Instructor Name: Zheng Wang, Ph.D.
Room Number: 2164
Phone Number: 352-273-6450
Email Address: zheng.wang@phhp.ufl.edu
Office Hours: by appointment
Teaching Assistants: N/A
Preferred Course Communications (e.g. email, office phone): email

Prerequisites This course is open to all Rehabilitation Science PhD students. As such, admission to the RSD program is a prerequisite. Graduate students from other programs are encouraged to register with prior permission of the instructor.

PURPOSE AND OUTCOME
Course Overview
This course defines fundamental concepts and theories related to motor control and movement science and discusses these concepts in the context of neurorehabilitation. The course also emphasizes atypical motor control functions and underlying neurophysiological mechanisms following disease/injury. Students will practice scientific writing and presentation skills through weekly in-class presentations.

Relation to Program Outcomes
This course relates to the following student learning objectives in the RSD program:
1. Develop critical reading, thinking and scientific communication skills
2. Learn how to present research data to a diverse audience through written formats and academic presentations
3. Learn how to receive and answer research questions through academic presentations
4. Teach students how to critically evaluate research theories, methodologies, findings and data interpretations
5. Teach students how to evaluate different clinical assessments, evaluations, and interventions in the context of rehabilitation science

Course Objectives and/or Goals
Following completion of the course, the student will be able to:
1. Discuss fundamental concepts and theories related to motor control and movement coordination;
2. Utilize foundational knowledge of motor control to evaluate atypical behavioral and physical deficits observed in neurodegenerative and neurodevelopmental conditions;
3. Propose areas of further studies in basic science and clinical & translational research to examine gaps in our current knowledge relative to disease diagnosis, clinical evaluations and interventions;
4. Communicate scientific research and activities through written formats and academic presentations.

**Instructional Methods**

This course will utilize a seminar format. All students will read directed articles each week before the class. Two students will be assigned for PPT presentations of the readings. These students will create PPT presentations which provide detailed descriptions of the readings before the class. They will also create three questions for each assigned article and disseminate the questions to the rest of the class no later than each **Tuesday**. They will present their PPT slides and lead the discussion during the class. The rest of the students will participate in the discussion related to these readings and contribute their insights to those questions sent by the speaker.

Required: directed readings (see below)

Optional:

**DESCRIPTION OF COURSE CONTENT**

The first ~ 1/3 of the course will be covering foundational knowledge about motor control and movement coordination. This includes theories of how movement is controlled and basic discussions of central and peripheral nervous system properties. The remainder of the course will focus on specific motor behaviors/outputs and their control in health and disease states. Each of these units will review the current understanding of motor control of a particular system in health, and then in a specific disease situation.

