

SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

ACADEMIC AFFAIRS

Course Number: BIOL 142 Department: Biology

Course Title: Introductory Nutrition Semester: Fall Year: 2001

Objectives/Competencies

Course Objective	Competencies
1. Understand food choices and relationship to human health.	<ol style="list-style-type: none">1. Explain the importance of the science of nutrition to human health.2. Describe the process by which scientists uncover nutrition facts.3. List the six classes of nutrients including which are organic and which are energy yielding.4. Describe the cultural and social meanings attached to food.5. Differentiate between those diseases that are strongly influenced by diet and those that are not responsive to nutrition.6. Identify and explain the five characteristics of a nutritious diet.7. Begin planning a healthy diet by using the concept of nutrient density.
2. Understand nutrition standards and guidelines.	<ol style="list-style-type: none">1. Describe the roles Recommended Dietary Allowances (RDA) and Daily values play in achieving adequate

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<p>3. Describe the remarkable human body.</p> <p>4. Understand carbohydrates: sugar, starch, glycogen, and fiber.</p>	<p>nutrient intakes.</p> <ol style="list-style-type: none"> 2. Describe how RDA's are established for nutrients and for energy intake. 3. Describe the various nutrition guidelines established by the United States, Canada, and the World Health Organization and compare their function to that of the RDA. 4. Identify the components of the Daily Food Guide and the Food Guide Pyramid and discuss how they are used to plan healthy diets. 5. Discuss how consumers can use the ingredients lists, nutrition facts panel, and health messages on food labels to make healthy food choices. 6. Describe characteristics of the Mediterranean diet and the evidence supporting its theoretical role in reducing incidence of heart disease and certain cancers. <ol style="list-style-type: none"> 1. Identify the basic needs of cells and describe how cells are organized into tissues, organs, and systems. 2. Describe the major functions of the cardiovascular, hormonal, nervous, digestive, and excretory systems. 3. Describe the mechanical and chemical digestive processes in order of their occurrence in the body. 4. Compare and contrast the diet of Stone Age people with the diet we eat in today's world. <ol style="list-style-type: none"> 1. Distinguish among the various carbohydrates found in

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<p>5. Understand lipids: fats, oils, phospholipids, and sterols.</p>	<p>foods and in the human body.</p> <ol style="list-style-type: none"> 2. Describe the body's use of glucose to provide energy or to make glycogen and fat. 3. Discuss diabetes, hypoglycemia, and lactose intolerance and their relationship to carbohydrate intake. 4. Discuss the roles of fiber-rich foods in the maintenance of the body's health and identify foods rich in fiber. 5. Assess the role alternative sweeteners play in one's diet. <ol style="list-style-type: none"> 1. Explain the way lipids are useful, both in foods and in the body. 2. Describe the structure of a triglyceride noting the differences between saturated and unsaturated. 3. Summarize the processes of lipid digestion, absorption, transport, and utilization in the body, including the significance of the lipoproteins. 4. Explain why manufacturers frequently hydrogenate fats and the possible health implications of consuming the trans-fatty acids formed during hydrogenation. 5. List the arguments for and against the growing use of the fat replacers Simplese and olestra. 6. Plan a diet containing fat in the right kinds and in the recommended amounts to provide optimal health and pleasure eating. 7. Discuss the possible roles for high-fat diets in the causation of obesity.
<p>6. Understand proteins and amino acids.</p>	

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<p>7. Understand the role of vitamins in the body.</p>	<ol style="list-style-type: none"> 1. Describe the structure of proteins and explain why adequate amounts of all the essential amino acids are required for protein synthesis. 2. Summarize the processes of protein digestion and absorption in the body. 3. Explain the roles of proteins in the body. 4. Discuss the importance of protein quality and mutual supplementation. 5. Calculate your individual protein RDA and describe how nitrogen balance studies are used in determining the RDA for protein. 6. Describe the consequences of both protein deficiency and protein excess. 7. Compare the positive health aspects of a vegetarian diet with those of a diet that includes meat and describe ways each diet can include adequate nutrients. <ol style="list-style-type: none"> 1. Define the term vitamin and explain how vitamins are classified. 2. Describe the characteristics of fat-soluble vitamins and water-soluble vitamins and explain how they differ. 3. List the chief functions and food sources of each vitamin and describe any major deficiency and toxicity symptoms associated with each. 4. Identify groups of people who may benefit from a multivitamin-mineral supplement and discuss guidelines for choosing an appropriate supplement.

