

**MISSISSIPPI STATE UNIVERSITY
COLLEGE OF EDUCATION**

**DEPARTMENT of KINESIOLOGY
COURSE SYLLABUS**

Course Prefix & Number: EP 8503

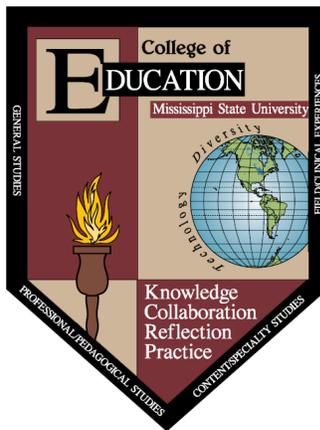
Course Title: Occupational Physiology

Credit Hours: Three (3) semester hours

Course Type: Lecture

Catalog Description: Evaluation of physiological, biomechanical, and ergonomic demands and responses to occupational demands, including task design and evaluation, employee selection and placement, and work-rest scheduling.

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. Demonstrate laboratory skills necessary for the evaluation and monitoring of exercise and work performance in workplace settings CFPO #3
2. Demonstrate the abilities and skills to solve problems regarding workplace related health situations collaboratively in a group and/or as an individual CFPO #3,4
3. Demonstrate skills in conducting and evaluating data on the human physiological, biochemical, and biomechanical responses to exercise in the workplace. CFPO #3, 4
4. Recognize and understand the purposes of test development, validation, and utilization of mental and physical aptitude tests in employee screening CFPO #3, 4
5. Read and summarize original research articles and scholarly reviews in occupationally related research CFPO #3, 4
6. Read and interpret research, and to appreciate ambiguities in the literature and the limits of current knowledge. CFPO #3
7. Discuss topics in human factors relating to human physiology in work environments CFPO #3, 4
8. Formulate research questions and experiments to test principles of work physiology CFPO #3

Topics to Be Covered:

1. An Introduction to Work Physiology: Review of work demands, work capacity, and human limitations (3 hours)
2. The Job and the Worker: Employment evaluation & selection, legal issues in hiring, test evaluation – validity & reliability, test implementation, testing applicants, testing incumbent employees (6 hours)
3. Anthropometrics: Basic ergonomic design philosophies, statistical basis of anthropometry, anthropometric data, body surface area, body segments, use of anthropometric data in design applications (6 hours)
4. Metabolically Demanding Work: Physiological responses to demands, physical work capacity, fatigue and its evaluation, endurance in physical work, work-rest scheduling (6 hours)
5. Work Requiring Muscular Force: Physiological responses to demands, physical work capacity, fatigue and its evaluation, endurance in physical work, work-rest scheduling (6 hours)
6. Work in Awkward Positions: Typical movement patterns; joint angles, velocities, and accelerations associated with normal gait versus abnormal gait (6 hours)
7. Shift Work: Shift organization and patterns, effects of shift work on workers, guidelines for shift work, criteria for selection of shift workers, alternative work schedules, applications and discussion (6 hours)
8. Work that is Predominately Sedentary: Postural and habitual problems, health risks in offices (6 hours)

Text:

Toomingas, A., Mathiassen, S.E., & Tornqvist, E.W. (2012). *Occupational physiology*. New York: CRC Press. **Required**

Methods of Instruction:

1. Lecture (Objectives 1-8)
2. Class Discussion (Objectives 1-8)
3. Lab activities (Objectives 1-8)

Suggested Student Activities:

1. Attend all lectures and participate in classroom discussions (Objectives 1-8)
2. Complete all lab activities (Objectives 1-8)
3. Read appropriate chapters in the textbook and supplementary reading materials (Objectives 1-8)
4. Complete the end of semester project (Objectives 1-8)
5. Be prepared for all lectures, quizzes, and exams. If you are struggling with a topic, please see the professor as soon as possible (Objectives 1-8)

MSU Honor Code:

Mississippi State University has an approved Honor Code that applies to all students. The code is as follows:

“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:

<http://www.msstate.edu/dept/audit/1207A.html>.

Honesty and integrity are expected of every student. All occurrences of academic misconduct will be dealt with in accordance with the guidelines and procedures outlined in the Academic Misconduct Policy. Additional university policies related to students can be accessed at: http://www.msstate.edu/web/student_policies.html.

Technology: Not an aspect of this course.

Diversity:

Diversity will not be specifically addressed in this course.

Disability statement:

It is the policy of Mississippi State University to accommodate students with special needs and learning disabilities as per the MSU Student Support Services policy. Students seeking accommodations on the basis of a disability or special need must identify themselves to the Office of Student Support Services (325-3335) to verify eligibility. Additional documentation guidelines may be obtained by contacting the Office of Student Support Services directly, or via the web at <http://www.msstate.edu/dept/audit/91130.html>. Academic accommodations and services are based upon an individual's needs. All documentation is confidential.

Field Component: This course does not have a field component.

Evaluation:

Two exams (includes the final exam)
Assignments
Research Proposal

Total Points = 500

200 points
200 points
100 points

Grading Scale: A = 90 - 100%, B = 80 - 89, C = 70 - 79, D = 60 - 69, F = 59 - below

Project: Students will work individually on a research proposal. Each student will choose a specific details of the proposal will be covered in class and examples will be posted on the class website. Each student will present the proposal to the class at the end of the semester.

Exams: Exams will consist of short answer and essay questions. There will be two exams given throughout the semester, including a comprehensive final exam.

Bibliography:

1. Acevedo, E. and P. Ekkekakis (2001). The transactional psychobiological nature of cognitive appraisal during exercise in environmentally stressful conditions. *Psychology of Sport and Exercise* 2(1): 47-67.
2. Acevedo, E. O. (2012). *The Oxford handbook of exercise psychology*. New York:Oxford University Press.
3. Acevedo, E. O. and P. Ekkekakis (2006). *Psychobiology of physical activity*. Champaign, IL:Human Kinetics.
4. Åstrand, P.-O. and P.-O. Åstrand (2003). *Textbook of work physiology : physiological bases of exercise*. Champaign, IL:Human Kinetics.
5. Davis, H. L., T. W. Faulkner and C. I. Miller (1969). Work physiology. *Hum Factors* 11(2): 157-165.

6. Erb, B. D. (1981). Applying work physiology to occupational medicine. *Occup Health Saf* **50**(6): 20-24.
7. Hayne, C. (1981). Ergonomics: the mechanics of man. 2.--The physiology of work. *Occup Health (Lond)* **33**(1): 18-24.
8. Hayne, C. R. (1973). Ergonomics--the scientific study of man at work. *Physiotherapy* **59**(10): 321-325.
9. Ilmarinen, J. (1989). Work and cardiovascular health: viewpoint of occupational physiology. *Ann Med* **21**(3): 209-214.
10. Kamon, E. (1974). Instrumentation for work physiology. *Trans N Y Acad Sci* **36**(7): 625-639.
11. Luongo, E. P. (1964). Work Physiology in Health and Disease. *JAMA* **188**: 27-32.
12. Sharkey, B. J. and P. O. Davis (2008). *Hard work : Defining physical work performance requirements*. Champaign, IL: Human Kinetics.
13. Shiraki, K. and M. K. Yousef (1987). *Man in stressful environments : Thermal and work physiology*. Springfield, IL: U.S.A., C.C. Thomas.
14. Toomingas, A., S. E. Mathiassen and E. W. Tornqvist (2012). *Occupational physiology*. Boca Raton: Taylor & Francis.