Science of Nutrition

CREDIT HOURS 3

LEVEL LOWER

PUBLISHED NOVEMBER 2017
The most current content guides are available at: www.excelsior.edu/contentguides
## CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparing for the Exam</td>
<td>1</td>
</tr>
<tr>
<td>Before You Choose This UExcel Exam</td>
<td>1</td>
</tr>
<tr>
<td>Uses for the Examination</td>
<td>1</td>
</tr>
<tr>
<td>Examination Length and Scoring</td>
<td>1</td>
</tr>
<tr>
<td>UExcel Exam Resources</td>
<td>1</td>
</tr>
<tr>
<td>Excelsior College Bookstore</td>
<td>1</td>
</tr>
<tr>
<td>UExcel Practice Exams</td>
<td>1</td>
</tr>
<tr>
<td>Excelsior College Library</td>
<td>1</td>
</tr>
<tr>
<td>Online Tutoring</td>
<td>2</td>
</tr>
<tr>
<td>MyExcelsior Community</td>
<td>2</td>
</tr>
<tr>
<td>Preparing for UExcel Exams</td>
<td>2</td>
</tr>
<tr>
<td>How Long Will It Take Me to Study?</td>
<td>2</td>
</tr>
<tr>
<td>Study Tips</td>
<td>2</td>
</tr>
<tr>
<td>Using UExcel Practice Exams</td>
<td>2</td>
</tr>
<tr>
<td>About Test Preparation Services</td>
<td>3</td>
</tr>
<tr>
<td>Preparing for This Exam</td>
<td>3</td>
</tr>
<tr>
<td>Prior Knowledge</td>
<td>3</td>
</tr>
<tr>
<td>Using the Content Outline</td>
<td>3</td>
</tr>
<tr>
<td>Using the Sample Questions and Rationales</td>
<td>3</td>
</tr>
<tr>
<td>Recommended Resources for the UExcel Exam in Science of Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>Textbooks</td>
<td>3</td>
</tr>
<tr>
<td>Open Educational Resources</td>
<td>4</td>
</tr>
<tr>
<td>Reducing Textbook Costs</td>
<td>4</td>
</tr>
<tr>
<td>Practice Exam</td>
<td>4</td>
</tr>
<tr>
<td>Content Outline</td>
<td>5</td>
</tr>
<tr>
<td>General Description of the Examination</td>
<td>5</td>
</tr>
<tr>
<td>Learning Outcomes</td>
<td>5</td>
</tr>
<tr>
<td>Content Outline</td>
<td>6</td>
</tr>
<tr>
<td>Sample Questions</td>
<td>11</td>
</tr>
<tr>
<td>Rationales</td>
<td>13</td>
</tr>
<tr>
<td>Taking the Exam</td>
<td>16</td>
</tr>
<tr>
<td>Registering for Your Exam</td>
<td>16</td>
</tr>
<tr>
<td>Register Online</td>
<td>16</td>
</tr>
<tr>
<td>Examination Administration</td>
<td>16</td>
</tr>
<tr>
<td>Computer-Delivered Testing</td>
<td>16</td>
</tr>
<tr>
<td>On the Day of Your Exam</td>
<td>16</td>
</tr>
<tr>
<td>Important Reminders</td>
<td>16</td>
</tr>
<tr>
<td>Academic Honesty Nondisclosure Statement</td>
<td>16</td>
</tr>
<tr>
<td>Information About UExcel Exams for Colleges and Universities</td>
<td>17</td>
</tr>
<tr>
<td>Science of Nutrition Exam Development Committee</td>
<td>17</td>
</tr>
</tbody>
</table>
Before You Choose This UExcel Exam

Uses for the Examination

- Excelsior College, the test developer, recommends granting three (3) semester hours of lower-level undergraduate credit to students who receive a letter grade of C or higher on this examination.
- Other colleges and universities also recognize this exam as a basis for granting credit or advanced standing.
- Individual institutions set their own policies for the amount of credit awarded and the minimum acceptable score.

Exam-takers who have applied to Excelsior College should ask their academic advisor where this exam fits within their degree program.

Exam-takers not enrolled in an Excelsior College degree program should check with the institution from which they wish to receive credit to determine whether credit will be granted and/or to find out the minimum grade required for credit. Those who intend to enroll at Excelsior College should ask an admissions counselor where this exam fits within their intended degree program.

