



Zoology 625: Development of the Nervous System

2 credits

<https://canvas.wisc.edu/courses/89232>

Course Designation and Attributes:

Level - Intermediate or Advanced

Breadth - Biological Sciences, counts toward the Natural Sciences requirement

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Thematic Group - Neuroscience

Meeting Time and Location: Monday & Wednesday 9:55am – 10:45am; 168 Noland Hall

Instructional Mode & Description:

All face-to-face.

Monday classes: student led discussion of literature articles that pertain to the previous Wednesday's lecture topic

Wednesday classes: standard lecture format, led by Prof. Wolman, on topic of neural development

See pg. 3 for more specific details

Credit Hours met by course: This class meets for two 50-minute class period each week over the spring semester and carries the expectation that students will work on course learning activities (reading, writing, problem sets, studying, etc) for about 2 hours out of classroom for every class period. This syllabus includes additional information about meeting times and expectations for student work.

Instructor and TA:

Professor: Marc Wolman, Ph.D.

213 Zoology Research Building

mawolman@wisc.edu

Office Hours: Email for appointment

TA: Irina Sedykh

131 Zoology Research Building

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Course Description: Survey of the principles guiding the development of the nervous system.

Course will cover descriptive and experimental analyses of developmental mechanisms underlying the formation of both vertebrate and invertebrate nervous systems.

Requisites:

One intermediate level course in biology; background in development & neurobiology recommended

Course Learning Outcomes:

Grading:

Class presentation	60 points
Class question answers	24 points (2 points/week, 12 total)
Questioner question	16 points
Midterm	100 points (Weeks 1-7 material, 5 short answer Qs)
Final	100 points (Weeks 8-14 material, 5 short answer Qs)
Total	300 points

Grade scale (%)

A: 90-100; AB:88-89.99; B: 80-87.99; BC: 78-79.99; C: 70-77.99; D: 60-69.99; F: <59.99

Readings

Students will read primary literature articles for each Monday student led class. As described below, reading the assigned article prior to Monday's class is required.

Monday Student Led Classes

Each Monday, we will discuss original research articles pertaining to the previous Wednesday's lecture topic. 3-4 students will present the article and lead the class. All students must read the article prior to Monday's class, even if you are not a presenter. At the beginning of Monday's class, all students (except presenters) will hand in a short essay (usually 4-5 sentences), which answers the "class question" about the assigned article. Late or emailed essays will not be accepted.

The 3-4 presenters will consult as a group with Prof. Wolman during the week before their Monday presentation. The presenting students are responsible for arranging this group pre-presentation meeting (~2 hours), which can occur between 8am-5pm on Thursday or Friday. Presenters are also responsible for formulating the class question, which will be posted to Learn@UW the Friday before the Monday presentation. Lastly, the presenters are expected to send Prof. Wolman a PDF of their slides by 5pm the Sunday before their Monday presentation.

For each Monday class, 6 students will act as "questioners". Each questioner will write a question and email it to Prof. Wolman by 5pm on Sunday (4 pts). Each questioner will need to ask their question during Monday's class (4 pts). All students will act as a questioner twice during the semester.

****See schedule below re: duties and due dates for each Monday paper discussion****

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
week before presentation	paper posted to Learn@UW		Lecture re: paper topic	<u>Presenters</u> : meet with Prof & TA Thurs or Fri (8-5) Class Q posted to Learn@UW by 5pm Fri			<u>Presenters</u> : send Prof. PDF of slides by 5pm; <u>Questioners</u> : send Prof. a question by 5pm
week OF presentation	<u>Presenters</u> : present paper <u>ALL others</u> : hand in answer to class Q						

Presenter and questioner slots will be determined during the first week of class via an online signup sheet. If you have a strong preference for a particular date, sign up early!

