I. TITLE: Physiology of Exercise and Fitness

II. COURSE DESCRIPTION AND PREREQUISITE(S):
Concepts of physiology as applied to exercise and fitness directed toward the needs of physical education teachers.
Prerequisite(s): HPE 175, all university studies math/science requirements, and senior standing; or consent of instructor.

III. COURSE OBJECTIVES:
Class activities will be centered on the attainment of the course objectives listed below. These objectives are understood to be reflective of, but not limited to those behaviors aligned with the Kentucky Core Academic Standards (KCAS), Characteristics of Highly Effective Teaching and Learning (CHETL), and Assessment Literacy. Following each objective, and enclosed in parentheses, are numbers that reference the Kentucky Teacher Standards for Preparation and Certification (KTS) and CHETL standards. Upon successful completion of this class, students will be able to
A. discuss in depth the importance of oxygen uptake in the energy production process (KTS #1; CHETL #1-5);
B. describe the potential changes in muscle fiber type proportions after strength, endurance, or power training (KTS #1; CHETL 1-5);
C. explain how nerves and skeletal muscle combine to control muscle contraction (KTS #1; CHETL #1-5);
D. describe the metabolic events that occur during the transition from rest to steady state and maximal exercise as well as during recovery (KTS #1; CHETL #1-5);
E. identify the changes that occur for heart rate, stroke volume, cardiac output, and arteriovenous oxygen difference during different exercise conditions (KTS #1; CHETL #1-5);
F. explain how cardiovascular structure and function change in response to endurance and strength training (KTS #1; CHETL #1-5);
G. describe the anatomy of the cardiovascular system and relate it to disease processes that occur with inactivity and other lifestyle problems (KTS #1; CHETL #1-5);
H. describe the transport of oxygen and carbon dioxide during rest and exercise and discuss changes that occur due to exercise training of various types (KTS #1; CHETL #1-5);
I. describe the hormonal responses to exercise that influence muscle energy metabolism, fluid balance, vascular hemodynamics, and protein synthesis (KTS #1; CHETL #1-5);
J. identify the principles behind the methods of training for specific sports and athletic activities (KTS #1; CHETL #1-5);
K. explain the concepts of overtraining and detraining (KTS #1; CHETL #1-5);
L. describe the physiological bases of strength development (KTS #1; CHETL #1-5);
M. identify the various nutritional strategies use for optimizing performance (KTS #1; CHETL #1-5);
N. evaluate the benefits of various ergogenic aids (KTS #1; CHETL #1-5);
O. interpret data from maximal oxygen uptake tests (KTS #1; CHETL #1-5);
P. demonstrate a basic understanding of body composition (KTS #1; CHETL #1-5);
Q. employ various tests for determining body composition (KTS #1; CHETL #1-5);
R. describe the normal growth and development of children and how exercise affects growth and development (KTS #1; CHETL #1-5);
S. describe the health implications for overweight and obesity (KTS #1; CHETL #1-5);
T. explain the events that lead to heat illness and provide recommendations for preventing the malady (KTS #1; CHETL #1-5);
U. perform skills required for American Red Cross 1st Aid and CPR Certification (KTS #1; CHETL #1-5); and
V. write professionally for the field of health and physical education (KTS #1; CHETL #2).

The COE Theme of Educator as Reflective Decision-Maker is addressed in this course by requiring students to reflect on various measures of personal fitness. In addition students reflect on the applicability of the fitness measures to students in the public schools.

The EPSB Theme of Assessment is explored in the course through the collection and analysis of fitness data using various instruments that may be utilized for assessing fitness in public school settings.

Learned societies from each discipline should be referenced by the preservice teacher. Kentucky documents, including SB1 Initiatives (e.g., Kentucky Core Academic Standards and Characteristics of Highly Effective Teaching and Learning) will be resources for all teacher candidates.

IV. CONTENT OUTLINE:
A. Metabolism and energy production during rest and exercise
B. Systemic response to exercise
C. Methods to improve exercise performance
D. Measurement techniques for fitness and exercise response
E. Growth, development, aging, and exercise
F. Gender and exercise performance
G. Exercise, health, and disease prevention
H. Senate Bill 1 Initiatives

V. INSTRUCTIONAL ACTIVITIES:
Lecture/discussion sessions complemented with PowerPoint presentations and paper materials provided in the course manual.
VI. FIELD, CLINICAL, AND/OR LABORATORY EXPERIENCES:
Students in this course have many opportunities to administer various physical tests, including fitness tests appropriate for use in school settings and in physical fitness/stress testing settings.

