**Physical Conditioning and Speed**

**(KINE 4640) Course Syllabus**

**Spring 2020**

**Instructor:**  Kevin A. Giordano, PT, DPT, CSCS

**Office:**  122 School of Kinesiology Building

**Lab:** 014 School of Kinesiology Building

**E-mail:** KAG0070@auburn.edu

**Office hours:**  Stop by or by appointment

**Pre-requisites:** none

**Co-requisites:** none

**Class schedule:** MWF 11:00-11:50am

**Class Location:** Student Activities Center Room 253

**Course description**: This course will focus on the physiological, anatomical/biomechanical, biochemical/molecular and nutritional/supplemental aspects of training for endurance and sprint related activity. Focus will also be directed to programming for short and long distance performance.

**Syllabus Prepared: January 7, 2020**

**Required text**: No required text; however, there are books that do support the material.

“Exercise Physiology: Theory and Application to Fitness and Performance” by Scott Powers and Edward Howley

“Exercise Physiology: Human Bioenergetics and Its Applications” by George Brooks, Thomas Fahey, and Kenneth Baldwin

These texts are very insightful but are not required

**Class Objectives:** upon completion of this course students should demonstrate an understanding of:

* The physiological adaptations that occur in response to endurance or sprint training
* Acute adaptations from endurance or sprint training
* Programming for endurance or sprint athletes
* Biomechanical concepts that optimize speed while reducing energy cost
* Understand various training models associated with performance
* Nutritional/supplemental components for building the endurance or sprint athlete

**Course Lectures**

1. Introductory Lecture
	1. Measuring performance
	2. Position, velocity, acceleration
	3. Planes and axes of the body
2. Metabolism – Hailey A. Parry, PhD Candidate in Mitochondrial Physiology
	1. Energy systems
	2. Lactate Threshold
	3. VO2
3. Acute Response to Endurance Exercise
	1. Fatigue
	2. Fuel
	3. Recovery
4. Adaptations to Endurance Exercise
	1. Physiologic Improvements
	2. Fuel Usage
	3. Benefits of Different Types of Training
5. Programming – Kenzie B. Friesen, PhD Candidate, Team Canada Softball Player Pool
	1. Training Principles
	2. Periodization
6. Macronutrition for the Endurance Athlete
	1. CHO
	2. Fat
	3. Protein
	4. Ketogenic Diets
7. Supplements for the Endurance Athlete
	1. Caffeine
	2. Blood Flow Gadgets
	3. Antioxidants
	4. Lactate Buffers
8. Biomechanics of Running
	1. Gait Cycle
	2. Muscle Activation
	3. Ground Reaction Forces
9. Foot-Shoe-Ground Interaction
	1. How the foot moves
	2. How different footwear affects running biomechanics and economy
10. What Makes You Faster
	1. Traits and interventions to improve power production and speed
11. Nutrition for the Sprint Athlete – if time allows
	1. Micronutrition
	2. Supplements

**Semester Grading Rubric:**

|  |  |  |
| --- | --- | --- |
| Assignments | Description | Points |
| Exams | 4 tests including mid-term and final | 80% |
| 4 Article Quizzes | 4 Quizzes that will be at home and cover one article each in an area pertinent to the current lecture material | 20% |

**Exams:** Exams will cover the most recent material. Questions on the exam will be related to class notes in the form of multiple choice, multiple multiple choice, fill in the blank, essay, and true/false. Exams will be completed in class. Be sure to bring a computer on test days!

1st) Intro, metabolism, acute tissue response, chronic adaptations

2nd) programming, nutrition

3rd) sprint material (probably)

4th) cumulative final

**Article Quizzes:** I will assign 4 separate research articles throughout the semester for you to read and critically review. Each student will complete a quiz and should be prepared to discuss the article in class.

**Final Exam:** The final exam will be cumulative. The final exam is Thursday April 30, 2019 from 12:00-2:30 pm. You will have as much time as needed.

**Grading Scale:**

|  |  |
| --- | --- |
| **Letter Grade** | **Percent Scale** |
| A | 90 - 100 |
| B | 80 - 89.99 |
| C | 70 - 79.99 |
| D | 60 - 69.99 |
| F | <60 |

**Attendance and Late-work Policies:**
Attendance is highly encouraged. If you miss class, it is your responsibility to get caught up from the available resources and classmates. I will not privately reteach material during office hours to students who miss class.
Late work will not be accepted without PRIOR communication or university approved excused absence. If you know you are going to miss an exam, then contact me before class.

**Disability and other accommodations**

If you have not established learning accommodations through the Program for Students with Disabilities (PSD) office (1228 Haley Center, 844-2096), please contact me as soon as possible if accommodations need to be made due to learning and/or other disabilities. Accommodations do not take effect until you have met with me individually.

Finally, let me know if you have pertinent medical information that you need to share with me.

**Academic Honesty and Conduct:**

All portions of the Academic Honesty code on <https://fp.auburn.edu/studentaffairs/policies.aspx> apply.

***You are expected to do the exams on your own, and without assistance from other classmates. Please do not cheat!***

**Diversity:**

Auburn University is committed to providing a working and academic environment free from discrimination and harassment and to fostering a nurturing and vibrant community founded upon the fundamental dignity and worth of all its members.

**Contingency Plan**

If the normal schedule is disrupted, the syllabus and other course plans may be modified to allow for completion of the course. Your instructor is aware that things may arise and affect the course of work as a class; in that case, your instructor will provide an addendum to your current syllabus with revised course assignments which will then replace this syllabus.

**Additional Notes:** while unlikely, note that the instructor reserves the right to modify this course syllabus at any time. However, students will receive verbal notification of such modification.

**If you have ANY questions, please contact me. I am here to help. Please do not hesitate to meet with me or ask questions.**