I. ASCRC General Education Form

<table>
<thead>
<tr>
<th>Group</th>
<th>Natural Sciences</th>
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<tbody>
<tr>
<td>Dept/Program</td>
<td>Applied Arts &amp; Sciences</td>
</tr>
<tr>
<td>Course #</td>
<td>SCN 201N / 202N</td>
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II. Endorsement/Approvals

Complete the form and obtain signatures before submitting to Faculty Senate Office

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Colin Henderson</th>
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<tbody>
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<td>Phone / Email</td>
<td>7834 / <a href="mailto:colin.henderson@umontana.edu">colin.henderson@umontana.edu</a></td>
</tr>
<tr>
<td>Program Chair</td>
<td>Cathy Corr</td>
</tr>
<tr>
<td>Dean</td>
<td>Barry Good</td>
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III. Description and purpose of the course:

General Education courses must be introductory and foundational. They must emphasize breadth, context, and connectedness; and relate course content to students’ future lives: See Preamble:

http://www.umt.edu/facultysenate/gened/GEPreamble_final.htm

Human Anatomy & Physiology provides students with conceptual and practical information on the anatomy and physiology of the human organism. On the conceptual level, students learn the normal processes responsible for development, growth and maintenance of the body. They learn about important homeostatic processes the regulate body functions, and responses to injury. On the practical level, students learn to identify microscopic and gross structure of the body, along with basic clinical assessment procedures for different systems. Identification is based on inspection of actual material as well as standard imagery which includes X-ray, CT, and MRI. Successfully completing this course at a B or higher level of performance means that students have met the following objectives:

1) Students will be able to describe the scientific basis for your understanding of anatomy and physiology. Presented with new information they should be able to judge whether it is scientifically sound.

2) Students will be able to describe the processes for energy transfers within the human body.

3) Students will be able to describe the cellular basis for life and how cellular processes govern physiology of development, growth, and normal function.

4) Students will be able to demonstrate practical knowledge of human gross anatomy, including proper naming and physical relationships among the different structures in the body.

5) Students will be able to describe the normal physiological function of different body systems. Given observations of particular anatomical and physiological status, Students should be able to objectively describe those observations and their consequences to normal body function.
### IV. Criteria:
Briefly explain how this course meets the criteria for the group. See: [http://www.umt.edu/facultysenate/ASCRCx/Adocuments/GE_Criteria5-1-08.htm](http://www.umt.edu/facultysenate/ASCRCx/Adocuments/GE_Criteria5-1-08.htm)

1. **Courses explore a discipline in the natural sciences and demonstrate how the scientific method is used within the discipline to draw scientific conclusions.**
   
   Examples of research that discovered specific physiologic principles are embedded throughout the course to demonstrate how hypotheses were formed and tested to produce what students learn as accepted knowledge about human physiology.

2. **Courses address the concept of analytic uncertainty and the rigorous process required to take an idea to a hypothesis and then to a validated scientific theory.**
   
   With the examples of research cited above there are several instances of faulty research or erroneous interpretation that are cited to illustrate how lack of scientific rigor has lead to wrong conclusions.

3. **Lab courses engage students in inquiry-based learning activities where they formulate a hypothesis, design an experiment to test the hypothesis, and collect, interpret, and present the data to support their conclusions.**
   
   Clinical assessment labs are specifically designed to have students collect data, evaluate results with reference to normal ranges, then report orally or in writing their outcomes and interpretations. Class data are in some cases pooled to instruct students on population variation and its origins. Critical thinking questions ask students to predict consequences of abnormal results.

### V. Student Learning Goals:
Briefly explain how this course will meet the applicable learning goals. See: [http://www.umt.edu/facultysenate/ASCRCx/Adocuments/GE_Criteria5-1-08.htm](http://www.umt.edu/facultysenate/ASCRCx/Adocuments/GE_Criteria5-1-08.htm)

1. **Understand the general principles associated with the discipline(s) studied;**
   
   Lecture and discovery oriented lab exercises first have students integrate structure and function at cellular, tissue, and organ levels of body organization. Using homeostasis and energy transfer as central principles, physiological processes are learned through lecture discussion and laboratory assessment exercises.

2. **Understand the methodology and activities scientists use to gather, validate and interpret data related to natural processes;**
   
   Students work with standard laboratory technologies to make all physiological assessments. Actual anatomical materials, including fresh tissues and cadaver prosections are used for anatomical instruction.

3. **Detect patterns, draw conclusions, develop conjectures and hypotheses, and test them by appropriate means and experiments;**
   
   Again, laboratory exercises emphasize assessment and evaluation of normal conditions with critical thinking to interpret the meaning of abnormal results. Lecture and laboratory exams include critical thinking questions to force integration and application of factual learning.

4. **Understand how scientific laws and theories are verified by quantitative measurement, scientific observation, and logical/critical reasoning; and**
   
   Principles of scientific process are mostly taught by example in lecture. Lab exercises include appropriate clinical measurement, evaluation and critical reasoning activities.
5. Understand the means by which analytic uncertainty is quantified and expressed in the natural sciences.

Anatomical features and physiologic processes have normal ranges, which indicate individual and population variation. Directly assessing, learning normal patterns, then completing critical thinking exercises reinforces the principle and the concept of variation which influences measurement uncertainty in clinical applications.

**VII. Syllabus:** Paste syllabus below or attach and send digital copy with form. The syllabus should clearly describe how the above criteria are satisfied. For assistance on syllabus preparation see: [http://teaching.berkeley.edu/bgd/syllabus.html](http://teaching.berkeley.edu/bgd/syllabus.html)

Syllabus attached.

*Please note: As an instructor of a general education course, Students will be expected to provide sample assessment items and corresponding responses to the Assessment Advisory Committee.*