VII. TEXT(S) AND RESOURCES:

American Red Cross 1st Aid / CPR & AED certification packet. Available in the MSU Bookstore under the HEA 195 section. You must bring the voucher to class!

VIII. EVALUATION AND GRADING PROCEDURES:
A. Grading Scale

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<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90-100%</td>
<td>A</td>
</tr>
<tr>
<td>80-89%</td>
<td>B</td>
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<tr>
<td>70-79%</td>
<td>C</td>
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<tr>
<td>60-69%</td>
<td>D</td>
</tr>
<tr>
<td>0-59%</td>
<td>E</td>
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IX. ATTENDANCE POLICY:
Students are expected to adhere to the MSU Attendance Policy outlined in the current MSU Bulletin. Students are expected to attend all class sessions unless illness or other acceptable reasons warrant absence.

X. ACADEMIC HONESTY POLICY:
Murray State University takes seriously its moral and educational obligation to maintain high standards of academic honesty and ethical behavior. Instructors are expected to evaluate students’ academic achievements accurately, as well as ascertain that work submitted by students is authentic and the result of their own efforts, and consistent with established academic standards. Students are obligated to respect and abide by the basic standards of personal and professional integrity.

Violations of Academic Honesty include:
Cheating - Intentionally using or attempting to use unauthorized information such as books, notes, study aids, or other electronic, online, or digital devices in any academic exercise; as well as unauthorized communication of information by any means to or from others during any academic exercise.

Fabrication and Falsification - Intentional alteration or invention of any information or citation in an academic exercise. Falsification involves changing information whereas fabrication involves inventing or counterfeiting information.

Multiple Submission - The submission of substantial portions of the same academic work, including oral reports, for credit more than once without authorization from the instructor.
**Plagiarism** - Intentionally or knowingly representing the words, ideas, creative work, or data of someone else as one’s own in any academic exercise, without due and proper acknowledgement.

Instructors should outline their expectations that may go beyond the scope of this policy at the beginning of each course and identify such expectations and restrictions in the course syllabus. When an instructor receives evidence, either directly or indirectly, of academic dishonesty, he or she should investigate the instance. The faculty member should then take appropriate disciplinary action.

Disciplinary action may include, but is not limited to the following:
1) Requiring the student(s) to repeat the exercise or do additional related exercise(s).
2) Lowering the grade or failing the student(s) on the particular exercise(s) involved.
3) Lowering the grade or failing the student(s) in the course.

**If the disciplinary action results in the awarding of a grade of E in the course, the student(s) may not drop the course.**

Faculty reserve the right to invalidate any exercise or other evaluative measures if substantial evidence exists that the integrity of the exercise has been compromised. Faculty also reserve the right to document in the course syllabi further academic honesty policy elements related to the individual disciplines.

A student may appeal the decision of the faculty member with the department chair in writing within five working days. Note: If, at any point in this process, the student alleges that actions have taken place that may be in violation of the Murray State University Non-Discrimination Statement, this process must be suspended and the matter be directed to the Office of Equal Opportunity. Any appeal will be forwarded to the appropriate university committee as determined by the Provost.

**XI. NON-DISCRIMINATION POLICY STATEMENT:**
Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or other provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities. For more information, contact Director of Equal Opportunity, Murray State University, 103 Wells Hall, Murray, KY 42071-3318. Telephone: 270-809-3155 (voice), 270-809-3361 (TDD).

**XII. FLAG SYSTEM/CONTINUOUS ASSESSMENT:**
Student progress is continuously assessed throughout the teacher preparation program. Appropriate professional characteristics and dispositions, in addition to academic achievement, are assessed. Positive and negative flags are submitted by faculty to Teacher Education Services and then presented to admissions committees. Negative flags are carefully reviewed to make a determination as to whether a student should be denied admission OR if a professional development plan will be designed for the student’s progress towards program completion. **NEGATIVE FLAGS MAY BE GROUNDS FOR DENIAL OF ADMISSION TO TEACHER EDUCATION.**