Examination Length and Scoring

The examination consists of approximately 120 questions, most of which are multiple choice; for samples of all the item types on this exam, see the sample items in the back of this guide. Some items are unscored, pretest items. The pretest items are embedded throughout the exam and are indistinguishable from the scored items. You will have two (2) hours to complete the examination. Your score will be reported as a letter grade.

UExcel Exam Resources

**Excelsior College Bookstore**

The Excelsior College Bookstore offers recommended textbooks and other resources to help you prepare for UExcel exams.

The bookstore is available online at: [www.excelsior.edu/bookstore](http://www.excelsior.edu/bookstore)

**UExcel Practice Exams**

The official UExcel practice exams are highly recommended as part of your study plan. Once you register for your UExcel exam, you are eligible to purchase the corresponding practice exam, which can be taken using any computer with a supported Web browser. Each practice exam includes two forms that you may take within a 180-day period.

**Excelsior College Library**

Enrolled Excelsior College students can access millions of authoritative resources online through the Excelsior College Library. Created through our partnership with the Sheridan Libraries of The Johns Hopkins University, the library provides access to journal articles, books, websites, databases, reference services, and many other resources. Special library
pages relate to the nursing degree exams and other selected exams. To access it, visit www.excelsior.edu/library (login is required).

Our library provides:

- 24/7 availability
- The world’s most current authoritative resources
- Help and support from staff librarians

**Online Tutoring**

Excelsior College offers online tutoring through SMARTTHINKING™ to connect with tutors who have been trained in a variety of academic subjects. To access SMARTTHINKING, go to www.excelsior.edu/smartthinking. Once there, you may download a copy of the SMARTTHINKING Student Handbook as a PDF.

**MyExcelsior Community**

MyExcelsior Community enables Excelsior College students and alumni to interact with their peers online. As members, students can participate in real-time chat groups, join online study groups, buy and sell used textbooks, and share Internet resources. Enrolled students have automatic access from their MyExcelsior page. Visit www.excelsior.edu/myexcelsiorcommunity.

**Preparing for UExcel Exams**

**How Long Will It Take Me to Study?**

A UExcel exam enables you to show that you've learned material comparable to one or more 15-week college-level courses. As an independent learner, you should study and review as much as you would for a college course. For a 3-credit course in a subject they don’t know, most students would be expected to study nine hours per week for 15 weeks, for a total of 135 hours.

**Study Tips**

Become an active user of the resource materials. Aim for understanding rather than memorization. The more active you are when you study, the more likely you will be to retain, understand, and apply the information.

The following techniques are generally considered to be active learning:

- **preview or survey** each chapter
- **highlight or underline text** you believe is important
- **write questions or comments** in the margins
- **practice re-stating content** in your own words
- **relate what you are reading** to the chapter title, section headings, and other organizing elements of the textbook
- **find ways to engage** your eyes, your ears, and your muscles, as well as your brain, in your studies
- **study with a partner or a small group** (if you are an enrolled student, search for partners on MyExcelsior Community)
- **prepare your review notes** as flashcards or create recordings that you can use while commuting or exercising

When you feel confident that you understand a content area, review what you have learned. Take a second look at the material to evaluate your understanding. If you have a study partner, the two of you can review by explaining the content to each other or writing test questions for each other to answer. Review questions from textbook chapters may be helpful for partner or individual study, as well.

**Using UExcel Practice Exams**

We recommend taking the first form of the practice exam when you begin studying, to see how much you already know. After taking the first practice exam, check your performance on each question and find out why your answer was right or wrong. This feedback will help you improve your knowledge of the subject and identify areas of weakness that you should address before taking the exam. Take the second form of the practice exam after you have finished studying. Analyze your results to identify the areas that you still need to review.

Although there is no guarantee, our research suggests that students who do well on the practice exams are more likely to pass the actual exam than those who do not do well (or do not take advantage of this opportunity).
About Test Preparation Services

Preparation for UExcel® exams and Excelsior College® Examinations, though based on independent study, is supported by Excelsior College with a comprehensive set of exam learning resources and services designed to help you succeed. These learning resources are prepared by Excelsior College so you can be assured that they are current and cover the content you are expected to master for the exams. These resources, and your desire to learn, are usually all that you will need to succeed.

There are test-preparation companies that will offer to help you study for our examinations. Some may imply a relationship with Excelsior College and/or make claims that their products and services are all that you need to prepare for our examinations.