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<p>8. Understand the role of water and minerals in the body.</p> <p>9. Understand energy balance and weight control.</p>	<p>5. Describe the best method of planning a diet that is both rich in vitamins and consistent with the Dietary Guidelines for Americans.</p> <p>6. Discuss the evidence suggesting that antioxidant nutrients and phytochemicals protect against cancer, heart disease, and age-related blindness.</p> <p>1. Discuss the major roles of water in the body and the amount of water needed by adults.</p> <p>2. Describe how the body regulates water intake and excretion to maintain water balance.</p> <p>3. Compare the arguments for and against drinking bottled water.</p> <p>4. Explain the role of minerals in maintaining the body's fluid and electrolyte balance and acid-base balance.</p> <p>5. List the major roles and important deficiency and toxicity symptoms for each major and trace mineral.</p> <p>6. List good food sources for the major and trace minerals.</p> <p>7. Support claims made for calcium in preventing osteoporosis.</p> <p>1. List and define the three components of the body's energy budget.</p> <p>2. Identify and explain the factors that affect the basal metabolic rate.</p> <p>3. Estimate his or her individual total energy expenditure.</p> <p>4. Discuss the problems of too much or too little body fat.</p>

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<p>10. Understand nutrients, physical activity, and the body's responses.</p>	<ol style="list-style-type: none"> 5. Discuss the role of standard weight tables and BMI in evaluating obesity. 6. Evaluate the methods used for estimating body fatness. 7. Summarize the theories that attempt to explain the mystery of obesity. 8. Explain what happens during moderate weight loss versus rapid weight loss. 9. Summarize the recommended strategies to promote weight control and understand the role surgery and pills play in this attempt. 10. Discuss the debate over whether overweight people should diet to lose weight. <ol style="list-style-type: none"> 1. Explain the benefits of and guidelines for regular physical activity for the body. 2. Summarize how the body adjusts its fuel mix to respond to physical activity of varying intensity levels and duration. 3. Discuss the effects, if any, of a high-protein diet on athletic performance. 4. Discuss the roles vitamins and minerals play in physical performance and indicate whether supplements are necessary to support the needs of active people. 5. List the risks of taking "ergogenic" aids and steroids to enhance physical performance. 6. Describe the best way to stay hydrated before and during exercise. 7. Define and describe eating disorders and explain the

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<p>13. Understand life cycle nutrition: child, teen, and older adult.</p>	<p>syndrome.</p> <ol style="list-style-type: none"> 5. List the benefits of breastfeeding on an infant and indicate the changes a lactating woman needs to make in her diet to promote breastfeeding success. 6. Describe the circumstances under which breastfeeding is not recommended and explain what alternative exist for proper infant nutrition. 7. Plan a timetable for feeding foods to an infant from birth to twelve months of age. 8. Give examples of some common nutrient-drug interactions.
<p>14. Understand food safety and food technology.</p>	<ol style="list-style-type: none"> 1. Describe the nutrient needs of young children and appropriate feeding practices including such issues as choking, portion sizes, and snacking. 2. Discuss nutrition-related concerns of children including the link between diet and behavior, the problem of lead, and impact of television on nutrition. 3. Distinguish between food allergies, intolerances, and aversions. 4. Discuss the special nutrient needs and concerns of teenagers including the effect of diet on PMS and acne. 5. Describe special nutritional needs of older adults and the suspected connections between diet and disease. 6. Discuss the relationship between food, mind, and memory. <ol style="list-style-type: none"> 1. List and prioritize the five hazards in our food supply

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<p>15. Understand world hunger and the global environment.</p>	<p>identified by the Food and Drug Administration.</p> <ol style="list-style-type: none"> 2. Discuss how microbial food poisoning can be prevented and indicate which foods are particularly troublesome. 3. Describe the risks, if any, of the following foods: natural toxins, environmental contaminants, pesticides, and hormone residues. 4. List four major food-processing techniques and explain the effect they have on the nutrient content of foods. 5. Discuss the regulations concerning food additives and identify the special roles of the major classes of additives. 6. List the arguments for and against the use of new food technologies. <ol style="list-style-type: none"> 1. Discuss some of the problems facing the global environment and how human uses of resources and energy are largely responsible. 2. Distinguish between the following terms: hunger, food insecurity, food poverty, and food shortage. 3. List some of the U.S. government programs designed to relieve poverty and hunger and discuss their effectiveness. 4. Compare the causes of hunger in the United States and in developing countries and explain the roles played by food shortages, chronic hunger, and the diminishing world food supply. 5. Explain how relieving poverty and overpopulation will help alleviate environmental degradation and hunger. 6. List some of the environmentally conscious food shopping

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	<p>and cooking activities consumers can choose to minimize the impacts on the environment.</p> <p>7. Discuss some of the environmental and social costs of agriculture and the food industry and indicate possible solutions that would enable both agribusiness and the environment to survive.</p>