

**University of Florida**  
**College of Public Health & Health Professions Syllabus**  
**SPA4106: Neuroplasticity and Rehabilitation (3)**  
Summer A 2021  
(class #19202/3) Sections: RONL, UFO  
Delivery Format: Online

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Office Hours: Wednesday, 9-11 a.m. or by appointment  
**Preferred Course Communications: Canvas Email**

Class Location: Web-based  
Chat Time: TBA, On Zoom

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**Prerequisites:**

Upper division standing in one of the BHS concentrations or permission of the instructor.

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## **PURPOSE AND OUTCOME**

### **Course Overview**

This elective course introduces the foundational knowledge about neuroplasticity and how it impacts treatment design and implementation across all of the health sciences. Students will be introduced to different types of rehabilitation approaches offered by the various health sciences.

### **Course Objectives and/or Goals**

After successfully completing SPA4904, students will be able to distinguish how life style choices impact neuroplasticity and how treatments and rehabilitation practices across the health sciences incorporate the principles of neuroplasticity to improve treatment outcomes. In doing so, they will be able to compare how known facilitators of neuroplasticity are operationalized in various rehabilitation contexts, noting the interactions between neuroplasticity, physical attributes, behavior, and environmental stimuli.

Learning Outcomes: Students will

- Distinguish among the Principles of Neuroplasticity and how they apply to rehabilitation
- Characterize how neuroplasticity impacts neurons and neural organization.
- Characterize how behavior (education, sleep, exercise, Cognitive-Behavioral treatment) can impact the brain's capacity for neuroplasticity and its response to interventions
- Analyze how the principles of neuroplasticity are incorporated into treatment plans developed within the health sciences.

### **Instructional Methods**

**This is a Web-Based Class–** *What is expected of you?*

You are expected to actively engage in the course throughout the semester. You will have a **weekly assignment** over the material that will be due before the weekly chats. This preparation gives you the knowledge or practice needed to engage in higher levels of learning during the live chat sessions. If you are not prepared for the face-to-face chats, you may struggle to keep pace with the discussion, and it is unlikely that you will reach the higher learning goals of the course. Your participation fosters a rich course experience for you and your peers that facilitates overall mastery of the course objectives.

## Course Materials and Technology

### Required Books

Doidge, N. **The Brain that Changes Itself**. Penguin Books (paperback)

**Plus: Articles as assigned, posted on CANVAS.**

For technical support for this class, 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>

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## ACADEMIC REQUIREMENTS AND GRADING

### Assignments

- Tests (3 @ 200 pts. each: 60% of grade)
- Discussions
  - Individual posts (12 @ 30 pts. eachh 36% of grade)
  - Within Group posts ( 8 @ 5 pts each 4% of grade)

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

<b>Points earned</b>	930-1000	900-929	870-899	830-869	800-829	770-799	700-769	*	670-699	630-669	600-629	<600
<b>Letter Grade</b>	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
<b>Grade Points</b>	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	0.0

\*The Bachelor of Health Science Programs do not use C- grades.

For greater detail on the meaning of letter grades and university policies related to them, see the Registrar's Grade Policy regulations at:

<http://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Homework Assignments will vary. The first one is a 1-2 page peer review of a chapter presentation. A rubric for the peer review is available in Rubrics. The other two are 1 page assignments requiring synthesis of material across more than one week.

Weekly Discussions (21 points each week) of issues in the readings or videos will take the place of in-class discussions. Discussions will be graded (see rubrics). The Discussions provide the backbone of the course. Discussions will be held among the members of a group and will form the basis for weekly chats.

Individual Discussion Posts (25 points) are due by Friday midnight, before the chat: Each person must submit one original post on the topic/question that demonstrates that they not only have read the material but also understood it.

- Each original post must be **between 100 and 200 words long**, and should unambiguously make a point about the topic.
- To get full points (25 each week) your post needs to show insight, propose a logical extension of the material, or provide a personal experience illustrating the point of prompt.
- Access to others' posts will not be available until you have posted your own original comment.

Within Group Posts (5 points) will be due by Saturday Midnight. You must make a substantive comment on the post of someone else in your group. You can either tell why you agree with the post (based on information from this or another class or your research), say why you disagree with a particular post (based on information from this or another class or your research), or describe how their post made you look at the question differently. Your post must be between **60-100 words long**.

Discussion posts containing inappropriate language, trolling, or other examples of poor "netiquette" will result minimally in the poster's grade being docked 5-10 points, loss of all points for that assignment, and deletion of the post. See paragraph on Netiquette, below.

