Scientific Writing in Integrative Physiology

General Information
Class: 8:00 a.m., 9:30 a.m., and 12:30 p.m. – Tuesdays and Thursdays (75 min each)
Location: Humanities 1B35
Prerequisites: IPHY or Concurrent Degree majors with 57-180 credits. Required for Honors Thesis.

Instructor: Thomas LaRocca, Ph.D.
Office: Temporary Building 1, Room 112
Phone: 303-492-3285
Email: thomas.larocca@colorado.edu
Office hours: any time by appointment (email); Tuesdays/Thursdays before and after class

Teaching Assistant: Blair Denman (blair.denman@colorado.edu)

Major Course Goals
Develop your skills and ability to:
1. Analyze and improve your writing process.
2. Read and understand scientific literature.
3. Find published research/information on a topic.
4. Build strong arguments by analyzing research data.
5. Create effective documents (text, graphics and presentations).
6. Analyze drafts and express comments professionally.
7. Communicate effectively about science.

Format
To facilitate our learning goals, the course is structured around 4 major assignments:
1. Letter paper analyzing the results of a research study.
2. Presentation addressing an unresolved scientific issue.
3. Opinion article arguing your point of view on the same issue.
4. Weekly class discussions about readings related to the above assignments.

Each major project will involve smaller assignments that lead up to the final product, including:
• readings and discussions
• brief writing assignments
• writing plans and drafts
• reviews of classmates’ drafts

**These assignments are designed to help you sequentially develop and improve your writing process and products. During each class, we will discuss new topics and skills, and we will use your most recent assignments to help develop final products. Therefore, it is essential that you complete assignments on schedule and be prepared to work with them at each class period.

Materials
• No textbook. All assignments, readings and handouts posted on D2L.
• Additional readings that you will be required to find through library research.
• Virtual Private Network (VPN) on your home computer. Information about VPN and instructions for downloading it are on the website for the Office of Information Technology.
• Always carry a flash drive for storing all class documents, email all documents to yourself, or use a system like Google Drive or Dropbox.
**Evaluation**
Grades on major projects will be based on content, structure and language mechanics. Grades on homework will be based on thoughtfulness, completeness and accuracy. Grades for participation will be based on class discussions and activities, quality of feedback to others and engagement in the course’s activities—so be prepared for class. Specific assignments and due dates are listed in the attached semester schedule. The general breakdown of your grade will be as follows:

- **Homework:** 5 brief skill-building assignments (50 points)
- **Letter paper:** 2 drafts (20 points) + final paper (100 points)
- **Presentation:** 1 brief presentation (40 points)
- **Opinion article:** 2 drafts (20 points) + references (5 points) + final paper (100 points)
- **Writing analyses:** 3 short papers on the writing process (15 points)
- **Participation (discussions, daily assignments, reviews):** throughout the semester (50 points)

**Total:** 400 points

**Final Grades:**
- A: 372-400 points (93-100%)
- A-: 360-371 points (90-92%)
- B+: 348-359 points (87-89%)
- B: 332-347 points (83-86%)
- B-: 320-331 points (80-82%);
- etc...

**Assignments**
Due dates and times for all assignments are listed on the schedule below and on D2L. In general:

- **All homework and writing assignments (drafts and final papers):**
  - are due by 11:59pm on the designated day;
  - must be submitted to the D2L Dropbox**;
  - must be typed (including tables), single-spaced, size 11 or 12 font (Arial or Helvetica);
  - must include a header with your name, assignment title, and the date.

- **All readings and small daily assignments (class participation):**
  - must be completed (and ready to use) by the start of the designated class.

**Attendance and participation**
This course is based on collaboration and communication, so you must be prepared to participate at the start of each class. Your participation grade (50/400 points) will be based on the completeness of drafts and small daily assignments, and on your participation in discussions about readings. You cannot make up missed discussions or daily assignments, so you should plan on attending all class sessions.

All assignments are due whether you are present or not. If you are absent when an assignment is due, you must still submit it via D2L or email. Absences due to health issues, deaths, official university activities or major events beyond your control (e.g., a court appearance, car accidents, etc.) may be excused with appropriate documentation. Requests for an excusal must be submitted immediately upon returning to class following an unplanned absence. **Conflicts:** If you have an unavoidable conflict with an assignment due date or a class date because of religious obligation, required participation in an out-of-town University athletic event, or serious illness, you must see me at least two weeks prior to the conflict so that we can make alternative arrangements. Unexcused absences will affect participation, and in-class assignment grades and cannot be made up.
University of Colorado and Course Policies

Disabilities: Activities in this class include reading and writing at home and in class, doing research in the library, working in small groups and using computers. If you qualify for accommodations because of a disability, please submit a letter from Disability Services to me in a timely manner so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities. Contact Disability Services at 303-492-8671 or by e-mail at dsinfo@colorado.edu.

