Neuromuscular Biology
KIN 725
Department of Kinesiology, McMaster University
Term 1, Fall 2016

Instructor: Dr. Vladimir Ljubicic
Email: ljubicic@mcmaster.ca
Room & Extension: IWC 219B x24517

Course Description:

The purpose of this course is to provide students an enhanced understanding of topics in neuromuscular biology through 1) lectures, 2) presentations, 3) the reading and discussion of current research literature, and 4) a writing assignment. Emphasis is placed on cellular mechanisms of health and disease, as well as responses and adaptations to physical activity.

The course will primarily consist of weekly student presentations of instructor-selected research articles, followed by group discussion. A topic list (Appendix A) and reading list (Appendix B) will be distributed. Readings for presentations will be assigned prior to each topic.

Resources and Reference Materials:

Appendices A-C detail the required resources and references for this course. Dr. Ljubicic will supplement these materials as necessary.

Assignments and Grading:

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CONTRIBUTION TO FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contributions to class discussions (assessed by instructor)</td>
<td>10%</td>
</tr>
<tr>
<td>Journal article presentations and critiques* (assessed by instructor)</td>
<td>30%</td>
</tr>
<tr>
<td>Seminar presentation* (assessed by instructor 50% and peers 50%)</td>
<td>30%</td>
</tr>
<tr>
<td>Research News and Views paper* (assessed by instructor)</td>
<td>30%</td>
</tr>
</tbody>
</table>

*details below
Journal article presentations and critiques

Appendix B contains the journal article reading list for this course. All students are responsible for reading four selected papers every week. Each week, three students will volunteer to present and critique one article each in the next class. Students will present the Introduction, Methods, Results and Discussion in detail over about 20 minutes. Questions from the audience will be interjected or will follow the presentation. Each student will present three times during the course, with the value of each presentation incrementally increasing (1st presentation = 7.5%, 2nd = 10%, 3rd = 12.5%).

Journal article presentations and critiques will be graded as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarity and organization</td>
<td>20%</td>
</tr>
<tr>
<td>Completeness (did you hit the important points?)</td>
<td>20%</td>
</tr>
<tr>
<td>Ability to “teach” the class</td>
<td>20%</td>
</tr>
<tr>
<td>Critical analysis of paper</td>
<td>20%</td>
</tr>
<tr>
<td>Ability to answer questions</td>
<td>20%</td>
</tr>
</tbody>
</table>

Seminar presentation

The topic of the seminar presentation will relate broadly to the content of the course. The presentation could be an expansion of a topic discussed in class, or a topic not specifically addressed in the course. Students must discuss potential topic ideas with Dr. Ljubicic and obtain approval before proceeding. The topic must be unrelated to the thesis/dissertation research of the student. However, the topic may be similar to the Research News and Views paper. Students will provide a 40-minute conference-style presentation. Seminar presentations will be assessed by Dr. Ljubicic (50%) and by your peers (50%, using the provided evaluation matrix).

Seminar presentations will be graded as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarity and organization</td>
<td>20%</td>
</tr>
<tr>
<td>Content</td>
<td>20%</td>
</tr>
<tr>
<td>Oral communication of material</td>
<td>20%</td>
</tr>
<tr>
<td>Visual communication of material</td>
<td>20%</td>
</tr>
<tr>
<td>Ability to answer questions</td>
<td>20%</td>
</tr>
</tbody>
</table>
**Research News and Views paper**

You've been commissioned by the journal *Nature* to contribute a *News and Views* article. Congratulations! Your selected article will relate broadly to the content of the course. The paper could be an expansion of a topic discussed in class, or not. Students must discuss potential articles with Dr. Ljubicic before proceeding. The article must be unrelated to the thesis/dissertation research of the student. Your paper must be critical to some degree, and must tell a story. See Appendix C for more detailed assignment information and for examples of *Nature News and Views* articles.

**Research News and Views papers will be graded as follows:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction of topic (News)</td>
<td>10%</td>
</tr>
<tr>
<td>Summary of relevant literature (News)</td>
<td>20%</td>
</tr>
<tr>
<td>Integration of critical findings (News)</td>
<td>20%</td>
</tr>
<tr>
<td>Key unresolved issues (Views)</td>
<td>25%</td>
</tr>
<tr>
<td>Student’s view and message (Views)</td>
<td>25%</td>
</tr>
</tbody>
</table>

**PLEASE NOTE:**

On occasion, it is difficult to predict the direction the course may take and the instructor may need to revise the course outline during term. Students will be informed as early as possible of any changes.

The Department of Kinesiology reserves the right to change dates, deadlines, and/or methods of assessment for this course in the event of unforeseen circumstances, such as illness of the instructor or a labour disruption.