### **Extra Credit (optional)**

To encourage awareness of different aspects of language research, you have the option of participating in 2 hours of research during the semester. A list of experiments that qualify for this credit can be found on the web at <http://slhs.php.ufl.edu/research/participant-pool-2/>.

Participating in research will earn you an extra 2% (20 points) added to your course grade.

If you are a distance learning student, choose not to participate in research, or do not qualify for any of the studies listed on the website, you can receive the same amount of course credit for an additional chapter from The Brain That Changes Itself (not one required by the class) and writing a 2.5 page synopsis of it. This short synopsis should be double spaced, using a 12 point font. Include the citation for the chapter you have chosen.

All extra credit must be submitted on CANVAS in the Extra Credit Assignment no later than April 21, 2020.

### **Exam Policy**

All assignments and assessments will be administered through CANVAS, and available for a limited time (e.g., 120 minutes for exams). The Honor Code applies to all graded work in this class! You are not to consult with anybody, unless the assignment requires it.

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

If you are ill at the time any assignment is due, you must let Dr. Altmann know **as soon as possible and before the assignment closes, or you will not be allowed to make up the assignment at another time. All late assignments must be made up within one week of the due date, and only with the instructor's approval.**

Any requests for extended time, re-dos, or make-up assignments or exams due to technical issues MUST be reported to the instructor immediately. You MUST e-mail the instructor as soon as possible (and no later than 12 hours) after the technical difficulty if you wish to request a make-up.

### **Policy Related to Required Class Participation**

This is a web-based class. There will be a weekly 1 hour chat that you are encouraged to attend. The chat will be recorded for people who cannot attend the chat. You should attend or view the chat each week. It is possible that important material for tests will come up in chat that is not included in the recorded lectures, so attending or viewing the chats is important.

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## **Proper “netiquette”—courtesy & respect.**

When posting on the Discussion Board in this online class, you should:

- Make posts that are on topic and within the scope of the course material
- Take your posts seriously and review and edit your posts before sending
- Be brief while still making a thorough comment
- Always give proper credit when referencing or quoting another source
- Be sure to read all messages in a thread before replying
- Don't repeat someone else's post without adding something of your own to it
- Avoid short, generic replies such as, “I agree.” You should include why you agree or add to the previous point
- Always be respectful of others' opinions even when they differ from your own
- When you disagree with someone, you should express your differing opinion in a respectful, non-critical way
- Do not make personal or insulting remarks
- Be open-minded

Posts containing inappropriate language, trolling, or other examples of poor “netiquette” will result minimally in the poster's grade being docked 5-10 points, and deletion of the post. See paragraph on Netiquette, below.

### **Feedback/Course Evaluation.**

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu> so make sure you include a statement regarding the value and expectation for student participation in course evaluations. We suggest you include a comment regarding how you will use the evaluations (e.g. to make specific improvements to the course and teaching style, assignments, etc.). It is also important to make some statement regarding the direct influence they have on faculty tenure and promotion, so your input is valuable. 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/>

<https://evaluations.ufl.edu/results/>

## **Academic Integrity**

Cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior.

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>
- <http://www.dso.ufl.edu/sccr/honorcodes/conductcode.php>
- <http://www.dso.ufl.edu/studenthandbook/studentrights.php>

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## **SUPPORT SERVICES**

### **Accommodations for Students with Disabilities**

If you require classroom accommodation because of a disability, you must register with the Dean of Students Office <http://www.dso.ufl.edu> within the first week of class. The Dean of Students Office will provide documentation to you, which you then give to the instructor when requesting accommodation. 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/CRISISCENTER/Pages/CrisisCenter.aspx>

BUT – 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.



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.

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## **Public Safety and Emergency Services**

- University Police Department 392-1111 or 9-1-1 for emergencies.

## **Other resources:**

- Campus Alcohol and Drug Resource Center (302 Student Health Center, 392-1161, ext. 4281).
- Student Mental Health Services (245 Student Health Center, 392-1171).
- University Counseling Center (301 Peabody Hall, 392-1575)
- Sexual Assault Recovery Services (SARS), Student Health Care Center, 392-1161, sexual counseling
- Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling

**Schedule: Neuroplasticity and Rehabilitation SPA 4106 (college-approved elective)**

All readings, lecture viewings, presentations, and discussion posting must be done **before the chat date listed for that week.**