Grading of Presentations – each student will be graded independently

40 pts: Class presentation that demonstrates an understanding of the paper and ability to engage the class in discussion. I realize students vary in their comfort in public speaking and that the papers presented vary in difficulty - I adjust my expectations accordingly. Presenting students must be ready

to start on time, or you will lose up to 10 points (come 15 minutes early on your presentation day!). The presentation (a PDF version) must be emailed or shared via BOX by a member of your group to Prof. Wolman by 5pm the Sunday before your presentation for full credit.

10 pts: Pre-presentation group consultation with instructor the week prior to your presentation. The group meeting includes all presenters. At this meeting, it should be clear that you have read the assigned paper at least once – we'll send out a guide to help you prepare. Come prepared to discuss the introduction, methods, results and figures, and discussion. Come with questions and comments!

5 pts: Active participation with your group in formulating the class question. The process can begin during the pre-presentation meeting. Good class questions are not “tricky” – they should be straightforward and assess whether students have read the paper before Monday's class. The class question is due to Prof. Wolman (via email) by 5pm the Friday before your Monday presentation.

5 pts: Discretionary points for citizenship. By this we mean: timely communications with your group to set up group meetings and work on the class question, punctual attendance to pre-presentation meeting with professor/TA, and being a team player.

Special remarks on plagiarism and citing research

When answering the class question, do not quote verbatim from the paper (or any other source). This is plagiarism and is unacceptable. It is acceptable to cite a passage in quotations if you give credit, but we would prefer that you put your answer in your own words. When preparing your presentation, reference any figures, tables, etc. that you insert into your presentation from other sources.

Exams

There are 2 exams (dates/times below). Exam 1 covers material from Jan 29-Mar 12. Exam 2 covers material from Mar 14-May 2. Each exam will be 5 short answer questions addressing topics discussed in the lectures and paper discussions. Exams will be open notes.

Schedule

Wed, Jan 24: Course logistics, Intro to Nervous System, Neural induction

Mon, Jan 29: Paper presentation- Neural induction (*Prof. Wolman*)

Wed, Jan 31: Lecture- Axial patterning & morphogenesis

Mon, Feb 5: Paper presentation- Axial patterning & morphogenesis (*group 1*)

Wed, Feb 7: Lecture - Patterning brain/spinal cord

Mon, Feb 12: Paper presentation- Patterning brain/spinal cord (*group 2*)

Wed, Feb 14: Lecture - Neurogenesis and gliogenesis

Mon, Feb 19: Paper presentation- Neurogenesis and gliogenesis (*group 3*)

Wed, Feb 21: Lecture - Neuronal migration

Mon, Feb 26: Paper presentation- Neuronal migration (*group 4*)

Wed, Feb 28: Lecture - Axon guidance and growth cones 1

Mon, Mar 5: Paper presentation- Axon guidance and growth cones 1 (*group 5*)

Wed, Mar 7: Lecture - Axon guidance and growth cones 2

Mon, Mar 12: Paper presentation- Axon guidance and growth cones 2 (*group 6*)

Tues, Mar 13: EXAM 1, 7-9pm - covers material from Jan 29-Mar 12

Wed, Mar 14: Lecture - Axon guidance 3 & Dendritogenesis

Mon, Mar 19: Paper presentation- Dendritogenesis (*group 7*)

Wed, Mar 21: Lecture - Synaptogenesis

Spring break Mar 24- Apr 1

Mon, Apr 2: Paper presentation- Dendritogenesis and Synaptogenesis (*group 8*)

Wed, Apr 4: Lecture – Topographic Mapping

Mon, Apr 9: Paper presentation- Topographic Mapping (*group 9*)

Wed, Apr 11: Lecture – Neuromuscular junctions

Mon, Apr 16: Paper presentation- Neuromuscular junctions (*group 10*)

Wed, Apr 18: Lecture – Myelination

Mon, Apr 23: Paper presentation- Myelination (*group 11*)

Wed, Apr 25: Lecture - Astrocytes

Mon, Apr 30: Paper presentation- Astrocytes (*group 12*)

Wed, May 2: Lecture – Neuron Regeneration

Fri, May 11: EXAM 2, 12:25pm – 2:25pm - covers material from Mar 21-May 2