**ACADEMIC INTEGRITY**

Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences (e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript reading "Grade of F assigned for academic dishonesty", and/or suspension or expulsion from the university). It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at: [http://www.mcmaster.ca/univsec/policy/AcademicIntegrity.pdf](http://www.mcmaster.ca/univsec/policy/AcademicIntegrity.pdf)

The following illustrates only three forms of academic dishonesty:

Department of Kinesiology, McMaster University
• Plagiarism (e.g. the submission of work that is not one's own or for which other credit has been obtained),
• Improper collaboration in group work.
• Copying or using unauthorized aids in tests and examinations.
### KIN 725 Fall 2016: APPENDIX A
#### TENTATIVE TERM SCHEDULE

This outline is subject to change. Readings are selected from Appendix B.

<table>
<thead>
<tr>
<th>WEEK</th>
<th>DATE</th>
<th>CLASS</th>
<th>TOPIC</th>
<th>READINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wed Sept 14</td>
<td>Meeting</td>
<td>KIN 725 &amp; Introduction to exercise biology</td>
<td>1, 2, 3, 4</td>
</tr>
<tr>
<td>2</td>
<td>Wed Sept 21</td>
<td>Presentations 1</td>
<td>Intracellular signalling</td>
<td>5, 6, 7</td>
</tr>
<tr>
<td>3</td>
<td>Wed Sept 28</td>
<td>Presentations 2</td>
<td>Spinal muscular atrophy</td>
<td>8, 9, 10</td>
</tr>
<tr>
<td>4</td>
<td>Wed Oct 5</td>
<td>Presentations 3</td>
<td>Amyotrophic lateral sclerosis</td>
<td>11, 12</td>
</tr>
<tr>
<td>5</td>
<td>Wed Oct 12</td>
<td></td>
<td>Mid-term recess – no class</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Wed Oct 19</td>
<td>Presentations 4</td>
<td>Neuromuscular junction</td>
<td>13, 14, 15</td>
</tr>
<tr>
<td>7</td>
<td>Wed Oct 26</td>
<td>Presentations 5</td>
<td>Neurotrophic factors</td>
<td>16, 17, 18</td>
</tr>
<tr>
<td>8</td>
<td>Wed Nov 2</td>
<td>Presentations 6</td>
<td>Muscular dystrophy</td>
<td>19, 20</td>
</tr>
<tr>
<td>9</td>
<td>Wed Nov 9</td>
<td>Presentations 7</td>
<td>Mitochondrial disease</td>
<td>21, 22, 23</td>
</tr>
<tr>
<td>10</td>
<td>Wed Nov 16</td>
<td>Presentations 8</td>
<td>Myotonic dystrophy</td>
<td>24, 25, 26</td>
</tr>
<tr>
<td>11</td>
<td>Wed Nov 23</td>
<td>Presentations 9</td>
<td>Glycogenosis</td>
<td>27, 28</td>
</tr>
<tr>
<td>12</td>
<td>Wed Nov 30</td>
<td></td>
<td>Seminar presentations 1</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Wed Dec 7</td>
<td></td>
<td>Seminar presentations 2, Research News and Views paper due</td>
<td></td>
</tr>
</tbody>
</table>
**WEEK 1: Introduction to exercise biology**

**Reviews**


**WEEK 2: Intracellular signalling**

**Review**


**Research articles**


**WEEK 3: Spinal muscular atrophy**

**Review**

Research articles


WEEK 4: Amyotrophic lateral sclerosis

Review


Research articles


WEEK 5: Neuromuscular junction

Review


Research articles


WEEK 7: Neurotrophic factors

Review

Research articles


WEEK 8: Muscular dystrophy

Review


Research articles


WEEK 9: Mitochondrial disease

Review


Research articles


**WEEK 10: Myotonic dystrophy**

**Review**


**Research articles**


**WEEK 11: Glycogenosis**

**Review**


**Research articles**

You’ve been commissioned to contribute a *Nature News and Views* article. Authors are committed to providing readers with a broad and accessible overview of the most important and interesting advances in the field of neuromuscular and exercise biology. *Nature News and Views* articles inform readers about the latest advances in research, as reported in recently published papers, appearing in *Nature* or elsewhere. “News” refers to your contextualizing and summary of an impactful, original research article, while “Views” refers to your take on the significance of the article.

As a general guideline, *News and Views* articles are short (1,000 words in length maximum) and have as much in common with journalistic news reports as the formal scientific literature. A brief (1-3 sentence) summary should appear immediately after the title and author (you) of your paper. There should be no more than 8-12 references included in your paper, and the article that you are writing about must appear first in the paper and reference list. Therefore, the central message of the *News and Views* must be stated clearly in the first paragraph and the piece should be written in a manner readily accessible to non-specialists. In this respect, it is essential to ask a colleague from an unrelated discipline to comment on the article before submitting it. Personal opinions, viewpoints, criticisms and predictions are encouraged. The submission of figures and artwork (not data) is required, to illustrate both specific points made in the piece and the more general context.

Below are examples of *Nature News and Views* articles that broadly relate to this course. You are strongly encouraged to read a variety of these examples in order to understand the general format of the paper, as well as to gain an appreciation for the content.