Excelsior College is not affiliated with any test preparation firm and does not endorse the products or services of these companies. No test preparation vendor is authorized to provide admissions counseling or academic advising services, or to collect any payments, on behalf of Excelsior College. Excelsior College does not send authorized representatives to a student’s home nor does it review the materials provided by test preparation companies for content or compatibility with Excelsior College examinations.

To help you become a well-informed consumer, we suggest that before you make any purchase decision regarding study materials provided by organizations other than Excelsior College, you consider the points outlined on our website at www.excelsior.edu/testprep.

Preparing for This Exam

Prior Knowledge

No prior knowledge of nutrition is required for this examination; however, students are expected to have a basic understanding of human physiology, biology, and chemistry sufficient to master the cell biology concepts tested.

Using the Content Outline

Each content area in the outline includes (1) the recommended minimum hours of study to devote to that content area and (2) the most important sections of the recommended resources for that area. These annotations are not intended to be comprehensive. You may need to refer to other chapters in the recommended textbooks. Chapter numbers and titles may differ in other editions.

This content outline contains examples of the types of information you should study. Although these examples are numerous, do not assume that everything on the exam will come from these examples. Conversely, do not expect that every detail you study will appear on the exam. Any exam is only a broad sample of all the questions that could be asked about the subject matter.

Using the Sample Questions and Rationales

Each content guide provides sample questions to illustrate those typically found on the exam. These questions are intended to give you an idea of the level of knowledge expected and the way questions are typically phrased. The sample questions do not sample the entire content of the exam and are not intended to serve as an entire practice test.

Recommended Resources for the UExcel Exam in Science of Nutrition

The study materials listed below are recommended by Excelsior College as the most appropriate resources to help you study for the examination. For information on ordering from the Excelsior College Bookstore, see page 1 of this guide. You may also find resource materials in college libraries. Public libraries may have some of the textbooks or may be able to obtain them through an interlibrary loan program.

You should allow sufficient time to obtain resources and to study before taking the exam.

Textbooks

The following textbook was used by the examination development committee to verify all questions on the exam. These study materials may be purchased from the Excelsior College Bookstore.

www.excelsior.edu/bookstore
Open Educational Resources

We especially recommend:

Principles of Human Nutrition course from The Johns Hopkins School of Public Health (JHSPH)

http://ocw.jhsph.edu/index.cfm/go/viewCourse/course/HumanNutrition/coursePage/index/

Kansas State University Nutrition Flexbook.

https://docs.google.com/folderview?pli=1&id=0ByOHn1XKLsxbNWM2MGE3M2UtOTc4MC00N2RlLjY2UtYjY1NxExYTY3Y2I3

Reducing Textbook Costs

Many students know it is less expensive to buy a used textbook, and buying a previous edition is also an option. The Excelsior College bookstore includes a buyback feature and a used book marketplace, as well as the ability to rent digital versions of textbooks for as long as students need them. Students are encouraged to explore these and the many other opportunities available online to help defray textbook costs.

Practice Exam

The Practice Exam is available after you register for this UExcel exam.
**General Description of the Examination**

The UExcel Science of Nutrition examination is based on material typically taught in a one-semester lower-level course in nutrition science.

This examination measures knowledge of facts and terminology, an understanding of concepts central to the topics of macronutrients, water and micronutrients, cell biology and physiology of nutrient utilization, and energy balance, and the ability to apply these concepts.

Those beginning to study for this exam should be familiar with concepts generally covered in human physiology, biology, and chemistry.

**Learning Outcomes**

After you have successfully worked your way through the recommended study materials, you should be able to demonstrate the following learning outcomes:

1. Describe the guidelines and principles for planning a healthy diet.
2. Name and explain the functions of the macronutrients and micronutrients.
3. Explain the physiological effects of deficiency and toxicity of dietary nutrients.
4. Outline the processes of nutrient digestion, absorption, transport, and utilization.
5. Demonstrate an understanding of how energy balance contributes to both obesity and physical fitness.
6. Identify the major organ systems, tissues, cells, and intracellular organelles involved in nutrient utilization.
Content Outline

The content outline describes the various areas of the test, similar to the way a syllabus outlines a course. To fully prepare requires self-direction and discipline. Study involves careful reading, reflection, and systematic review.

The major content areas on the Science of Nutrition examination, the percent of the examination, and the hours to devote to each content area are listed below.

