how brain development correlates with behavioral development in humans and animal models
- Students will learn how to effectively read primary research articles and critique research studies in discussion
- Students will learn how to effectively present research findings to peers and lead discussion

Content Topic List

- Neural induction and segmentation
- Generation and differentiation of neurons
- Axon growth, guidance and target selection
- Synapse formation and refinement
- Behavioral development
- Prenatal programming of infant brain
- The infant brain
- Child brain development
- The adolescent brain
- Preconception programming of neural development
- Maternal regulation of embryonic development
- Epigenetics and brain development
- Sex differentiation and sex differences in brain development
- Childhood environment and brain circuit formation
- The immune system and CNS development
- Neurodevelopmental disorders
- Stress and the developing brain
- Brain changes associated with aging

Attachments

- Psychology Curriculum Map UPDATED 4-9-2015.xlsx: Updated Curriculum Map
(Other Supporting Documentation. Owner: Paulsen, Alisa Marie)
- Psych 5622 syllabus.docx: Syllabus
(Syllabus. Owner: Paulsen, Alisa Marie)
- Concurrence Letter Psych 5622.pdf: Concurrence Letter
(Concurrence. Owner: Paulsen, Alisa Marie)

Comments

COURSE REQUEST
5622 - Status: PENDING

Last Updated: Vankeerbergen, Bernadette
Chantal
05/20/2015

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Paulsen, Alisa Marie	05/12/2015 04:53 PM	Submitted for Approval
Approved	Givens, Bennet Stuart	05/19/2015 12:22 PM	Unit Approval
Approved	Haddad, Deborah Moore	05/19/2015 05:03 PM	College Approval
Pending Approval	Nolen, Dawn Vankeerbergen, Bernadette Chantal Hanlin, Deborah Kay Jenkins, Mary Ellen Bigler Hogle, Danielle Nicole	05/19/2015 05:03 PM	ASCCAO Approval

Course: Psych 5622: The Development of Brain and Behavior

Semester: Spring 2016

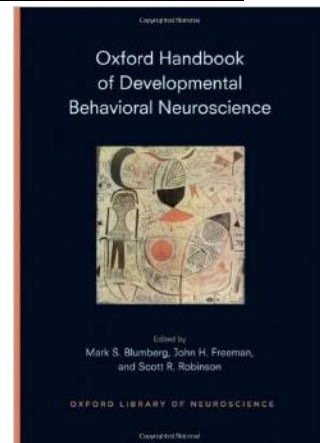
Time: Tuesdays/Thursdays; 11:05am-12:30pm

Instructor: Dr. Kathryn Lenz
Assistant Professor, Departments of Psychology & Neuroscience
Office: Psychology Building, Room 45
Phone: 614-292-8565
Email: lenz.56@osu.edu

Course description: This course explores the process of brain development from a systems and circuits neuroscience perspective, beginning at conception and proceeding to adulthood by focusing on human and rodent models. The first 4 weeks of the course will cover the basic processes of central nervous system differentiation and patterning that occur post-conception in mammals. The next 5 weeks will focus on how the brain continues to change throughout infancy, childhood and adolescence, in both humans and rodent models. The last 5 weeks of the course will focus on how environmental variables and experiences prior to conception and during the embryonic period, infancy and childhood shape brain development and program behavior throughout life, including aging and neuropsychiatric disorders with developmental origins.

Textbook, reading, and other resources: Our textbook will be **Oxford Handbook of Developmental Behavioral Neuroscience, Oxford Library of Science, by Mark Blumberg, John Freeman, and Scott Robinson (2009).**

This *textbook is optional reading* and chapters will be assigned to line up with weekly lecture topics. A copy of the course textbook will be on reserve at the Thompson library. Additional primary and review research articles will be assigned throughout the semester and distributed electronically. **Either one book chapter or one review article will be assigned per week for optional background reading (which will be covered in my lecture).** In addition, 1-2 primary research articles will be assigned for every class period beginning in week 5, and students will be responsible for presenting the primary research articles in class every Thursday. **Primary research articles are required reading.**



The course website can be found at www.carmen.osu.edu. This site is where all course materials and information are made available including the lecture files and primary research articles. A study guide will be provided before each exam.

Exams: There will be **three midterm exams** in this course, which will consist of 50 multiple choice, true/false, matching, and fill in the blank, and short answer essay

questions. Midterms 1 and 2 will be taken during regular class times throughout the semester and midterm 3 will be held during the scheduled final exam period. These exams will include the material covered since the last exam. **Each exam will be worth 100 points.**

Presentation: Each student will be responsible for helping lead the discussion of a primary research article assigned for the entire class to read. This will include a 15-minute Powerpoint presentation of the background, methods, results, and implications of the study. Student leaders will also be responsible for answering any questions about the study that arise, and leading a structured group discussion of the research. **This presentation will be worth 100 points.**

Discussion questions: All students are expected to attend class and participate in the discussion. Students will be required to choose one of the research articles presented every week and generate a discussion question for that article to contribute each week. These will be turned in to the student leading discussion for that article *on Tuesdays for use in discussion on Thursdays* for use during their discussion period. All students are expected to participate in the discussion of each research article. Weekly discussion questions are worth **5 points per week for weeks 5-14 of class following our initial lecture-based overview. This is 10 weeks, equaling 50 points total.**

Attendance and Participation: This course will not work if students do not attend regularly and actively participate in discussion. Therefore, attendance is expected and will be taken daily. Attending class and participating in discussion is worth **2 points per day of lecture and discussion (25 days total) or 50 points total.** *You will receive 1 point just for showing up and another 1 point for participating in discussion.* Only OSU-approved absences and documented illness will be accepted as excuses for missing class.