**Topical Outline/Course Schedule**

<table>
<thead>
<tr>
<th>Week (Date)</th>
<th>Topic(s)</th>
<th>Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (1/9)</td>
<td>Introduction to the course</td>
<td><strong>Lecture:</strong> Overview of Course Syllabus (Q &amp; A) Overview of Motor Control Theories</td>
</tr>
<tr>
<td>2 (1/16)</td>
<td>Theories of motor control: Dynamic systems approach</td>
<td>Leader: Zheng Wang</td>
</tr>
<tr>
<td>Week (Date)</td>
<td>Topic(s)</td>
<td>Readings</td>
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<td>------------</td>
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</tbody>
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| 3 (1/23)   | Theories of motor control: Internal Model  
| 4 (1/30)   | Theories of motor control: Reflexes vs. Voluntary control  
| 5 (2/6)    | Theories of hierarchical control of movement and motor programming  
| 6 (2/13)   | Postural control  
Disease: Aging/PD  
| 7 (2/20)   | Locomotion / gait in health and disease  
Disease: Stroke  
Leaders: David Clark | TBD  
Articles from last year include:  
<table>
<thead>
<tr>
<th>Week (Date)</th>
<th>Topic(s)</th>
<th>Readings</th>
</tr>
</thead>
</table>
| **8** (2/27) | Mid-term | 1. Pick one of the topics covered in weeks 1-7 and discuss how it relates to your primary research interest.  
2. The presentation shall include:  
   - Background (Specific research questions and hypotheses);  
   - Significance;  
   - Approach & Method;  
   - Preliminary Data (Optional)  
   - Relevance (i.e., How this course relates to your research or contributes to your research studies)  
3. At least 10 slides (~15 min presentation)  
4. Save the file to pdf and Name file: **RSD6710_2020Spring_Mid_LastName**  
**Due date:** Upload the PPT slides to Canvas on **2/27** before midnight |
| **9** (3/5) | Grasping and gripping in health and disease  
Disease: ASD  
| **10** (3/12) | Reaching in health and disease  
Disease: ASD  
<table>
<thead>
<tr>
<th>Week (Date)</th>
<th>Topic(s)</th>
<th>Readings</th>
</tr>
</thead>
</table>
| 12 (3/26)  | Spontaneous eye blinks  
Disease: ASD  
| 13 (4/2)   | Breathing and coughing  
Disease: TBD  
Leader: Paul Davenport | TBD |
| 14 (4/9)   | Integrative motor function: motor control of driving in health and disease  
Disease: Aging  
Leader: Sherrilene Classen's team | TBD  
UF Smart House visit |
| 15 (4/16)  | Motor control and SCI -  
Disease: Spinal cord injury  
Leader: Emily Fox | TBD |
| 16 (4/23)  | Reading day |
Final Exam:
Student presentations based on Weeks 1-15.
Assignment: create a research statement as follows (see an example on Canvas)

1. Pick one of the topics covered in weeks 2-15 and discuss how it relates to your primary research interest.
2. The research statement shall include:
   - Research focus;
   - Research Project 1
   - Research Project 2
3. Potential problems, alternative strategies
4. Requirement:
   - 1-2 pages; Margins: Narrow
   - Font: Arial; Font size: 11;
   - Save the file to pdf;
   - Name the file: RSD6710_2020Spring_Final_LastName

Due date: Upload the PPT slides to Canvas on 4/30 before midnight

For technical support for this class, please contact the UF Help Desk at:
- Learning-support@ufl.edu
- (352) 392-HELP - select option 2
- https://lss.at.ufl.edu/help.shtml

ACADEMIC REQUIREMENTS AND GRADING
Grading
The grade for the course will be calculated based on the following criteria:
1. Presentation of directed reading (25%): Each student will present 3 original research articles to the class during the semester. Each paper will be worth 8.3% of the grade. The student will prepare a 30-minute presentation. The presentation needs to include: i) a general introduction (background) of the topic being discussed; ii) a statement on the goal(s) and central question(s) of the paper; iii) a critical evaluation of the experimental techniques/methodologies presented in the paper; iv) a clear explanation of the figures presented in the paper; v) an explanation as to how the data addressed or did not address the hypotheses/goals of the paper; vi) an overview of the strengths and weaknesses of the study; vii) a discussion of the scientific implications of the work; viii) a discussion as to whether the interpretations/conclusions were justified based on the data/results, and; ix) a final evaluation of the paper. The student will upload his/her ppt slides on Canvas for grading (100 points of each ppt file).

2. Questions distributed by the presenter (25%): Each week, the student who presents will distribute at least 3 questions on Canvas (100 points). The questions need to be directly related to the assigned readings.
3. **In class discussion (25%)**: Approximately 10-20 minutes will be dedicated to discussing each selected article. Each student must contribute a question/discussion item related to the research article being presented (100 points).

