



## Course Number and Title: EXS 200 Nutrition for Sport and Exercise

**Campus Location:**

Wilmington

**Effective Date:**

2020-51

**Prerequisite:**

EXS 135 and BIO 115

**Co-Requisites:**

None

**Course Credits and Hours:**

3.00 credits

3.00 lecture hours/week

0.00 lab hours/week

**Course Description:**

This course covers the functions and sources of nutrients, energy balance, and metabolism with an emphasis on health promotion and disease prevention. Supplements, weight control, myths and fallacies, evaluation of popular diets and dietary approaches for specific physical activity are examined.

**Required Text(s):**

Obtain current textbook information by viewing the [campus bookstore - https://www.dtcc.edu/bookstores](https://www.dtcc.edu/bookstores) online or visit a campus bookstore. Check your course schedule for the course number and section.

**Additional Materials:**

Exercise Science Program Manual

Allied Health/Science Department Policy Manual

**Schedule Type:**

Classroom Course

**Disclaimer:**

None

**Core Course Performance Objectives (CCPOs):**

1. Explain the roles of most nutrients in the body and their interrelationships. (CCC 2, 4, 6; PGC 1, 2)
2. Explain the metabolic considerations of diet with regard to energy expenditure and weight control. (CCC 2, 4, 6; PGC 1, 2, 3)
3. List food sources of nutrients and distinguish whether or not a diet meets nutrient recommendations. (CCC 2, 4, 6; PGC 1, 2, 3)
4. Explain the role nutrition plays in health promotion and disease prevention. (CCC 2, 4, 6; PGC 1, 2)
5. Develop, analyze, and modify a diet designed for a specific physical activity. (CCC 2, 4, 6; PGC 1, 2, 3, 4, 5)
6. Determine criteria to evaluate reliable versus unreliable sources of nutrition information on the Internet. (CCC 2, 4, 5, 6; PGC 1, 2, 3, 9)
7. Analyze the use of various dietary supplements and ergogenic aids. (CCC 2, 4, 6; PGC 1, 2)
8. Complete a computer dietary intake assessment, and propose appropriate recommendations. (CCC 2, 4, 5, 6; PGC 1, 2, 3, 10)
9. Identify and demonstrate the components of professional behaviors as applied in the classroom and lab activities. (CCC 3, 4; PGC 1, 5, 8, 10)

See Core Curriculum Competencies and Program Graduate Competencies at the end of the syllabus. CCPOs are linked to every competency they develop.

**Measurable Performance Objectives (MPOs):**

Upon completion of this course, the student will:

1. Explain the roles of most nutrients in the body and their interrelationships.
  1. Define *organic chemistry*, and describe the special functional groups in carbohydrates, lipids, and proteins.
  2. Compare and contrast monosaccharides, disaccharides, and polysaccharides.
  3. Describe the glycemic index and its influence on blood sugar levels.
  4. Describe glycogen metabolism.
  5. Explain the effects of hypoglycemia, hyperglycemia, and glucosuria.
  6. Describe the metabolism of carbohydrates at rest and during exercise.
  7. Describe lipid catabolism and anabolism.
  8. Compare saturated, unsaturated, and polyunsaturated fatty acids.
  9. Define *high-density lipoproteins* (HDL), *low-density lipoproteins* (LDL), *lipoprotein A* (Lp(a)), *very low-density lipoproteins* (VLDL),

