Instructor Name: Russell Hepple
Office: BMS J397
Office Phone Number: 352 294-8703
Email Address: rthepple@phhp.ufl.edu
Office Hours: By appointment
Preferred Course Communications: Office phone or 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 addresses the impact of aging and various diseases on skeletal muscle biology, the mechanisms therein, and preclinical (animal model) or clinical approaches to therapeutically treating the muscle to improve function.

Course Topics: The course will start with a broad discussion of the organization and maintenance of the motor unit, and discussion of primary pathways regulating skeletal muscle mass and function. We will then consider current research about aging muscle, and various other conditions where skeletal muscle is adversely impacted. Some of these other conditions will involve primary muscle diseases (e.g., Amyotrophic Lateral Sclerosis), whereas others will involve conditions where adverse muscle impact is an ‘off-target’ occurrence (e.g., tobacco-related disease, cancer cachexia, chemotherapy-induced muscle impairment). The focus will be on critically evaluating the available evidence concerning mechanisms driving muscle impairment in these conditions, including discussion of current controversies. In discussions of therapeutic approaches, much of the focus will be on the basic science and the success (or not) of molecularly targeted interventions, with some consideration of exercise/physical activity/physical therapy as a therapeutic tool.

Relation to Program Outcomes
This course relates to the following student learning objectives in the RSD program:

1. Knowledge: Apply competencies in a focused area of rehabilitation science that can be applied in a research study. Evaluate competencies related to aging and disease in skeletal muscle biology as it is applied in research.
2. Professional Behavior: Exhibit ethical research conduct. Recognize ethical research conduct and critique research methods.
3. Knowledge: Display understanding of role of academic researcher. Understand the role of an academic researcher. Understand the limitations of different research methods.

Course Objectives and/or Goals
**Upon completion of the course:**

1. Students will be able to characterize the fundamental organization of the motor unit and potential points of vulnerability;
2. Students will be able to characterize the major pathways involved in regulating muscle mass and function with aging and various other conditions and diseases;
3. Students will be able to critically interpret the current literature and critically interpret experimental results;
4. Students will be able to present a proposal for research to an audience and convey the scientific premise, how this informed experimental design, and ultimately how results will be interpreted;

**What is expected of you?**

You are expected to actively engage in the course throughout the semester. You must come to class prepared to contribute to the class discussion by reading and understanding all reading materials related to a given lecture. This preparation gives you the knowledge or practice needed to engage in higher levels of learning during the live class sessions. If you are not prepared for the face-to-face sessions, you may struggle to keep pace with the activities occurring in the live sessions, and it is unlikely that you will reach the higher learning goals of the course. Similarly, you are expected to actively participate in the live class both through asking questions as well as volunteering answers to questions and related discussion. Your participation fosters a rich course experience for you and your peers that facilitates overall mastery of the course objectives.

**DESCRIPTION OF COURSE CONTENT.** This course meets once per week for 3 class periods.

**Topical Outline/Course Schedule**

<table>
<thead>
<tr>
<th>Week</th>
<th>Date(s)</th>
<th>Topic(s)</th>
<th>Readings*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week</td>
<td>Date(s)</td>
<td>Topic(s)</td>
<td>Readings*</td>
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</tr>
<tr>
<td>8</td>
<td>Feb 26</td>
<td>Aging Muscle IV: Lessons from the extremes: elite octogenarian athletes versus low functioning elderly; heterochronic parabiosis experiments</td>
<td>Rebo et al. 2016</td>
</tr>
<tr>
<td>9</td>
<td>Mar 11</td>
<td>Cancer cachexia. Animal models of cachexia. Last hour: Anatomy of an Aims page; have students identify the topic of their Aims page, oral presentation and final paper.</td>
<td>Assigned by Dr. Judge</td>
</tr>
<tr>
<td>10</td>
<td>Mar 18</td>
<td>No formal lecture (students working on Aims page and presentations for L9-14)</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Mar 25</td>
<td>Chemotherapy and muscle</td>
<td>Assigned by Dr. Smuder</td>
</tr>
<tr>
<td>12</td>
<td>Apr 1</td>
<td>PD/CKD</td>
<td>Assigned by Dr. Ryan</td>
</tr>
<tr>
<td>13</td>
<td>Apr 8</td>
<td>Tobacco-related disease “Virtual Lecture” (pre-recorded)</td>
<td>Kaphchinsky et al. J Physiol. 2018</td>
</tr>
<tr>
<td>14</td>
<td>Apr 15</td>
<td>Amyotrophic Lateral Sclerosis. Familial versus sporadic ALS.</td>
<td>Assigned by Dr. Plowman</td>
</tr>
<tr>
<td>15</td>
<td>Apr 22</td>
<td>Presentations of Aims page</td>
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</tbody>
</table>

*Note: Readings listed are seminal articles in the field. In addition, the readings list above is incomplete, pending the receipt of readings from the other presenters.