4. **Mid-term PPT presentation and final written exam (25%)**:  
Mid-term PPT presentation (100 points) will be evaluated based on the following criteria:  
- **Topic**: the topic shall be related to the student's research projects. Topics will be reviewed and discussed with the instructor to ensure they are suitable for the students’ backgrounds and research experience.  
- **The content of the presentation**:  
  - Background (i.e., research focus/interest)  
  - Significance (i.e., the impact of the proposed study; how this proposed study significantly contributes to our current understanding of rehabilitation science)  
  - Research Questions & Hypotheses (detailed explanation of your research questions and hypotheses)  
  - Approach & Method (detailed explanation of the approaches/methodologies that will be used in this proposed study)  
  - Preliminary Data (Optional)  
- **Relevance** (i.e., How this course relates to your research projects? How to integrate the knowledge you’ve learned to your research studies)  
- **Presentation skills**

Final written exam (100 points) is a written research statement which students will prepare at home and upload to Canvas before the due date. Students shall pick up at least one of the topics covered in weeks 2-15 and discuss how it relates to their primary research interest. A research statement can be a summary of research achievements (for senior graduate students) and a proposal for upcoming research (for both junior and senior graduate students). It often includes both current aims and findings, and future goals. An example of the research statement is available for students in Canvas to use as a reference.

The research statement will be evaluated based on the following criteria:  
- **Topic**: the topic shall be related to the student’s research studies/projects as well as the course topics  
- **The content of the presentation shall include**:  
  - Background (i.e., an introduction of the research focus)  
  - Significance (i.e., a statement re the impact of the proposed study; how this proposed study significantly contributes to our current understanding of the selected topic)  
  - Research Questions & Hypotheses (i.e., specific research questions that the proposed studies intend to address and hypotheses related to these questions)  
  - Approach & Method (detailed explanation of approaches/methodologies you will use for this proposed study)  
  - Preliminary Data (Optional)  
  - Potential problems and alternative strategies  
- **Relevance**  
- **The research statement needs to be well-written to receive the full points**

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<thead>
<tr>
<th>Requirement</th>
<th>Due date</th>
<th>% of final grade</th>
</tr>
</thead>
</table>
Presentation of directed reading | Various | 25% (5 papers worth 5% each)
---|---|---
Questions distributed by the presenter | Various | 25%
---|---|---
In class discussion | Weekly | 25%
---|---|---
Mid-term PPT presentation | Various | 25% (12.5% each)
---|---|---
Final Research Statement | 05/02/19 | 25%

Point system used (i.e., how do course points translate into letter grades).  
**Example:**

<table>
<thead>
<tr>
<th>Points earned</th>
<th>93-100</th>
<th>90-92</th>
<th>87-89</th>
<th>83-86</th>
<th>80-82</th>
<th>77-79</th>
<th>73-76</th>
<th>70-72</th>
<th>67-69</th>
<th>63-66</th>
<th>60-62</th>
<th>Below 60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter Grade</td>
<td>A</td>
<td>A-</td>
<td>B+</td>
<td>B</td>
<td>B-</td>
<td>C+</td>
<td>C</td>
<td>C-</td>
<td>D+</td>
<td>D</td>
<td>D-</td>
<td>E</td>
</tr>
<tr>
<td>Grade Points</td>
<td>4.0</td>
<td>3.67</td>
<td>3.33</td>
<td>3.0</td>
<td>2.67</td>
<td>2.33</td>
<td>2.0</td>
<td>1.67</td>
<td>1.33</td>
<td>1.0</td>
<td>0.67</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Please be aware that a C- is not an acceptable grade for graduate students. The GPA for graduate students must be 3.0. based on all 5000 level courses and above to graduate. A grade of C counts toward a graduate degree only if a sufficient number of credits in courses numbered 5000 or higher have been earned with a B+ or higher.

More information on UF grading policy may be found at:  
http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades

**Exam Policy**

**Policy Related to Make up Exams or Other Work**

Excused absences will be handled in accordance with UF policy for excused absences.

For other cases, if you are unable to present on your scheduled day, it is your responsibility to inform both course director and lead speakers by email and make arrangement to switch with another student. If you are unable to make proper arrangement before the class, you still need to prepare for the ppt presentation as well as schedule an individual meeting with the instructor to present your slides to receive the grade. Coordination of any make-up work with instructor is encouraged to take place in advance whenever possible and must be approved by the instructor.

