The Science Of Nutrition  
BIO-208-TE

This TECEP® places emphasis on accurate and scientifically sound information about human nutrition. Topics covered include: diet planning principles; macro, micronutrients and water, metabolism and weight management; nutrition in physical activity and nutrition across the lifecycle. (3 s.h.)

- Test format: 100 multiple choice questions (1 point each)
- Passing score: 65%. Your score will be reported as CR (credit) or NC (no credit).
- Time limit: 2 hours

Topics on the test and their approximate distribution

1. **Nutrition basics** (20%)
   A. Diet planning principles; the Food Label, USDA MyPlate and food guidance systems
   B. GI system and digestive problems

2. **The macronutrients: carbohydrates, fat and protein** (20%)
   A. Simple and complex carbohydrates/fiber
   B. Fats and the impact each has on health
   C. Proteins-adequate intake/vegetarianism

3. **Metabolism** (20%)
   A. Steps involved in metabolism
   B. How energy is derived from carbohydrate, fat and protein
   C. Consequences of consuming too much or too little energy
   D. Weight management

4. **Water, vitamins and minerals** (20%)
   A. Water: the essential nutrient-its function in health and recommendations for adequate hydration
   B. The water and fat soluble vitamins/antioxidants
   C. The minerals: major and trace minerals

5. **Nutrition applied to various life conditions** (20%)
   A. Nutrition applied to physical activity and sports nutrition
   B. Life cycle: fetal development, infancy, childhood, adolescence, adulthood and aging
   C. Disease and prevention
   D. Consumer concerns and food safety

Outcomes assessed on the test

- Describe how to properly design individualized eating plans by utilizing diet planning principles, the USDA MyPlate food guidance system, the RDA, and other food guide plans that incorporate personal and ethnic food preferences.
- Describe protein form and function, identify essential amino acids, explain the health effects of protein intake, describe protein-energy malnutrition, and explain how vegetarians and nonvegetarians obtain adequate protein.
- Explain the steps involved in metabolism and the way energy is derived from carbohydrate, fat, and protein, including the consequences of consuming too much or too little energy.
- Explain the effects of other types of dietary elements on metabolism including vitamins, water-electrolyte balance, and mineral supplementation.
- Apply nutritional material to life conditions including physical activity, pregnancy, disease, and aging.
Study materials

Eleanor Whitney and Sharon Rolfes. *Understanding Nutrition*
Current edition. Wadsworth/Thompson

Frances Sizer and Ellie Whitney. *Nutrition: Concepts and Controversies*
Current edition. Cengage Learning

Free online study resources:
Chapter from Open Stax Anatomy and Physiology Textbook
http://cnx.org/contents/14fb4ad7-39a1-4eee-ab6e-3ef2482e3e22@7.1:169/Anatomy_&_Physiology

Introduction to Nutrition
http://2012books.lardbucket.org/books/an-introduction-to-nutrition/

Tufts Open Course on Nutrition
http://ocw.tufts.edu/Course/47/Coursehome

Johns Hopkins Open Course on Nutrition
http://ocw.jhsph.edu/index.cfm/go/viewCourse/course/HumanNutrition/coursePage/lectureNotes/

Sample questions

1. What is one important function of fat in the body?
   a. To provide precursors for glucose synthesis
   b. To build muscle tissue
   c. To regulate blood glucose
   d. To protect vital organs against shock

2. Recommended Dietary Allowances may be used to
   a. measure nutrient balance of population groups
   b. assess dietary nutrient adequacy for individuals
   c. treat people with diet-related illnesses
   d. calculate exact food requirements for most individuals

3. What is the function of bile?
   a. It emulsifies fats.
   b. It initiates digestion of protein.
   c. It enhances absorption of complex carbohydrates.
   d. It protects stomach and small intestine from hydrochloric acid.