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Percent of the Examination</th>
<th>Hours of Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Overview of Nutrition</td>
<td>15%</td>
<td>20</td>
</tr>
<tr>
<td>II. Macronutrients</td>
<td>25%</td>
<td>27</td>
</tr>
<tr>
<td>III. Water and Micronutrients</td>
<td>25%</td>
<td>27</td>
</tr>
<tr>
<td>IV. Physiology of Nutrient Utilization</td>
<td>15%</td>
<td>21</td>
</tr>
<tr>
<td>V. Consequences of Energy Balance</td>
<td>20%</td>
<td>27</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: Occasionally, examples will be listed for a content topic to help clarify that topic. However, the content of the examination is not limited to the specific examples given.

I. Overview of Nutrition

15 PERCENT OF EXAM | 20 HOURS OF STUDY

Ch. 1, An Overview of Nutrition
Ch. 2, Planning a Healthy Diet

A. Introduction

1. Classification of nutrients
   a. Essential nutrients
   b. Energy yielding nutrients
   c. Organic vs. inorganic nutrients
2. Science of nutrition
   a. Scientific method

B. Planning a healthy diet

1. Principles and guidelines
   a. Dietary guidelines for Americans
   b. Nutrient and energy density
2. Diet planning guides
   a. MyPlate
   b. Nutrients of concern
3. Food labels

1) Development of hypotheses
2) Research design
b. Types of research studies
   1) Epidemiological
   2) Experimental
3. Dietary reference intakes (DRIs)
4. Nutrition assessment, diet, and health
   a. Adequate nutrition
   b. Malnutrition
   c. Chronic diseases
5. Reliable nutrition information
a. Ingredient list
b. Nutrition facts panel
c. Claims on labels

4. Vegetarian diets

II. Macronutrients

25 PERCENT OF EXAM | 27 HOURS OF STUDY

Ch. 4, The Carbohydrates: Sugars, Starches, and Fibers
Ch. 5, The Lipids: Triglycerides, Phospholipids, and Sterols
Ch. 6, Protein: Amino Acids

A. Carbohydrates
1. Types of carbohydrates
   a. Simple (mono- and disaccharides)
   b. Complex
   c. Fiber
      1) Soluble
      2) Insoluble
2. Food sources and recommended intakes
3. Glucose homeostasis
   a. Type 1 diabetes
   b. Type 2 diabetes
4. Health effects associated with carbohydrates
   a. Obesity
   b. Gastrointestinal health
   c. Dental caries
   d. Lactose intolerance
   e. Alternative sweeteners

B. Lipids
1. Types of lipids
   a. Triglycerides
      1) Glycerol
      2) Fatty acids
         a) Saturated
         b) Unsaturated
   b. Phospholipids
   c. Sterols
      1) Cholesterol
      2) Phytosterols (plant sterols)
2. Food sources and recommended intakes of lipids
   a. Health effects associated with lipids
   b. Cardiovascular disease
      1) Hydrogenation and trans fatty acids
   c. Obesity
   d. Cancer

C. Proteins
1. Amino acids
   a. Nonessential
   b. Essential
2. Protein turnover
   a. Amino acid pool
   b. Nitrogen balance
3. Functions of proteins
4. Food sources and recommended intakes
   a. Protein quality
   b. Complete proteins
   c. Incomplete and complementary proteins
5. Health effects associated with proteins
   a. Protein energy malnutrition
   b. Protein and amino acid supplementation
6. Animal vs. plant sources
III. Water and Micronutrients

25 PERCENT OF EXAM  |  27 HOURS OF STUDY

Ch. 10, The Water-Soluble Vitamins: B Vitamins and Vitamin C
Ch. 11, The Fat-Soluble Vitamins: A, D, E, and K
Ch. 12, Water and the Major Minerals
Ch. 13, The Trace Minerals

A. Water
1. Properties and importance of water
2. Functions of water in the body
3. Water balance and recommended intake
4. Dehydration

B. Minerals: the inorganic nutrients
1. Dietary requirements, food sources, functions in the body, effects of deficiency and toxicity of minerals
   a. Major minerals
      1) Electrolytes
         a) Sodium
         b) Potassium
         c) Chloride
      2) Other major minerals
         a) Calcium
         b) Phosphorus
         c) Magnesium
         d) Sulfur
   b. Trace minerals
      1) Iron
      2) Zinc
      3) Iodine
      4) Selenium
      5) Copper
      6) Manganese
      7) Fluoride
      8) Chromium
      9) Molybdenum