**Course Materials and Technology**

We will use the UF Canvas system. Readings and assignments will be posted on Canvas. https://elearning.ufl.edu/

**Laptop / tablet policy**

It is permitted to bring a laptop or tablet to class only for the purposes of taking notes and doing internet searches (e.g., using PubMed) on topics directly relevant to the course. Please do not use these devices for personal internet use (e.g. email) during class.

**Phones**

ABSOLUTELY NO TEXTING, EMAILING, INSTANT MESSENGING, SKYPING, FACETIMING, FACEBOOKING etc. during class. If you choose to do this, I will ask you to leave class, and you will get a zero for the day.
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

Class Participation
Students are expected to be “active learners” and directly contribute to discussions in each lecture. Students will be evaluated in each class based upon their contribution to in-class discussions, including contributions during In-Class Presentations (see next point). Contributions may include raising questions with the class on a topic of discussion, and answering questions posed by the instructor or other students in the class. For example, students may ask a question that demonstrates an attempt at synthesis of information (e.g., “Does the same xxx alteration seen in aging muscle also apply to other conditions with muscle atrophy?”) or that articulates a point needing clarification. Students may also offer insights from their own area of research as it relates to a given topic of discussion.

Aims Page
Students will write a one page (1 inch margins on all sides, 11 point font) scientific Aims Page according to the recommendations for an NIH grant proposal (Anatomy of an Aims Page). The topic is to be the same as that chosen for the In-Class Presentation and Take-home Final Exam (see below). The Aims Page should be sent by email to Dr. Hepple by 5 pm on the Wednesday prior to the individual student’s In-Class Presentation. Grading will be based upon (i) the Introductory paragraph [scientific premise and articulation of gap in knowledge; 3 points], (ii) the Second paragraph [proposed solution to gap in knowledge; 3 points]; (iii) the statement of Specific Aims [clarity and logical link of Aims to scientific premise and proposed solution to knowledge gap; 2 points]; and (iv) the Summary paragraph [statements of innovation, expected outcomes and impact for field; 2 points].

In-Class Presentations
Students will provide a 20-minute research presentation in Powerpoint to the class. The format of the presentation should consist of a scientific premise based upon current published research, specifics of the experimental approach used to test proposed hypotheses, and anticipated results and their interpretation. Students need to upload their Powerpoint presentations to Canvas prior to the start of class, without exception. Topics for the presentation must be approved by the instructor and will directly relate to the topics discussed in lectures 5 through 14, and will also be the same topic as that chosen for the Take-home Final Exam (see below). Grading will be based upon both the in-class oral presentation (15 points; clarity of delivery, eye-contact with class, not simply reading the slides but using them as props to emphasize specific points [demonstrates grasp of material being presented], comfortable delivery [avoid talking too quickly, avoid filling space with “ummm” and other non-language sound]) and the powerpoint slides (15 points; appropriate amount of detail on each slide [avoid clutter], logical organization that mirrors elements in Aims Page [see above], effective use of graphics versus text [a picture is worth a thousand words], use of animations to bring in slide elements for the purpose of guiding audience from point to point).

Take-home Final Exam
Students will submit a take-home Final Exam that will consist of a 10-page research proposal that describes the scientific premise, research approach, and primary outcome measures related to a novel therapeutic
The student must clearly describe how the proposed intervention addresses the current understanding of the molecular and physiological underpinnings of the adverse muscle impact in the condition under study. Additional details follow the letter grade to grade point conversion table, below (under heading: Exam Policy).

### Grading

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Due date</th>
<th>Points or % of final grade (% must sum to 100%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class participation:</td>
<td>weekly</td>
<td>15% (15 points)</td>
</tr>
<tr>
<td>Aims page</td>
<td>Assigned individually</td>
<td>15% (15 points)</td>
</tr>
<tr>
<td>In-class presentation</td>
<td>Assigned individually</td>
<td>30% (30 points)</td>
</tr>
<tr>
<td>Take-home final exam</td>
<td>By 5 pm on the Friday of the week following the last day of classes (May 1, 2020)</td>
<td>40% (40 points)</td>
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</table>

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

<table>
<thead>
<tr>
<th>Points earned</th>
<th>Letter Grade</th>
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</thead>
<tbody>
<tr>
<td>93-100</td>
<td>A</td>
</tr>
<tr>
<td>90-92</td>
<td>A-</td>
</tr>
<tr>
<td>87-89</td>
<td>B+</td>
</tr>
<tr>
<td>83-86</td>
<td>B</td>
</tr>
<tr>
<td>80-82</td>
<td>B-</td>
</tr>
<tr>
<td>77-79</td>
<td>C+</td>
</tr>
<tr>
<td>73-76</td>
<td>C</td>
</tr>
<tr>
<td>70-72</td>
<td>C-</td>
</tr>
<tr>
<td>67-69</td>
<td>D+</td>
</tr>
<tr>
<td>63-66</td>
<td>D</td>
</tr>
<tr>
<td>60-62</td>
<td>D-</td>
</tr>
<tr>
<td>Below 60</td>
<td>E</td>
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</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. in 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.