CHAT DATE	TOPIC	Videos	READINGS
<b>WEEK 1. NEUROPLASTICITY BASICS 5/10 - 5/15</b>			
5/11	Neuroplasticity Introduction  The Principles of Neuroplasticity	Welcome: Introductions  Neuroplasticity & Rehabilitation  The 10 Principles of Neuroplasticity	Kleim and Jones-10 principles of Neuroplasticity
5/11	Neuroplasticity at the Neural Level	a. The Neuron  b. Neuroplasticity at the neural level  c. Evidence from research in Animals	Jones chap 3: Experience Dependent Change in Non-humans
5/13	Neuroplasticity at the Cortical Level	a. Brain review 1 b. Brain review 2 c. Brain review 3 d. Merzenich	<b>Doidge</b> Chap. 3 Merzenich
<b>WEEK 2. DO-IT-YOURSELF NEUROPLASTICITY 5/16 - 5/22</b>			
5/18	Neuroplasticity, Exercise & Cognitive Reserve	a. Intro to Cognition b. Neuroplasticity & Cognitive Reserve c. Exercise: An important mediator of Neuroplasticity d. Chronic exercise	Hillman, Erickson, Kramer (2008). Be smart exercise your heart.  Pastula et al (2012) Effects of moderate-intensity exercise training on the cognitive function of young adults with intellectual disabilities.
5/20	Neuroplasticity and Sleep	Dr. Payne-Murphy. Healthy Sleep	Curcio et al., 2006. Sleep, memory, and plasticity
<b>TEST 1 available 5/21-5/22</b>			



<b>WEEK 3. NEUROPLASTICITY &amp; PHYSICAL THERAPY</b> <b>5/23 - 5/29</b>			
5/25	Neuroplasticity and Motor Deficits	Walking in old age (Dr. Clark)	<b>Doidge</b> , Chapter 5: Learned non-use
5/27	Neuroplasticity and Stroke Rehabilitation	Rehabilitation after stroke (Dr. Rose) -stroke rehabilitation -compensatory vs. restorative treatments	Dickstein 2008 Rehabilitation of gait speed after stroke: a critical review of interventions
<b>WEEK 4. THE DARK SIDES OF NEUROPLASTICITY</b> <b>5/30 - 6/5</b>			
6/1	Neuroplasticity and Pain	The dark side of Plasticity: Pain (Dr. Bialosky), Part 1 Part 2 Part 3.	<b>Petersen-Felix &amp; Curatolo</b> 2002 Neuroplasticity – an important factor in acute and chronic pain  <b>Doidge</b> Chapter 7. Pain-The dark side of plasticity
6/8	Neuroplasticity and Psychiatry	PTSD and Neuroplasticity (Dr. Silverman)	<b>Doidge</b> Chapter 6. Brain lock unlocked  Makinson Young 2012 CBT and treatments for PTSD
<b>Test 2 Available</b> <b>6/4 - 6/5</b>			
<b>WEEK 5. BRAIN STIMULATION &amp; COMMUNICATION DISORDERS</b> <b>6/6 - 6/12</b>			
6/3	High tech treatments for neurologic disorders	Brain Stimulation treatments: tDCS & rTMS (Dr. Altmann)  Brain Stimulation Treatments tDCS Presentation from SPA5254	<b>Filmer et al. 2014.</b> Applications of tDCS to understand brain function. <i>Trends in Neurosciences</i> , 37(12), 742-750.  <b>Doidge</b> Chapter 8-Imagination-How Thinking Makes it So
6/10	Neuroplasticity and Language treatments in adults	Language and Language Processing (Xu)  Neuroplasticity and language treatments In adults (Altmann)  tDCS for Cognitive Impairments (SPA5254)	<b>Marangolo 2020 Effects of tDCS on language function in Aphasia</b>



<p align="center"><b>WEEK 6. NEUROPLASTICITY &amp; PEDIATRIC DISORDERS</b>  <b>6/13 - 6/18</b></p>			
6/15	Neuroplasticity, Hearing, and Language Development	<p>Neuroplasticity and Cochlear Implants (Dr. Siburt)</p> <p>Acquisition of Phonology</p> <p>Neuroplasticity and Hearing Loss (Dr. Nittrouer)</p>	<p>Flexer 2011 Cochlear Implants and Neuroplasticity (4 pages)”</p> <p>Nittrouer 2002. From ear to cortex-what clinicians need to know.</p>
6/17	Sensory Processing Disorders	<p>OT approaches to sensory processing disorders (Dr. Kreider)</p> <p>Audiologic approaches to auditory processing disorders (Dr. Hensley)</p>	<p><b>Dewey et al.</b> 2002. Developmental coordination disorder: Associated problems in attention, learning, and psychosocial adjustment</p> <p><b>Doidge</b> chapter 1- A woman perpetually falling</p>
<p><b>Test 3 Available</b>  <b>6/17 - 6/18</b></p>			
<i>AAAH!</i>			