C. Vitamins
1. Dietary requirements, food sources, functions in the body, effects of deficiency and toxicity of vitamins
2. Water-soluble vitamins
   a. B vitamins
      1) Thiamine
      2) Riboflavin
      3) Niacin
      4) Biotin
      5) Pantothenic acid
      6) Vitamin B6
      7) Folate
      8) Vitamin B12
   b. Vitamin C
3. Fat-soluble vitamins
   a. Vitamin A
   b. Vitamin D
   c. Vitamin E
   d. Vitamin K
4. Health effects
   a. B-vitamin fortification
   b. Neural tube defects
   c. Pernicious anemia
   d. Vitamin D supplements

D. Antioxidant nutrients and health
E. Vitamin and mineral supplements

c. Common health effects associated with minerals
   1) Hypertension
   2) Osteoporosis
   3) Iron deficiency anemia and hemochromatosis
   4) Iodine deficiency
   5) Fluoride and dental caries
   6) Hyponatremia
IV. Cell Biology and Physiology of Nutrient Utilization

15 PERCENT OF EXAM | 21 HOURS OF STUDY

Ch. 3, Digestion, Absorption, and Transport
Ch. 7, Energy Metabolism

A. Digestion
   1. Anatomy of the GI tract
   2. Muscular action
   3. Digestive secretions
   4. Nutrient digestion
      a. Carbohydrates
      b. Lipids
      c. Protein
      d. Fiber

B. Absorption
   1. Mechanisms of absorption
   2. To the bloodstream
      a. Amino acids, di- and tripeptides
      b. Simple carbohydrates
      c. Short and medium chain fatty acids, glycerol
      d. Water-soluble vitamins
      e. Minerals
      f. Water
   3. To the lymphatic system
      a. Monoglycerides
      b. Long chain fatty acids
      c. Fat-soluble vitamins
      d. Cholesterol and phospholipids

C. Health and regulation of the GI tract
   1. Bacteria
   2. Hormones
   3. Nerve pathways
   4. Health and digestive problems
      a. Diarrhea
      b. Irritable bowel syndrome
      c. Constipation
      d. GERD
      e. Other problems

D. Transport
   1. Vascular system
   2. Lymphatic system
   3. Lipid transport
      a. Lipoproteins

E. Cell anatomy and metabolism
   1. Catabolic pathways
      a. Glycolysis
      b. TCA cycle
      c. Electron transport chain
      d. Beta-oxidation
      e. Feasting and fasting
   2. Anabolic pathways
      a. Protein synthesis
      b. Gluconeogenesis
      c. Glycogen synthesis
      d. Lipogenesis
   3. Alcohol metabolism

F. Excretion
   1. Kidneys
   2. Bile
   3. Intestines
   4. Skin
V. Consequences of Energy Balance

Ch. 8, Energy Balance and Body Composition
Ch. 9, Weight Management: Overweight, Obesity, and Underweight
Ch. 14, Fitness: Physical Activity, Nutrients, and Body Adaptations

A. Energy balance
   1. Influences on energy intake
   2. Components of energy expenditure

B. Body composition
   1. Measurements
      a. BMI
      b. DEXA
      c. Other measures
   2. Fat distribution
      a. Waist circumference

C. Weight management and health implications of over- and underweight
   1. Overweight and obesity
      a. Prevalence
         1) Childhood obesity
      b. Physiology of adipose tissue
      c. Causes of overweight and obesity
         1) Genetics
         2) Environment
      d. Treatments for overweight and obesity
         1) Dietary factors
            a) Eating plans
               (i) Fad diets
            2) Behavior modification
            3) Physical activity
            4) Aggressive treatments
               a) Surgery
               b) Drugs
   2. Underweight
      a. Physiological implications
      b. Treatments
      c. Eating disorders
         1) Anorexia
         2) Bulimia
         3) Binge eating
         4) Female athlete triad
         5) Other disorders

D. Physical fitness
   1. Definition of physical fitness
   2. Benefits of fitness
   3. Types of fitness
   4. Energy systems to support activity
      a. Anaerobic
         1) ATP-CP
         2) Glycolysis
      b. Aerobic
         1) Glycogen utilization
         2) Fat utilization
   5. Nutrients to support activity
      a. Vitamins
      b. Minerals
      c. Fluids and electrolytes
         1) Sports drinks
      d. Dietary patterns
         1) Diets to support activity
         2) Before, during, and after competition foods/meals
      e. Supplements and ergogenic aids
Sample Questions

The sample questions give you an idea of the level of knowledge expected in the exam and how questions are typically phrased. They are not representative of the entire content of the exam and are not intended to serve as a practice test.