<table>
<thead>
<tr>
<th>Letter Grade</th>
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<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>B+</td>
</tr>
<tr>
<td>B-</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>D+</td>
</tr>
<tr>
<td>D-</td>
</tr>
<tr>
<td>WF</td>
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<tr>
<td>NG</td>
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</tbody>
</table>

For greater detail on the meaning of letter grades and university policies related to them, see the Registrar’s Grade Policy regulations at: [http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades](http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades)

### Exam Policy

There is a single, “take home” examination at the end of the course in the format of a research proposal (as noted above). Students must indicate their topic to the instructor at least two weeks prior to the last day of classes, unless other arrangements are made with the instructor.

The exam is graded based upon the quality of the research proposal:

- Is the Scientific Premise clearly stated and is it linked to a Statement of Hypothesis? (10 points)
- Is the Significance of the work rationalized? (5 points)
• Are the Approaches appropriate to test the stated hypothesis? (10 points)
• Are the Approaches feasible? (5 points)
• Is the proposal innovative? (5 points)
• Are the proposed experiments likely to Advance the Field? (5 points)

Format:
• Use 11-point size Arial Font
• Single space
• Margins of 1” on every side.
• 10 pages in length (excludes references, figures, and tables)
• Include references as appropriate
• Typos, grammar and presentation of figures will be considered when grading. Examples of useful rules for good writing can be found in Strunk & White, *The Elements of Style*.
• Exams are to be submitted by email to Dr. Hepple by 5 pm on the day the exam is due (see table, above).

Policy Related to Make up Exams or Other Work
Make up work is not permitted unless arrangements have been made with the instructor. Coordination of any make-up work (e.g., for in-class presentation or take-home final exam) with instructor is encouraged to take place in advance whenever possible. Please note: Any requests for make-ups due to technical issues MUST be accompanied by the UF Computing help desk ([http://helpdesk.ufl.edu/](http://helpdesk.ufl.edu/)) correspondence. You MUST e-mail me within 24 hours of the technical difficulty if you wish to request a make-up.

Policy Related to Required Class Attendance
Attendance is mandatory and will be documented by the instructor at the start of each class. Please be on time, noting that individuals more than 5 min late will not receive credit for class participation on that day. Please contact the instructor as soon as possible if you are unable to attend class or need to leave class early for any reason.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: [https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx)

Excused absences must be consistent with university policies in the Graduate Catalog ([http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance](http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance)). Additional information can be found here: [https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx)

STUDENT EXPECTATIONS, ROLES, AND OPPORTUNITIES FOR INPUT

Expectations Regarding Course Behavior
Professional behavior is expected and is exemplified by:
1. Attendance to all classes
2. Timeliness
3. Attentiveness
4. Respectful and polite interaction with peers and instructors
5. Active learning as demonstrated by questions and discussion

Communication Guidelines
Students should communicate with the instructor by his office phone or by email.
**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 professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/.

Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/.

Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

**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

**SUPPORT SERVICES**

**Accommodations for Students with Disabilities**

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center by visiting
It is important for students to share their accommodation letter with their instructor and discuss their access needs, 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](http://www.counseling.ufl.edu). On line and in person assistance is available.
- You Matter We Care website: [http://www.umatter.ufl.edu/](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/](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](http://www.alachuacounty.us/DEPTS/CSS/CRISISCENTER/Pages/CrisisCenter.aspx)

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.

**Inclusive Learning Environment**

Public health and health professions are based on the belief in human dignity and on respect for the individual. As we share our personal beliefs inside or outside of the classroom, it is always with the understanding that we value and respect diversity of background, experience, and opinion, where every individual feels valued. We believe in, and promote, openness and tolerance of differences in ethnicity and culture, and we respect differing personal, spiritual, religious and political values. We further believe that celebrating such diversity enriches the quality of the educational experiences we provide our students and enhances our own personal and professional relationships. We embrace The University of Florida’s Non-Discrimination Policy, which reads, “The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans’ Readjustment Assistance Act.” If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see your instructor or refer to the Office of Multicultural & Diversity Affairs website: [www.multicultural.ufl.edu](http://www.multicultural.ufl.edu).