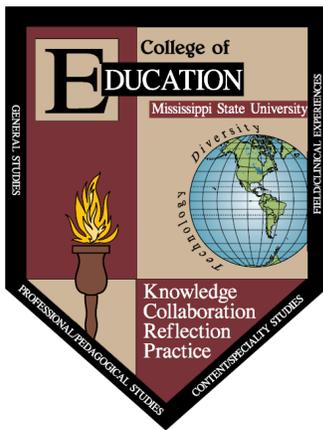


**MISSISSIPPI STATE UNIVERSITY
COLLEGE OF EDUCATION**

**DEPARTMENT of KINESIOLOGY
COURSE SYLLABUS**

Course Prefix & Number:	PE 3313
Course Title:	Sport Physiology
Credit Hours:	Three (3) semester hours
Course Type:	Lecture/Laboratory
Catalog Description:	Prerequisites: BIO 1004 or BIO 3004. Athletic performance physiology applicable to physical education and coaching. Physiological concepts of sports performance including methods, bioenergetics, ergogenics, and nutrition for athletes are examined.

College of Education Conceptual Framework:



The faculty in the College of Education at Mississippi State University are committed to assuring the success of students and graduates by providing superior learning opportunities that are continually improved as society, schools, and technology change. The organizing theme for the conceptual framework for the College of Education at Mississippi State University is educational professionals - dedicated to continual improvement of all students' educational experiences. The beliefs that guide program development are as follows:

1. **KNOWLEDGE** - Educational professionals must have a deep understanding of the organizing concepts, processes, and attitudes that comprise their chosen disciplinary knowledge base, the pedagogical knowledge base, and the pedagogical content knowledge base. They must also know how to complement these knowledge bases with the appropriate use of technology.
2. **COLLABORATION** - Educational professionals must continually seek opportunities to work together, learn from one another, forge partnerships, and assume positions of responsibility.
3. **REFLECTION** - Educational professionals must be willing to assess their own strengths and weaknesses through reflection. They must also possess the skills, behaviors, and attitudes necessary to learn, change, and grow as life-long learners.

4. **PRACTICE** - Educational professionals must have a rich repertoire of research-based strategies for instruction, assessment, and the use of technologies. They must be able to focus that array of skills on promoting authentic learning by all students or clients, while exhibiting an appreciation and commitment to the value and role of diversity.

Course Objectives:

1. Discuss the basis of sport physiology and describe the fundamental exercise training principles. **InTASC # 1; CFPO # 3.**
2. Describe the structure and function of skeletal muscle, and discuss the excitation and contraction process. **InTASC # 1; CFPO # 3.**
3. Describe fiber type characteristics and discuss the impact of these differences on function. **InTASC # 1; CFPO # 3.**
4. Describe the nature of muscle recruitment and the various types of muscle actions. **InTASC # 1; CFPO # 3.**
5. Discuss the structure and function of the nervous system. **InTASC # 1; CFPO # 3.**
6. Discuss the manner in which nervous impulses are generated and their implications to exercise performance. **InTASC # 1; CFPO # 3.**
7. Discuss sensory-motor integration and the function of the specialized sensory receptors found within the musculoskeletal system. **InTASC # 1; CFPO # 3.**
8. Discuss the mechanisms by which muscle soreness occurs and its implications to exercise performance. **InTASC # 1; CFPO # 3.**
9. Demonstrate an understanding of the metabolic, hormonal and neuromuscular adaptations of the various organ systems to both resistance and aerobic exercise training. **InTASC # 1; CFPO # 3.**
10. Discuss the various major bioenergetic pathways, including the phosphagen energy system, glycolysis, Krebs' citric acid cycle and oxidative phosphorylation. **InTASC # 1; CFPO # 3.**
11. Discuss metabolism and the ways in which it can be estimated. **InTASC # 1; CFPO # 3.**
12. Discuss the metabolic and neuromuscular factors that lead to fatigue. **InTASC # 1; CFPO # 3.**
13. Demonstrate an understanding of the training techniques used for developing

physical conditioning, and the physiological concepts for those training techniques. **InTASC # 1; CFPO # 3.**

14. Demonstrate an understanding of the role of Ergogenic Aids on physiological performance. **InTASC # 1; CFPO # 3.**

15. Discuss the physiological responses to acute exercise. **InTASC # 1; CFPO # 3.**

16. Discuss the physiological adaptations to exercise training. **InTASC # 1; CFPO # 3.**

17. Demonstrate an understanding of an optimal training model and tapering for peak performance. **InTASC # 1; CFPO # 3.**

18. Describe the general principles of exercise training (aerobic & anaerobic). **InTASC # 1; CFPO # 3.**

19. Acquire knowledge and basic skills used in common tests and measurements in exercise science. **InTASC # 1; CFPO # 3, 4, 10.**

Topic to Be Covered:

1. Lab Hours: 15
2. Structure and Function of Exercising Muscle: 2 hours
3. Fuel for Exercising Muscle: 3 hours
4. Neural Control of Exercising Muscle: 2 hours
5. Energy Expenditure of Fatigue: 3 hours
6. The Cardiovascular System and its Control: 3 hours
7. Cardiorespiratory Responses to Acute Exercise: 2 hours
8. Principles of Exercise Training: 2 hours
9. Adaptations to Resistance Training: 2 hours
10. Adaptations to Aerobic and Anaerobic Training: 2 hours
11. Training for Sport: 2 hours
12. Body Compositions and Nutrition for Sport: 3 hours
13. Ergogenic Aids and Sport: 2 hours
14. Children and Adolescents in Sport and Exercise: 2 hours

Required Text and Materials: Lecture & Lab

Wilmore, J.H., Costill, D.L., and Kenney, W.L. (2012). *Physiology of sport and exercise* (5th ed.). Champaign, IL. Human Kinetics.

Laboratory Notebook for PE 3313: Physiology of Sport and Exercise.

Methods of Instruction:

1. Lecture and discussion (Direct Instruction), 2 hours per week in classroom setting.
2. Lab, 2 hours per week in Laboratory setting (Problem-based Learning).

Student Activities (Lab):

1. The students will measure resting heart rate and blood pressure. # 1,6
2. The students will measure muscular one repetition maximum strength. #1, 9
3. The students will measure muscular endurance during resistance exercise. #1,9
4. The students will understand and measure BP and HR responses to resistance exercise. #1,6
5. The students will measure speed and agility. #1,8
6. The student will measure power output. #1,8
7. The student will measure upper and lower body flexibility (range of motion). #1,8
8. The student will measure body composition and understand the gender differences regarding fat and fat free mass. #1,12
9. The students will measure BP and HR responses to aerobic exercise. #1,10
10. The student will measure and perform aerobic field test. #1,10

MSU Honor Code:

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."

Upon accepting admission to Mississippi State University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor Code. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the MSU community from the requirements or the processes of the Honor Code. For additional information please visit:
www.msstate.edu/dept/uadit/PDF/1207.pdf

Technology:

1. Computer & Projector: PowerPoint Lecture(s)
2. MyCourses: submitting assignments, viewing PowerPoint slides, viewing posted articles, and quizzes/exams

Diversity:

Diversity related issues (physiological) will be addressed in Chapter 15 in the form of lecture and class discussion.

Disability:

Students having any special needs (i.e., disabilities, problems, or any other factors that may affect their performance in class) may receive specialized testing through Student Support Services (325-3335). These needs should be brought to the instructor's attention during the first week of course. The instructor will meet with the student to ensure access to resources in the University and make appropriate instructional modifications as required. Accommodations will be made on a case by case basis, depending on the student's needs.

Field Component: N/A

Evaluation of Student Progress:

A = 90% or above

B = 80 - 89%

C = 70 - 79%

D = 60 - 69%

Four written exams

400 pts.

Online Quizzes and/or Exams

If you are having any general computer problems on the computer you will be using for exams or quizzes you should visit the IT Help Desk located in 108 Allen Hall (8:00 A.M. to 5:00 P.M.) for assistance.

If any exams are given in an online format – it will only be given using Respondus Lockdown Browser. This is not negotiable. This is free software that can be downloaded to your own computer at: (http://www.its.msstate.edu/Services/Software/index.php?party_id=37). The Lockdown Browser is also installed on many computers across campus in labs (<http://www.its.msstate.edu/Information/OpenLabs/index.php>) including the library commons computer lab. There will be a timeline of 5 working days to make up an exam. This will include a letter grade deduction from the exam score. Following the 5 day period, in addition to the previous mentioned deduction, a 5 point deduction per day will occur (excluding weekends).

Laboratory Grade: The score earned in the lab section of the course will count as 25% of the final course grade (refer to “Assessment of Laboratory Experiences” for additional information).

Bibliography:

Baechle, T.R. & Earle, R.W. (2008). *Essentials of strength training and conditioning*. , Champagne, IL: Human Kinetics.

Brooks, G.A., Fahey, T.D., & Baldwin, K.M. (2005). *Exercise physiology: Human bioenergetics and its applications* (4th ed.). McGraw Hill, Inc., New York.

Brown, S.P., Miller, W.C., & Eason, J.M. (2006). *Exercise physiology*. Baltimore: Lippincott Williams & Wilkins.

Guyton, A.C., & J.E. Hall. (2000). *Textbook of medical physiology (10th ed.)*. Philadelphia: W.B. Saunders Co.

McArdle, W. D., Katch, F. I., & Katch, Victor L. (2000). *Essentials of exercise physiology (2nd ed.)*. Philadelphia: Lippincott, Williams, and Wilkins.

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Powers, S. K. & Howley, E. T. (2004). *Exercise physiology. (5th ed.)* Madison, WI: Brown and Benchmark.

Robergs, R. A., & Roberts, S. O. (1997). *Exercise physiology: Exercise, performance, and clinical applications*. Boston: WCB McGraw Hill.