Rationales for the questions can be found on pages 13–15 of this guide. In that section, the correct answer is identified and each answer is explained. The number in parentheses at the beginning of each rationale refers to the corresponding section of the content outline. For any questions you answer incorrectly, return to that section of the content outline for further study.

1. Which are consistently reliable sources of nutrition-related information? (Select the 2 that apply.)
   1) an unsolicited e-mail
   2) a registered dietician
   3) a famous athlete
   4) the PubMed website
   5) a website selling a product

2. Which of the following is considered an “empty kCal” food?
   1) pizza
   2) bacon
   3) soda
   4) hamburger

3. Which descriptions are accurate about the MyPlate tool? (Select the 3 that apply.)
   1) Its recommendations apply only to adults.
   2) The sections of the plate vary in size to show the relative proportion of each food group.
   3) It lists the healthiest choices within each food group.
   4) It reflects five food groups.
   5) It was created by the United States Department of Agriculture.

4. What was the basis for the Food and Drug Administration’s (FDA’s) granting stevia the status of “generally recognized as safe”?
   1) Stevia was used for many years by the indigenous people of South America to sweeten their beverages.
   2) Stevia has an Acceptable Daily Intake (ADI) of 4 mg/kg body weight.
   3) Stevia is a glycoside digested and absorbed normally.
   4) Stevia is 300 times as sweet as pure sucrose.

5. How would consumption of plant sterols affect total blood cholesterol concentration?
   Total blood cholesterol concentration would
   1) remain the same.
   2) decrease.
   3) increase slightly.
   4) increase dramatically.
6. Which hormone is a protein?
   1) testosterone
   2) estrogen
   3) cortisol
   4) insulin

7. For which condition is oral rehydration therapy necessary?
   1) overproduction of aldosterone by adrenal glands
   2) dehydration due to diarrhea
   3) protein loss from injury
   4) glucose loss in diabetes

8. Which is rich in molybdenum?
   1) cereals
   2) butter
   3) oils
   4) poultry

9. Which B vitamin is most likely to be destroyed by food processing?
   1) pantothenic acid
   2) niacin
   3) biotin
   4) riboflavin

10. Which segment of the gastrointestinal tract has three muscle layers?
    1) stomach
    2) esophagus
    3) small intestine
    4) large intestine

11. Why is high-density lipoprotein (HDL) called the “good” cholesterol?
    1) HDL cholesterol is metabolized by the muscle.
    2) HDL inhibits the transport of dietary lipids by chylomicrons.
    3) HDL interacts with VLDL, causing less fat to be deposited in the fat cell.
    4) HDL picks up cholesterol from the body’s cells and facilitates its disposal by the liver.

12. Which substance can be used to make glucose?
    1) lactate
    2) fatty acids
    3) acetyl CoA
    4) ketogenic amino acids

13. Which is likely to be the most successful weight-loss strategy?
    1) taking ephedrine-containing supplements that help with weight loss (about 2 pounds a month)
    2) combining of steam, sauna bath, and wraps to burn and break up fat
    3) losing 10 percent of weight within 6 months to one year
    4) taking FDA-approved drugs for weight loss

14. During high-intensity exercise, a person depletes which fuel source most significantly?
    1) glycogen
    2) fat
    3) protein
    4) lactate

15. Which is least beneficial for replacing fluids for serious endurance athletes during athletic events?
    1) enhanced water
    2) energy drink
    3) sports drink
    4) plain water
1. (IA5)
   1. There is no way to know if this information is reliable or not.

   *2. RDs have college degrees in nutrition and/or dietetics, and are thus qualified to give sound nutritional advice.

3. Unless the individual has formal, college-level training in nutrition, there is no way for you to know if what they say is factual and based upon valid scientific evidence.

   *4. This is a federal government-sponsored website that contains links to peer-reviewed scientific studies. It is thus a trustworthy source of valid nutrition-related information.

5) When money is involved, one should always be cautious and wary.