Grading: Grades will be based on points earned out of a possible **500 points.** This will include your scores from:

Midterm exams: (300 points)

Presentation: (100 points)

Attendance/participation: (50 points)

Generation of discussion questions: (50 points).

Students who are doing poorly in the course should drop it or withdraw (taking a grade of W) before the OSU deadlines for those actions. The grades for each exam will be curved based on the highest performing student for each exam. *For example, if the highest grade on an exam is 94/100; then every student will get 6 points added to their raw score.* The scores posted on Carmen will reflect your CURVED SCORE. Because

each individual exam will be curved and extra credit will be offered, no additional curve or 'rounding up' will occur.

The standard OSU grading scale will be used to assign final grades:

A	93-100%	(465+ points)
A-	90-92.9%	(450-464 points)
B+	87-89.9%	(435-449 points)
B	83-86.9%	(415-434 points)
B-	80-82.9%	(400-414 points)
C+	77-79.9%	(385-399 points)
C	73-76.9%	(365-384 points)
C-	70-72.9%	(350-364 points)
D+	67-69.9%	(335-349 points)
D	60-66.9%	(300-334 points)
E	0-59.9%	(0-299 points)

Make-up Policy: Students are expected to take their exams at the times and dates specified on the syllabus. **Makeup exams will only offered for university-approved excused absences.** If an unavoidable conflict arises, you should notify me via email before the scheduled start of the exam, but no later than the next scheduled class meeting. Students may be requested to provide *verifiable* documentation of the absence (a doctor's note, an obituary, or letter from university athletics department). If the absence is valid (i.e., a university approved reason with sufficient documentation) then a make-up exam will be scheduled within one week of the scheduled exam with no grade penalty. If the absence is NOT considered valid (i.e., unapproved reason or insufficient documentation) then the missed exam will be assigned a grade of 0.

Office Hours: Monday and Thursdays from 10:00am-11:00am, or by appointment. I'm happy to meet with you outside of office hours if you schedule it in advance, but please no unscheduled drop-ins outside of office hours.

Disabilities Statement: Students with disabilities that have been certified by the Office for Disability Services (ODS) will be appropriately accommodated, and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; <http://www.ods.ohio-state.edu/>.

Academic Misconduct: All students at the Ohio State University are bound by the Code of Student Conduct (see http://studentaffairs.osu.edu/pdfs/csc_12-31-07.pdf). Violations of the code in this class will be dealt with according to the procedures detailed in that code. Any alleged cases of misconduct will be referred to the Committee on Academic Misconduct. It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with

examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct. For advice on how to stay out of academic trouble, see Ten Suggestions for Preserving Academic Integrity at <http://oaa.osu.edu/coam/ten-suggestions.html>

Daily Schedule: *(Any schedule changes will be announced in class and Carmen)*

Week	Date	Class	Topic Covered in Class	Chapter
1	Tues	1	Introduction; Neural induction and segmentation	4
	Thurs	2	Generation of neurons and cellular differentiation	4
2	Tues	3	Axon growth, guidance and target selection	Review article
	Thurs	4	Death and survival of neurons	5
3	Tues	5	Synapse formation	Review article
	Thurs	6	Activity dependent synapse refinement	7
4	Tues	7	Development of CNS electrophysiology	8
	Thurs	8	Wrap up and review	
5	Tues	9	EXAM 1	
	Thurs	10	Neocortical development	19
6	Tues	11	Prenatal programming of infant brain	Review Article
	Thurs	12	Child brain development I: Memory	28, 30
7	Tues	13	Child brain development II: Language	35
	Thurs	14	The adolescent brain I	Review Article
8	Tues	15	The adolescent brain II	Review Article
	Thurs	16	Preconception programming of neural development	Review Article
9	Tues	17	Maternal regulation of embryonic development	16
	Thurs	18	EXAM 2	
----			SPRING BREAK: NO CLASS	
10	Tues	19	Epigenetics and brain development I	Review Article
	Thurs	20	Epigenetics and brain development II	Review Article
11	Tues	21	Sex differentiation	21
	Thurs	22	Sex differences in brain development	Review Article
12	Tues	23	Stress and the developing brain	Review Article
	Thurs	24	Childhood environment and brain circuit formation	Review Article
13	Tues	25	The immune system and CNS development	Review Article
	Thurs	26	Neurodevelopmental disorders: Autism and ADHD	Review Article
14	Tues	27	Neurodevelopmental disorders: Schizophrenia and others	Review Article
	Thurs	28	Brain changes associated with aging; Wrap up	Review Article
15			EXAM 3 (during scheduled final period)	

Department of
Neuroscience

Randy J. Nelson, Ph.D.
Distinguished University Professor
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Brumbaugh Chair in Brain
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Professor and Chair
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11 May 2015

Dr. John Bruno, Professor
Director, Neuroscience Undergraduate Program
Department of Psychology
The Ohio State University
Columbus, OH 43210

Dear John:

I am writing to provide concurrence for Dr. Lenz's Developmental Neuroscience course (Psych 5622). After examining both of the course descriptions, it does not appear to replicate NeuroSci H5790 and may indeed serve as a feeder course. I agree with Drs. Lenz, Campbell, Beattie, Jontes, Bishop, and you that this course is urgently needed. Dr. Lenz thus has my strongest support for this new course. Please contact me or Georgia Bishop for any additional information.

Sincerely,

Randy J. Nelson,
Distinguished University Professor
Professor and Chair, Department of Neuroscience

Cc: Drs. C. Campbell, G. Bishop