- and *chylomicrons* (CM), and discuss their influence on heart disease.
10. Describe the catabolism and anabolism of amino acids and proteins.
  11. Describe, compare the roles, and discuss the effects of deficiencies of water soluble and fat soluble vitamins in the body.
  12. Discuss hypervitaminosis.
  13. Describe, compare the roles, and discuss the effects of deficiencies of minerals in the body.
  14. Discuss the role of water with regard to proper nutrition.
  15. Discuss the importance of electrolytes for proper nutrition and well-being.
  16. Describe the roles of adenosine triphosphate (ATP), creatine phosphate (CP), and the reduced coenzymes nicotinamide adenine dinucleotide (NADH.H)<sup>+</sup>, and flavin adenine dinucleotide (FADH<sub>2</sub>) in the oxidative and the substrate level phosphorylation.
  17. Describe the stages and critical steps in anaerobic and aerobic respiration of a glucose molecule.
  18. Explain the chemiosmotic theory.
  19. Explain the concept of the metabolic mill.
2. Explain the metabolic considerations of diet with regard to energy expenditure and weight control.
    1. Describe how calories and joules are used to compare the energy value of nutrients.
    2. Define the following terms: *thermodynamics*, *energetics*, and *bioenergetics*.
    3. Identify the nutrient requirements best suited for immediate (phosphogenic), short term (anaerobic, glycolytic), and long term (aerobic) respiration pathways.
    4. Describe the metabolic dynamics of oxygen debt.
    5. Define *respiratory quotient* (RQ) and its implications in exercise prescription.
    6. Define *respiratory exchange ratio* (RER).
    7. Define *basal metabolic rate* (BMR) and explain the differences in BMR of males and females.
    8. Describe how physical activity, dietary-induced thermogenesis, climate, body mass, pregnancy, and lactation affect energy expenditure.
    9. Discuss creatine phosphate, ATP, and glycogen use in trained and untrained athletes during maximal exercise.
    10. Describe how caloric modifications of diet and/or exercise leads to weight loss or gain.
    11. Describe how body fat percentages are used to assess weight loss and weight gain.
    12. Describe the concept of periodized weight loss programs.
  3. List food sources of nutrients and distinguish whether or not a diet meets nutrient recommendations.
    1. Describe the significance of Recommended Daily Allowance (RDAs).
    2. Identify the essential and nonessential nutrients.
    3. Describe the basis underlying of the development of healthful dietary guidelines.
    4. Describe the foods that are available to meet specific nutrient needs.
    5. Describe the Food Guide Pyramid.
    6. Describe the food exchange system.
    7. Interpret food labels and health claims of various foods.
    8. Describe the benefits and concerns of vegetarian diets.
    9. Describe the nutritional considerations required for a vegetarian diet.
    10. Compare the various fad and popular diets with regards to their nutritional adequacy.
  4. Explain the role nutrition plays in health promotion and disease prevention.
    1. Describe the general guidelines for healthy eating.
    2. Describe anorexia nervosa and bulimia.
    3. Describe the female athlete triad.
    4. Describe how age, heredity, state and type of training, gender and body composition affect nutritional requirements.
    5. Describe how alcohol intake impacts nutritional planning.
    6. Describe the recommended dietary guidelines for reducing the risk of chronic disease.
    7. Describe how fluids and electrolytes are affected by physical performance.
    8. Describe fluids and electrolytes considerations and concerns when exercising in extreme temperatures.
  5. Develop, analyze, and modify a diet designed for a specific physical activity.
    1. Describe sports-related nutrition.
    2. Describe how proper nutrition can optimize athletic performance through pre-competition and during competition.
    3. Describe post-competition dietary considerations.
    4. Describe the use and functions of carbohydrates related to exercise performance.
    5. Calculate the value of carbohydrate loading, and describe how to carbohydrate load prior to various sport activities.
    6. Describe the use and functions of lipids related to exercise performance.
    7. Describe the use and functions of proteins related to exercise performance.
    8. Explain the importance of hydration prior, during, and after various sport activities.
    9. Design and interpret a dietary plan for weight loss or maintenance.
    10. Design and interpret a dietary plan for weight gain.
    11. Describe the optimal nutritional requirements for prolonged exercise and for intense exercise.
    12. Compare the energy expenditure of walking, jogging, and swimming.
    13. Compare and contrast the dietary recommendations for hypertrophy, maximum strength, and the muscle definition phases of a periodized strength training program.
    14. Analyze a current diet based upon the three-day dietary software results, and modify to meet the specific needs of various types of physical activity.
  6. Determine reliable versus unreliable sources of nutrition information on the Internet.
    1. Describe how to identify nutritional quackery in health and sports.
    2. Identify reliable electronic sources of nutritional information and supplement information.