2. (IB1b)
   1. Even pizza contains some nutrients (protein, fats, carbohydrates).

   2. Even bacon contains some nutrients (protein, fat).

   *3. Soda is considered an empty calorie food because none of its calories provide any nutrients.

   4. Even a hamburger contains some nutrients (protein, fat).

3. (IB2a)
   1. The MyPlate recommendations apply to children as well as adults.

   *2. Each part of MyPlate is sized differently to reflect the relative proportion each food group contributes to a healthy diet. For example, the vegetable section is slightly larger than the protein section.

   3. MyPlate does not distinguish between the foods that are high or low in nutrient density.

   *4. The four food groups are fruits, grains, vegetables, and protein. A circle to the right represents dairy.

   *5) MyPlate was created by the USDA and is found on the website www.choosemyplate.gov.

4. (IIA4e)
   *1. The fact that stevia has been used for many years without side effects by people in South America was a major reason for granting GRAS status.

   2. The ADI for stevia is not a basis for granting GRAS status.

   3. The fact that stevia is digested and absorbed normally is not a basis for GRAS status.

   4. The sweetness of stevia is not a basis for granting GRAS status.

*correct answer
5. (IIB2)
1. Plant sterols can significantly decrease blood cholesterol concentration, so it would not remain the same.
2. Consumption of plant sterols would decrease total blood cholesterol concentration.
3. Plant sterols do not cause blood cholesterol concentration to increase.
4. See 3).

6. (IIC3)
1. Testosterone is made from the lipid cholesterol and is not a protein.
2. Estrogen is made from the lipid cholesterol and is not a protein.
3. Cortisol is a steroid hormone and is not a protein.
4. Insulin is a small protein made by the pancreas.

7. (IIA3)
1. Medical intervention is necessary because this condition occurs when there is a kidney tumor. Mere oral rehydration therapy is insufficient.
2. Oral rehydration therapy is used worldwide to replace fluid lost due to dehydration. It consists of a solution of sugar, salt, and water and is taken by mouth.
3. Oral rehydration therapy does not treat protein loss from injury.
4. Medical intervention is necessary because this occurs when diabetes is uncontrolled. Mere oral rehydration therapy is insufficient.

8. (IIIB1b9)
1. Molybdenum-rich foods include legumes, breads, other grain products, leafy green vegetables, milk, and liver.
2. See 1).
3. See 1).
4. See 1).

9. (IIIC2a5)
1. Pantothenic acid is easily destroyed in food processing.
2. Niacin is relatively stable during food processing.
3. Biotin is relatively stable during food processing.
4. Riboflavin is easily destroyed by light, but is relatively stable during food processing.

10. (IVA2)
1. The stomach has circular, longitudinal, and diagonal muscle layers.
2. The esophagus has circular and longitudinal muscle layers.
3. The small intestine has circular and longitudinal muscle layers.
4. The large intestine has circular and longitudinal muscle layers.

11. (IVD3)
1. HDL cholesterol is not metabolized by the muscle.
2. Inhibition of chylomicron transport of dietary lipids is not a function of HDL.
3. HDL interaction with VLDL does not result in less fat deposition in tissues.
4. HDL cholesterol is known as “good cholesterol” because it encourages cardiovascular health by participating in reverse cholesterol transport.

12. (IVE2b)
1. Lactate can be converted to pyruvate, which can be used to make glucose.
2. Fatty acids are oxidized to acetyl CoA which cannot be used to make glucose.
3. Acetyl CoA cannot be used to make glucose.
4. Ketogenic amino acids can be converted to acetyl CoA, which cannot be used to make glucose.
13. (VC1d)
1. This weight loss comes with great risk. These supplements have been implicated in numerous heart attacks and seizures.

2. These gimmicks don’t help with weight loss. They do not melt the fat off the body, although they may dehydrate people so they lose water weight.

*3. Successful weight-loss strategies embrace small changes, moderate losses, and reasonable goals. Losing 10 percent of weight within 6 months to one year is the most reasonable strategy.

4. When these drugs are used as part of a long-term comprehensive weight loss program, they can help with modest weight loss; nevertheless, the long-term use of drugs poses risks.

14. (VD4b1)
*1. For most people, glycogen stores will be depleted by two hours of intensive activity unless the activity intensity is reduced to allow for more aerobic metabolism.