Academic Integrity: All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include: cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council (honor@colorado.edu; 303-735-2273). Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). Other information on the Honor Code can be found at http://www.colorado.edu/policies/honor.html and at http://honorcode.colorado.edu.

Religious Observances: Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. Please inform the instructor within the first two weeks of class if you have a conflict due to a religious observance. See full details at http://www.colorado.edu/policies/fac_relig.html.

Classroom Behavior: Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, color, culture, religion, creed, politics, veteran’s status, sexual orientation, gender, gender identity and gender expression, age, disability, and nationalities. Class rosters are provided to the instructor with the student’s legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. See policies at http://www.colorado.edu/policies/classbehavior.html and at http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student_code.

Discrimination and Harassment: The University of Colorado at Boulder Discrimination and Harassment Policy and Procedures, the University of Colorado Sexual Harassment Policy and Procedures, and the University of Colorado Conflict of Interest in Cases of Amorous Relationships policy apply to all students, staff and faculty. Any student, staff or faculty member who believes s/he has been the subject of sexual harassment or discrimination or harassment based upon race, color, national origin, sex, age, disability, creed, religion, sexual orientation or veteran status should contact the Office of Discrimination and Harassment (ODH) at 303-492-2127 or the Office of Student Conduct (OSC) at 303-492-5550. Information about the ODH, the above referenced policies, and the campus resources available to assist individuals regarding discrimination or harassment can be obtained at http://www.colorado.edu/odh.
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<tr>
<th>Learning goal</th>
<th>Specific skills</th>
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| Analyze and improve your own writing process. | • Observe your own writing process and reflect on its strengths and opportunities for improvement.  
• Add new strategies for planning and revision.  
• Practice collaborating on writing. |
| Find out what has been published on a scientific topic, issue, or argument, and get copies of sources. | • Distinguish strategies for learning what has been published from strategies for finding complete copies of sources.  
• Find published works on a topic. Use a search matrix.  
• Use multiple strategies to find full-text copies of sources: online (PDF and HTML); hard copies; and materials via interlibrary loan.  
• Distinguish between peer-reviewed research sources, reference sources and sources without quality control. |
| Read research articles to understand scientific questions and evidence, and synthesize information from multiple articles. | • Distinguish research reports from reviews in scientific literature.  
• Distinguish types of research: intervention vs. observation, epidemiological, longitudinal vs. cross-sectional, qualitative reviews vs. meta-analyses.  
• Identify key features of articles: specific research question or purpose, methods and results. Compare/contrast key features from multiple articles.  
• Synthesize data from multiple articles to reveal patterns. |
| Build strong arguments by analyzing research data. | • Analyze content/structure of arguments (claims, data, explanations).  
• Define an issue (a research question).  
• Evaluate strengths & limitations of conflicting, competing or incomplete evidence; reach an evidence-based conclusion about an unresolved issue.  
• Argue a case for the best possible conclusion about an issue, given imperfect evidence. |
| Create documents (text and graphics) that accomplish communication goals and reach target readers. | • Plan strategies for accomplishing communication goals and reaching target audiences (specify goals, audience, message, and expectations).  
• Use goal-based structures for documents; make structure clear to readers and ensure that documents that stick to their purpose.  
• Design graphics to support major points.  
• Use a level of content and diction appropriate for target readers.  
• Revise content, structure, and mechanical details of drafts.  
• Apply comments from others to revise your own drafts. |
| Analyze drafts and express comments professionally. | • Comment on content, structure and mechanical details in others' drafts to help them accomplish purposes and reach target readers.  
• Proofread drafts and correct mechanics.  
• Have constructive meetings with authors whose drafts you review. |
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<tr>
<th>Week 1</th>
<th>Date</th>
<th>Class/Topic</th>
<th>Due in class</th>
<th>Due in Dropbox</th>
<th>Points</th>
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<tbody>
<tr>
<td></td>
<td>12-Jan</td>
<td>Introduction, effective discussions</td>
<td>Read/answer questions: Professionalism</td>
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|        | 14-Jan     | What is scientific writing?  | Read/answer questions: Scientific Writing  
Read/answer questions: Zinsser 2001 (simplicity)  
Have file system ready | Analysis-1  
Homework-1 | 15     |
| Week 2 |            |                              |                                                                              |                |        |
|        | 19-Jan     | Basic scientific writing techniques | Read/answer questions: Scientific Writing Skills                             |                |        |
|        | 21-Jan     | Starting a project, reading reviews | Read/answer questions: Letter assignment  
Read/answer questions: O'Keefe 2004                        | Homework-2     | 10     |
| Week 3 |            |                              |                                                                              |                |        |
|        | 26-Jan     | Reading research reports     | Read/answer questions: Chiva-Blanch 2014                                       |                |        |
