

# **Movement Neuroscience** **David E. Vaillancourt, PhD**

**Time and Place:** T Period 4 (10:40-11:25), R Period 4-5 (10:40-12:35)

**Text Book: Neuroscience Fifth Edition** - Editor: Purves et al;

**Tutis Vilis Web Page:** <http://www.physpharm.fmd.uwo.ca/undergrad/sensesweb/>

**Instructor Contact:** email: [vcourt@ufl.edu](mailto:vcourt@ufl.edu), office: 170I FL-GYM, phone: 4-1770

## **Course objectives:**

The course provides an in depth overview and treatment of the sensory and motor systems of the nervous system responsible for regulating movement. Electric signaling of nerve cells will be covered as they pertain to movement. Sensory systems including somatosensory, proprioception, pain, visual, and auditory systems, and how these systems relate to movement, are discussed considering their fundamental roles in motor control. Discussion of each sensory system focuses on peripheral anatomy and physiology, as well as and central brain physiology for processing each type of sensory signal. A particular emphasis lies in understanding how these sensory signals are integrated and relayed to motor systems. Lower motor neurons, upper motor neurons, cortical physiology of movements, basal ganglia physiology, cerebellar physiology, posture, and eye movements are all discussed. Speech and language motor control, sleep physiology, and cognition and memory, are addressed as they relate to movement. In support of these topics, functional anatomy of the spinal cord, brain stem, and brain is covered.

## **Evaluation:**

Exam 1 (25%)

Exam 2 (25%)

Exam 3 (25%) (Not-cumulative)

Quizzes (25%)

\*\*There will be eight quizzes throughout the semester

\*\*\*All exams include True and False, Multiple Choice.

## **Attendance:**

It is expected that students will attend class regularly. Quizzes are meant to maintain attendance each week. Quizzes will be taken from lecture notes.

## **Grades:**

Grading scale will be consistent with the scale below.

<http://www.isis.ufl.edu/minusgrades.html>

A (4.0)	93 – 100%
A- (3.67)	90 – 92.99%
B+(3.33)	87 – 89.99%
B (3.00)	83 – 86.99%
B- (2.67)	80 – 82.99%
C+(2.33)	77 – 79.99%
C (2.00)	73 – 76.99%
C- (1.67)	70 – 72.99%
D+(1.33)	67 – 69.99%
D (1.00)	63 – 66.99%
D- (0.67)	60 – 62.99%

E (0.00)      less than 60%

**Policy for Make-up exams and other work:**

Make-up exams and other work can be requested given that there is a medical, family, or other emergency that deems the need for a make-up. Requirements for class attendance and make-up exams, assignments, and other work are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

**Policy on disabilities:**

The course will provide accommodations to students with disabilities. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

**University Policy on Accommodating Students with Disabilities:** Students requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc/>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

**University Policy on Academic Misconduct:** As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: *“We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.”* You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: *“On my honor, I have neither given nor received unauthorized aid in doing this assignment.”* It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/SCCR/honorcodes/honorcode.php>.

**Getting Help:**

For issues with technical difficulties for E-learning in Sakai, please contact the UF Help Desk at:

- [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu)
- (352) 392-HELP - select option 2
- <https://lss.at.ufl.edu/help.shtml>

\*\* Any requests for make-ups due to technical issues MUST be accompanied by the ticket number received from LSS when the problem was reported to them. The ticket number will document the time and date of

the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

Other resources are available at <http://www.distance.ufl.edu/getting-help> for:

- Counseling and Wellness resources
- Disability resources
- Resources for handling student concerns and complaints
- Library Help Desk support

Should you have any complaints with your experience in this course please visit <http://www.distance.ufl.edu/student-complaints> to submit a complaint.

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

### **Course Evaluations:**

Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu>.

### **Weekly Outline:**

#### Week 1

8/23 Chapter 1 – The Organization of the System - Studying the Nervous System

#### Week 2

8/28 Chapter 2 – Electrical Signals of Nerve Cells

8/30 Chapter 9 The Somatic Sensory System Part 1

Vilis Lecture on Touch 7

#### Week 3

9/4 Chapter 9 The Somatic Sensory System Part 2

9/6 Chapter 10 Pain

Quiz 1

#### Week 4

9/11 Dystonia ThinkTank (8am-12pm)

9/13 Chapter 11 Vision: Eye Part 1; Chapter 11 Vision: Eye Part 2;  
Quiz 2

Week 5

9/18 Chapter 11 Vision: Eye Part 3  
9/20 Exam 1

Week 6

9/25 Chapter 12 Central Visual Pathways Part 1  
9/27 Chapter 12 Central Visual Pathways Part 2

Week 7

10/2 Chapter 13 Auditory System Part 1  
10/4 Chapter 13 Auditory System Part 2  
Quiz 3

Week 8

10/9 Chapter 14 Vestibular System Part 1  
10/11 Quiz 4

Week 9

10/16 Chapter 16 Lower Motor Neuron Circuits and Motor Control Part 1  
10/18 Chapter 16 Lower Motor Neuron Circuits and Motor Control Part 2

Week 10

10/24 Quiz 5; Review Q  
10/26 Exam 2

Week 11

10/30 Chapter 17 Upper Motor Neuron Control of Brainstem and Spinal Cord Part 1  
11/1 Chapter 17 Upper Motor Neuron Control of Brainstem and Spinal Cord Part 2

Week 12

11/6 Chapter 18 Basal Ganglia Part 1  
11/8 Chapter 18 Basal Ganglia Part 2  
Quiz 6

Week 13

11/13 Chapter 19 Cerebellum  
11/15 Ch 20 Eye movements  
Quiz 7

Week 14

11/21 No class  
11/23 Thanksgiving

Week 15

11/27 Ch 26 Association Cortex and Cognition

11/29 Ch 27 Speech and Language  
Quiz 8

Week 16

12/4 Oliver Sachs Day

\*\*Exam 3 will occur during Final Exam time scheduled for this course.