7. Analyze the use of various dietary supplements and ergogenic aids.
  1. Describe the health implications of carbohydrate intake, including but not limited to: refined sugars, artificial sweeteners, complex carbohydrates, lactose intolerance, and dietary fiber.
  2. Describe the health implications of lipid intake, including but not limited to:
    1. Wheat germ oil
    2. Lecithin
    3. Omega-3 fatty acids
    4. Choline
    5. Carnitine
  3. Compare and contrast various popular fat-burner supplements with regard to their actions, effectiveness, safety, dose, and contraindications.
  4. Compare and contrast various popular mass-building supplements with regard to their actions, effectiveness, safety, dose, and contraindications.
  5. Discuss the use of illicit steroids.
  6. Analyze the results of a pre-exercise questionnaire of an individual who uses dietary supplements and/or ergogenic aids.
  7. List safety concerns and considerations of dietary supplement and ergogenic aid usage.
8. Complete a computer dietary intake assessment, and propose appropriate recommendations.
  1. Describe the appropriate protocol used to attain a three-day record of an individual's dietary intake.
  2. Use a dietary software program to analyze a three-day dietary intake.
  3. Analyze and make appropriate recommendations based upon the results of the three-day dietary software results.
  4. Develop dietary programs for various populations incorporating screening techniques, progress reports, and diet adjustments to the appropriate levels.
  5. Describe the dietary considerations when dealing with various special populations.
9. Identify and demonstrate the components of professional behaviors tool as applied in the classroom and lab activities.
  1. Complete a self-assessment on each behavior of the professional behaviors tool at least one time during this course.
  2. Demonstrate competence in the professional behaviors tool identified below:
    1. Professionalism and responsibility
    2. Interpersonal skills and communication skills
    3. Nonverbal communication
    4. Commitment to learning and effective use of time and resources
    5. Use of constructive feedback
    6. Problem-solving and critical thinking
    7. Stress management

**Evaluation Criteria/Policies:**

Students must demonstrate proficiency on all CCPOs at a minimal 75 percent level to successfully complete the course. The grade will be determined using the Delaware Tech grading system:

92	-	100	=	A
83	-	91	=	B
75	-	82	=	C
0	-	74	=	F

Students should refer to the [Student Handbook - https://www.dtcc.edu/handbook](https://www.dtcc.edu/handbook) for information on the Academic Standing Policy, the Academic Integrity Policy, Student Rights and Responsibilities, and other policies relevant to their academic progress.

**Final Course Grade:**

Calculated using the following weighted average

Evaluation Measure	Percentage of final grade
Exams (3 @20%) (summative)	60%
Project (summative)	20%
Final Exam (summative)	15%
Homework (9 @ 0.55%) (formative)	5%
Professional Behaviors Assessment (formative)	0%
TOTAL	100%

**Core Curriculum Competencies (CCCs are the competencies every graduate will develop):**

1. Apply clear and effective communication skills.
2. Use critical thinking to solve problems.
3. Collaborate to achieve a common goal.
4. Demonstrate professional and ethical conduct.
5. Use information literacy for effective vocational and/or academic research.
6. Apply quantitative reasoning and/or scientific inquiry to solve practical problems.

**Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):**

1. Integrate professional behaviors in an ethical, legal, safe, and effective manner within the exercise science delivery system.
2. Perform appropriate measurement and assessment techniques to assist in evaluating a client's status for proper exercise prescription plans.
3. Prescribe and implement a comprehensive exercise prescription plan based upon pre-exercise screenings.
4. Communicate effectively with clients about their progress.
5. Modify existing exercise prescription plans based upon routinely scheduled re-evaluations of clients.
6. Document relevant aspects of client treatment.
7. Demonstrate effective written, oral, and nonverbal communication skills with clients, their families, colleagues, health care providers, and the public.
8. Communicate knowledge by participating in the teaching and explaining of exercise science concepts to clients, colleagues and the public.
9. Recognize the importance of continued development of knowledge and skills through the practice of reading professional literature and attending continuing education activities.
10. Demonstrate the ability to apply their knowledge to aspects of clinical practice, as required of an entry-level Certified Exercise Science technologist.

**Disabilities Support Statement:**

The College is committed to providing reasonable accommodations for students with disabilities. Students are encouraged to schedule an appointment with the campus Disabilities Support Counselor to request an accommodation needed due to a disability. A listing of campus Disabilities Support Counselors and contact information can be found at the [disabilities services - https://www.dtcc.edu/disabilitysupport](https://www.dtcc.edu/disabilitysupport) web page or visit the campus Advising Center.