4. To assist the process of digestion and absorption, it is usually best to
   a. eat before 6 PM daily
   b. combine different food types to enhance the absorption process
   c. avoid eating meat and fruit at the same meal to prevent competition
   d. take enzyme supplements periodically so the system can rejuvenate

5. ___________ is an example of an added sugar.
   a. Raw sugar
   b. Eicosanoid
   c. Glycerol
   d. Levulose
6. Vitamin C serves as a(n)
   a. coenzyme
   b. antagonist
   c. antioxidant
   d. intrinsic factor

7. Which of the following nutrients show a dramatic increase in absorption during pregnancy?
   a. Salt and sugar
   b. Protein and fat
   c. Calcium and iron
   d. Thiamin and ascorbic acid

8. What is one of the most significant nutritional concerns for older adults?
   a. Depression caused by the death of a spouse, sibling, or friend
   b. Dehydration caused by lack of thirst
   c. Insufficient intake of carbohydrates to maintain adequate weight
   d. Excess intake of high-dose multivitamins

9. When there is insufficient glucose consumed to support metabolism, fat fragments combine to form
   a. ketone bodies
   b. glycerol
   c. chylomicrons
   d. triglycerides

10. Who is the most appropriate person to consult regarding nutritional information?
    a. Chiropractor
    b. Medical doctor
    c. Health food store owner
    d. Registered dietitian

11. Glycogen is mainly stored in
    a. muscle and liver tissue
    b. pancreas and kidney tissue
    c. stomach and intestine tissue
    d. brain and red blood cell tissue

12. In what part of the body are chylomicrons produced?
    a. Liver
    b. Small intestine
    c. Pancreas
    d. Gall bladder

13. A high-protein diet increases the risk of
    a. Parkinson's disease
    b. osteoporosis
    c. multiple sclerosis
    d. type I diabetes

14. The accumulation of body fat tissue surrounding the ________ contributes to chronic disease.
    a. chest
    b. face
    c. abdomen
    d. hips
15. What is the primary excretory route for the water-soluble vitamins?
   a. Bile
   b. Kidney
   c. Intestine
   d. Perspiration

16. In what population group are the effects of vitamin A deficiency most severe?
   a. Newborns
   b. Adolescents
   c. Adults
   d. Elderly

17. Which of the following conditions is an enlargement of the thyroid gland caused by an iodine deficiency?
   a. Goiter
   b. Strictures
   c. Hypokalaemia
   d. Psoriasis

18. Which of the following is a characteristic of the trace minerals?
   a. The amounts found in foods are not predictable.
   b. Dermatitis is a sign of deficiency common to many trace minerals.
   c. Deficiencies are more difficult to recognize in children than in adults.
   d. The average person has approximately 100 grams of trace minerals in their body.

19. The sequence of amino acids that make up a protein molecule is specified by
   a. diet
   b. age
   c. sex
   d. heredity

20. Which of the following foods requires the LEAST energy to produce?
   a. Fruit
   b. Vegetables
   c. Grains
   d. Meat

21. Heavy use of soy products as a substitute for meat can inhibit absorption of
   a. calcium
   b. folate
   c. vitamin D
   d. iron

22. The increasing independence that comes with adolescence can cause nutritional problems, because many adolescents
   a. have decreased appetites after their major growth spurt has taken place
   b. take medications that diminish the nutritional value of food
   c. spend their food money on illegal drugs
   d. are uninterested in or unaware of the importance of good nutrition

23. Why is exercise an important part of the treatment of diabetes?
   a. It prevents the heart problems associated with diabetes.
   b. It helps prevent amputations because exercised legs are stimulated to release stored glycogen.
   c. It stimulates muscles to take up 10-20 times more glucose than unexercised muscles.
   d. It burns excess kcalories and reduces body fat associated with diabetes onset.
24. Which of the following vitamins is most likely to be missing from a vegan diet?
   a. A
   b. B<sub>12</sub>
   c. C
   d. E

Answers to sample questions
1. b 2. b 3. a 4. b 5. a
6. c 7. c 8. b 9. a 10. d
11. a 12. b 13. b 14. c 15. b
16. a 17. a 18. a 19. d 20. c
21. d 22. d 23. c 24. b