

# Bemidji State University

## PHED 3300: Physiology of Exercise and Nutrition

### A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: \*.\*

Lab Hours/Week: \*.\*

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

MnTC Goals: None

An examination of the effects of exercise on the systems of the body as they relate to health and performance. Nutritional concepts of weight control, ergogenic aids and fluid replacement will be discussed. Techniques for developing, prescribing, and assessing fitness components will be presented. Prerequisite: BIOL 2110 or consent of instructor.

### B. COURSE EFFECTIVE DATES: 08/22/1997 - Present

## C. OUTLINE OF MAJOR CONTENT AREAS

1. Introduction & Training principles
2. periodization, fitness
3. Using Polar Heart Rate monitors and RPE to measure mild, moderate and vigorous exercise to avoid overtraining
4. Exercise as stress and overtraining
5. Measuring blood pressure at rest and during exercise
6. Energy production
7. Substrate Utilization
8. Anaerobic Metabolism during exercise
9. Aerobic metabolism during exercise
10. Training principles
11. Cardiorespiratory Training Principles & physical activity recommendations
12. Assessing Muscular Strength and Endurance
13. Cardiovascular Responses to exercise
14. Cardiovascular Disease Risk Factors and Physical Activity
15. Skeletal Muscle System - Muscle contractions
16. Planning a diet to meet the U.S. Dietary Goals and RDAs
17. Muscular Contraction and Movement
  - Force production, muscular fatigue and soreness
  - Effect of age on muscle function
18. Estimating caloric expenditure during physical activity and MET-minutes with accelerometers and using step counters
19. Muscle Soreness and Stretch shortening cycle
20. Muscle Soreness and Stretch shortening cycle
21. Introduction to Nutrition - RDAs, MyPyramid caloric needs
22. Dietary protein needs
23. MET levels for sitting, standing, walking
24. Dietary fat & types, needs, concerns
25. Assessing body fat with skinfold measures
26. Importance of carbohydrates
27. Vitamins
28. measuring height and
29. Minerals
30. Body composition
31. Portion sizes and caloric balance
32. Weight Control and Eating disorders
33. Obesity and health risks - - in class examination of the role of body weight and body fat on risk of coronary heart disease. This includes critical thinking about overweight/underweight and risk of disease. Students will ask and answer questions in class. Metabolic syndrome articles - students will bring an article about the metabolic syndrome and a discussion about this cluster of risk factors and how lifestyle choice such as weight control, physical activity and a diet with caloric moderation can reduce the risk of the metabolic syndrome.

#### **D. LEARNING OUTCOMES (General)**

1. know, understand and/or demonstrate:  
A basic knowledge of exercise physiology
  - a) The three major pathways for ATP production (ATP-PC, Anaerobic, Aerobic and training/conditioning methods to enhance each system
  - b) The response of the heart, respiratory system, muscle, blood pressure and blood chemistry (lactic acid, cholesterol, HDLs, LDLs, triglycerides, etc) to a bout of exercise or physical activity.
  - c) The adaptations the heart, muscle, body fat, bone, blood, and other body systems and tissues make to regular physical activity
2. know, understand and/or demonstrate: Knowledge of the Federal Guidelines for physical activity.
3. know, understand and/or demonstrate: Skills needed for physiological testing
  - a) How to assess and evaluate body composition and body mass index.
4. know, understand and/or demonstrate: The ability to prescribe individual exercise programs that are safe and effective
  - a) Prescribing a fitness program based on fitness results, interests, available resources, etc.
5. know, understand and/or demonstrate: A basic knowledge of nutritional needs for active and sedentary populations including calories and nutrient needs
  - a) Including knowledge of the functions and food sources for protein, fat, carbohydrate, vitamins and minerals
  - b) Knowledge of the function and importance of water
  - c) Assess diets and plan a diet to meet National nutrition guidelines.
6. know, understand and/or demonstrate: Understand the key features needed for weight management and prevention of obesity.

#### **E. Minnesota Transfer Curriculum Goal Area(s) and Competencies**

None

#### **F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

#### **G. SPECIAL INFORMATION**

None noted