**Policy Related to Required Class Attendance**

Attendance and participation in group discussions is mandatory and will determine successful completion of this course. Please note all faculty are bound by the UF policy for excused absences.
Excused absences must be consistent with university policies in the Graduate Catalog (http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance) and require appropriate documentation. Additional information can be found here: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

Policy Related to Guests Attending Class:

Only registered students are permitted to attend class. However, we recognize that students who are caretakers may face occasional unexpected challenges creating attendance barriers. Therefore, by exception, a department chair or his or her designee (e.g., instructors) may grant a student permission to bring a guest(s) for a total of two class sessions per semester. This is two sessions total across all courses. No further extensions will be granted. Please note that guests are not permitted to attend either cadaver or wet labs. Students are responsible for course material regardless of attendance. For additional information, please review the Classroom Guests of Students policy in its entirety. Link to full policy: http://facstaff.phhp.ufl.edu/services/resourceguide/getstarted.htm

STUDENT EXPECTATIONS, ROLES, AND OPPORTUNITIES FOR INPUT

Expectations Regarding Course Behavior
Professional behavior is exemplified by:
1. Attendance to all classes
2. Not using electronic devices for personal use during class
3. Timeliness
4. Respectful and polite interaction with peers and instructors
5. Active learning as demonstrated by questions and discussion

Communication Guidelines

Laptop / tablet policy
Please bring a laptop or tablet to class with a copy of your assignment loaded on it. Please do not use these devices for personal internet use (e.g. email) during class.

Phones
Professionalism is expected. Please do not use these devices for personal internet use (e.g. email) during class.

Academic Integrity

Students are expected to act in accordance with the University of Florida policy on academic integrity. 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 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 additional information regarding Academic Integrity, please see Student Conduct and Honor Code or the Graduate Student Website for additional details:
https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/
http://gradschool.ufl.edu/students/introduction.html

Please remember cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior.

Online Faculty Course Evaluation Process
Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations 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/results/.

SUPPORT SERVICES

Accommodations for Students with Disabilities
If you require classroom accommodation because of a disability, it is strongly recommended you register with the Dean of Students Office http://www.dso.ufl.edu within the first week of class or as soon as you believe you might be eligible for accommodations. The Dean of Students Office will provide documentation of accommodations to you, which you must then give to me as the instructor of the course to receive accommodations. Please do this as soon as possible after you receive the letter. Students with disabilities should follow this procedure as early as possible in the semester. The College is committed to providing reasonable accommodations to assist students in their coursework.

Counseling and Student Health
Students sometimes experience stress from academic expectations and/or personal and interpersonal issues that may interfere with their academic performance. If you find yourself facing issues that have the potential to or are already negatively affecting your coursework, you are encouraged to talk with an instructor and/or seek help through University resources available to you.

- The Counseling and Wellness Center 352-392-1575 offers a variety of support services such as psychological assessment and intervention and assistance for math and test anxiety. Visit their web site for more information: http://www.counseling.ufl.edu. On line and in person assistance is available.
- You Matter We Care website: http://www.umatter.ufl.edu/. If you are feeling overwhelmed or stressed, you can reach out for help through the You Matter We Care website, which is staffed by Dean of Students and Counseling Center personnel.
• The Student Health Care Center at Shands is a satellite clinic of the main Student Health Care Center located on Fletcher Drive on campus. Student Health at Shands offers a variety of clinical services. The clinic is located on the second floor of the Dental Tower in the Health Science Center. For more information, contact the clinic at 392-0627 or check out the web site at: https://shcc.ufl.edu/

• Crisis intervention is always available 24/7 from:
  Alachua County Crisis Center:
  (352) 264-6789
  http://www.alachuacounty.us/DEPTS/CSS/CRISIS CENTER/Pages/Crisis Center.asp

Do not wait until you reach a crisis to come in and talk with us. We have helped many students through stressful situations impacting their academic performance. You are not alone so do not be afraid to ask for assistance.