|        | 28-Jan     | Understanding research/writing | Read/answer questions: Lindeberg 2007  
Read/answer questions: Valls-Pedret 2015                        | Homework-3     | 10     |
| Week 4 |            |                              |                                                                              |                |        |
|        | 2-Feb      | Constructing figures and tables | Read/answer questions: Figures & Tables                                        |                |        |
|        | 4-Feb      | Reader expectations  
Writing about results | Read/answer questions: Letter Example                                            | Homework-4     | 10     |
| Week 5 |            |                              |                                                                              |                |        |
|        | 9-Feb      | Writing discussion sections  
Finding references | Results paragraph  
4 possible references to share                                                  |                |        |
|        | 11-Feb     | Finding and using references | Results/discussion paragraph                                                   | Homework-5     | 10     |
| Week 6 |            |                              |                                                                              |                |        |
|        | 16-Feb     | Writing introductions, formatting drafts | Read/answer questions: Introductions                                        |                |        |
|        | 18-Feb     | Message unity, formatting drafts  
Work time | Introduction paragraph  
Read/answer questions: Zinsser 2001 (unity)                        | Letter draft 1 | 10     |
| Week 7 |            |                              |                                                                              |                |        |
|        | 23-Feb     | Identifying writing topics, editing drafts | Read/answer questions: Opinion Article assignment  
Read/answer questions: Joyner 2013                            |                |        |
|        | 25-Feb     | Peer review, work time       | Letter draft 2 (end of class)                                                 |                |        |
| Week 8 |            |                              |                                                                              |                |        |
|        | 1-Mar      | Peer review                  | Letter review (start of class)                                                | Letter review  | 10     |
|        | 3-Mar      | Formatting final products, work time | Letter                                                                        |                |        |
| Week 9 |            |                              |                                                                              |                |        |
|        | 8-Mar      | Planning scientific presentations | Read/answer questions: Presentation Assignment  
Read/answer questions: Scientific Presentations                        |                |        |
<p>|        | 10-Mar     | Building scientific presentations | Read/answer questions: Talk Tips                                               | Analysis-2     | 5      |
| Week 10|            |                              |                                                                              |                |        |
|        | 15-Mar     | Presentations                | Presentations                                                                |                | 40     |
|        | 17-Mar     | Presentations                | Presentations                                                                |                |        |
| Spring Break |        |                              |                                                                              |                |        |
|        | 22-Mar     | NO CLASS                      |                                                                              |                |        |
|        | 24-Mar     | NO CLASS                      |                                                                              |                |        |</p>
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<tr>
<th>Week 11</th>
<th>29-Mar</th>
<th>Writing for different audiences Describing DATA</th>
<th>Read/answer questions: Caroll 2015</th>
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<tr>
<td></td>
<td>31-Mar</td>
<td>Communicating writing goals Demonstrating LOGIC</td>
<td>Read/answer questions: Oster 2014 Synthesis matrix 5</td>
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<td>Week 12</td>
<td>5-Apr</td>
<td>Using graphics effectively</td>
<td>Read/answer questions: Jabr 2013</td>
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<td>7-Apr</td>
<td>Connecting with readers</td>
<td>Read/answer questions: Zinsser 2001 (lead/ending) Opinion draft 1 10</td>
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<td>Week 13</td>
<td>12-Apr</td>
<td>Discussing/explaining data</td>
<td>Read/answer questions: Hutchinson 2014</td>
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<td>14-Apr</td>
<td>Writing for different audiences</td>
<td>Read/answer questions: Zinsser 2001 (clutter)</td>
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<td>Week 14</td>
<td>19-Apr</td>
<td>Editing for readability</td>
<td>Read/answer questions: Argument structure</td>
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<td>21-Apr</td>
<td>Peer review, work time</td>
<td>Opinion draft 2 (end of class)</td>
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<td>Week 15</td>
<td>26-Apr</td>
<td>Peer review, work time</td>
<td>Opinion review (start of class) Opinion review 10</td>
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<td>28-Apr</td>
<td>Writing strategies for the future</td>
<td>Opinion Article Analysis-3 105</td>
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<td><strong>Class participation and preparation</strong></td>
<td>50</td>
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<td><strong>TOTAL</strong></td>
<td>400</td>
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