2. See 1).

3. See 1).

4. See 1).

15. (VD5c1)
1. Enhanced water contains few carbohydrates and electrolytes, but flavors may encourage greater fluid intake.

*2. Energy drinks can hinder performance and contain high concentrations of carbohydrates that are not optimal for fluid absorption.

3. Sports drinks deliver fluids as well as carbohydrates and electrolytes in specific concentrations necessary to replenish fluids and nutrients lost during endurance activities.

4. Plain water delivers fluids without any potential harmful additions. While it may not be sufficient alone for an endurance athlete, it is unlikely to cause harm or hinder performance.
SECTION FIVE

Taking the Exam

Registering for Your Exam

Register Online

www.excelsior.edu/examregistration

Follow the instructions and pay by Visa, MasterCard, American Express, or Discover Card.

Examination Administration

Pearson Testing Centers serve as the administrator for all Excelsior College computer-delivered exams. The Disability Services office at Excelsior College is responsible for considering requests for reasonable accommodations (exceptions for individual students with documented disabilities). If you are requesting an accommodation due to a disability, download and complete a Request for Accommodation form that can be accessed by visiting the Excelsior College website at www.excelsior.edu/disability-services.

Computer-Delivered Testing

You will take the exam by computer, entering your answers using either the keyboard or the mouse. The system is designed to be as user-friendly as possible, even for those with little or no computer experience. On-screen instructions are similar to those you would see in a paper examination booklet.

We strongly encourage you to use the online tutorial before taking your exam at a Pearson Testing Center. To access the tutorial, go to www.pearsonvue.com/uexcel and click on the Pearson VUE Tutorial link on the right hand side of the page.

On the Day of Your Exam

Important Reminders

On the day of your exam, remember to:

• dress comfortably: the computer will not mind that you’re wearing your favorite relaxation outfit

• arrive at the test site rested and prepared to concentrate for an extended period

• allow sufficient time to travel, park, and locate the test center

• be prepared for possible variations in temperature at the test center due to weather changes or energy conservation measures

• bring your ID, but otherwise, don’t weigh yourself down with belongings that will have to be kept in a locker during the test.

Academic Honesty

Nondisclosure Statement

• All test takers must agree to the terms of the Excelsior College Academic Honesty Policy before taking an examination. The agreement will be presented on screen at the Pearson VUE Testing Center before the start of your exam.

• Once the test taker agrees to the terms of the Academic Honesty Nondisclosure Statement, the exam will begin.

If you choose not to accept the terms of the agreement

• your exam will be terminated

• you will be required to leave the testing center
you will not be eligible for a refund. For more information, review the Student Policy Handbook at www.excelsior.edu/studentpolicyhandbook.

Student behavior is monitored during and after the exam. Electronic measures are used to monitor the security of test items and scan for illegal use of intellectual property. This monitoring includes surveillance of Internet chat rooms, websites, and other public forums.

Information About UExcel Exams for Colleges and Universities

A committee of teaching faculty and practicing professionals determines the learning outcomes to be tested on each exam. Excelsior College Center for Educational Measurement staff oversee the technical aspects of test construction in accordance with current professional standards. To promote fairness in testing, we take special care to ensure that the language used in the exams and related materials is consistent, professional, and user friendly. Editorial staff perform systematic quantitative and qualitative reviews to ensure accuracy, clarity, and compliance with conventions of bias-free language usage.

Excelsior College, the test developer, recommends granting three (3) semester hours of lower-level undergraduate credit to students who receive a letter grade of C or higher on this examination. Other colleges and universities also recognize this exam as a basis for granting credit or advanced standing. Individual institutions set their own policies for the amount of credit awarded and the minimum acceptable score.

Science of Nutrition Exam Development Committee

James F. Collins, PhD (Vanderbilt University, Molecular Physiology, 1994)
Associate Professor, Food Science and Human Nutrition, University of Florida

Nancy M. DiMarco, PhD, RD, CSSD (Iowa State University, Nutritional Physiology, 1979)
Professor, Nutrition and Food Sciences, Texas Woman’s University

Sonya Hauser, PhD (Tufts University, Food Policy and Applied Nutrition, 2009)
Graduate Program Director and Assistant Professor, Nutrition Science, The Sage Colleges

Julian E. Spallholz, PhD (University of Hawaii, Biochemistry-Biophysics, 1971)
Professor, Nutrition and Biochemistry, Texas Tech University