

WTCS Repository

10-806-172 Basic Nutritional Science

Course Outcome Summary

Course Information

Description This course provides an introduction into the science of nutrition. Basics concepts related to digestion and metabolism are presented. The significance of carbohydrates., lipids, proteins and vitamins to the human organism are discussed. The relationship of proper nutrition to selected pathological conditions throughout the human lifecycle is presented. The concept of sustainability and environmentally - conscious food production introduced.

Total Credits 3.00

Pre/Corequisites

Prerequisite Each Wisconsin Technical College determines the General Education course prerequisites used by their academic institution. If prerequisites for a course are determined to be appropriate, the final Course Outcome Summary must identify the prerequisites approved for use by the individual Technical College.

Course Competencies

1. Describe the role for carbohydrate in human physiology.

Assessment Strategies

1.1. in classroom assessment activities, on a quiz, on a worksheet, on a comprehensive examination

Criteria

Your performance will be successful when:

- 1.1. you explain the structure of monosaccharides, disaccharides and polysaccharides
- 1.2. you relate structure to function
- 1.3. you explain health benefits of soluble and insoluble fiber
- 1.4. you complete fiber content worksheet

2. Describe the role for lipids/fats in human physiology.

Assessment Strategies

2.1. in classroom assessment activities, on a quiz, on a worksheet, on a comprehensive examination

Criteria

Your performance will be successful when:

- 2.1. you explain the structure of triglycerides, fatty acids, and cholesterol
- 2.2. you relate structure to function
- 2.3. you define the function of fat in the body
- 2.4. you identify the role of fat and list optimal amounts in the diet
- 2.5. you identify essential fatty acids and food sources for each
- 2.6. you explain "good" and "bad" cholesterol and optimal blood lipid levels for each
- 2.7. you explain hydrogenation and trans fatty acids
- 2.8. you outline physiological consequences of over-consumption of fats

3. Describe the role for proteins in human physiology.

Assessment Strategies

3.1. in classroom assessment activities, on a quiz, on a worksheet, on a comprehensive examination

Criteria

Your performance will be successful when:

- 3.1. you complete worksheet assessing own protein intake
- 3.2. you relate structure to function
- 3.3. you list three complete and three incomplete proteins
- 3.4. you identify the diseases caused by protein deprivation
- 3.5. you identify the health consequences of protein over-consumption
- 3.6. you describe protein metabolism as related to enzymes, hormones, immunity, gluconeogenesis, and fluid balance

4. Describe the role for vitamins in human physiology.

Assessment Strategies

4.1. completing quiz, worksheet, and comprehensive examination

Criteria

Your performance will be successful when:

- 4.1. you contrast the role of vitamins to the other nutrients
- 4.2. you identify the water soluble vitamins, function, and good food sources for each
- 4.3. you identify the fat soluble vitamins, function, and good food sources for each
- 4.4. you define precursor and antagonist as they relate to vitamins
- 4.5. you identify potential causes of vitamin deficiencies
- 4.6. you describe affect of harvesting, processing, preparation and storage of foods to potential vitamin content variability
- 4.7. you state conditions of use for vitamin supplement preparations
- 4.8. you recognize potentially toxic intake levels of vitamins
- 4.9. you complete vitamin use worksheet

5. Describe the role for minerals in human physiology.

Assessment Strategies

5.1. in classroom assessment activities, on a quiz and comprehensive examination

Criteria

Your performance will be successful when:

- 5.1. you utilize dietary intake tables to identify recommended intakes of trace minerals
- 5.2. you state function and good food sources of essential minerals
- 5.3. you describe potential toxicity signs from minerals
- 5.4. you list population groups "at risk" from deficiency states
- 5.5. you utilize dietary intake tables to identify recommended intakes of trace minerals

6. Describe the role for water in human physiology.

Assessment Strategies

6.1. in classroom assessment activities, on a quiz, worksheet, and comprehensive examination

Criteria

Your performance will be successful when:

- 6.1. you calculate own fluid needs on a worksheet
- 6.2. you explain conditions causing dehydration
- 6.3. you define overhydration
- 6.4. you list physiological consequences of dehydration

7. Identify the organs of the digestive track.

Assessment Strategies

7.1. in classroom assessment activities, on quiz, and comprehensive examination

Criteria

Your performance will be successful when:

- 7.1. you identify physiological location of mouth and esophagus
- 7.2. you identify physiological location and importance of the role of the liver and gall bladder in the digestive process
- 7.3. you identify the liver, gall bladder, pancreas and small intestines as organs that produce and secrete digestive substances
- 7.4. you identify physiological location and function of the small and large intestine

8. Explain chemical and mechanical components of digestion/absorption.

Assessment Strategies

8.1. in classroom assessment activities, on a quiz, and on a comprehensive examination

Criteria

Your performance will be successful when:

- 8.1. you list three mechanical actions of digestion
- 8.2. you identify digestive juices and function of each
- 8.3. you identify two of the four organs that produce substances needed in digestion
- 8.4. you explain the function of enzymes in chemical breakdown of food

9. List diseases that impact digestion/absorption.

Assessment Strategies

9.1. in classroom assessment activities, on a quiz, and on a comprehensive examination

Criteria

Your performance will be successful when:

- 9.1. you explain the impact of an ulcer, hernia, GERD, constipation, diarrhea, and IBS on digestion/absorption
- 9.2. you explain the impact of GERD on digestion and absorption
- 9.3. you identify dietary factors related to the impact of constipation on digestion and absorption
- 9.4. you explain the impact of diarrhea and IRS on digestion and absorption

10. Identify substances absorbed upon completion of protein/fat/carbohydrate digestion.

Assessment Strategies

10.1. in classroom assessment activities, on a quiz, on a comprehensive examination

Criteria

Your performance will be successful when:

- 10.1. you identify three simple sugars absorbed from carbohydrate
- 10.2. you explain absorption as a process which allows digested nutrients to be moved into circulation
- 10.3. you identify free fatty acids as one of the substances broken down from fat during digestion
- 10.4. you identify amino acids as the substances absorbed from the digestion of protein

11. Analyze intake for ten nutrients utilizing standards.

Assessment Strategies

11.1. in classroom assessment activities, on a quiz, and on a comprehensive examination.

Criteria

Your performance will be successful when:

- 11.1. you will list amounts of foods from each group you will include each day
- 11.2. you will list amounts of foods from each group you need daily

- 11.3. you will identify serving sizes in both ounces and cup measurements
- 11.4. you will create an individualized Food Guide Pyramid from mypyramid.gov

12. Explain the role of the Food Guide Pyramid in assessing nutritional adequacy.

Assessment Strategies

- 12.1. in classroom assessment activities, on a worksheet, on a quiz, and on comprehensive examination

Criteria

Your performance will be successful when:

- 12.1. you list the food groups and amounts needed daily
- 12.2. you select and print standardized menu for 2000 kcalories from mypyramid.gov
- 12.3. you demonstrate use of Food Guide Pyramid and menu for assessing adequacy
- 12.4. you identify the recommended serving size for each food group

13. Describe the role of Dietary Guidelines for Americans for making healthy lifestyle changes.

Assessment Strategies

- 13.1. in classroom assessment activities, on a quiz, and on a comprehensive examination.

Criteria

Your performance will be successful when:

- 13.1. you list the eight Dietary Guidelines
- 13.2. you identify lifestyle factors indicated for meeting guidelines
- 13.3. you explain which guideline has the most meaning for you as an individual and why
- 13.4. you describe the role of the guidelines for improving the health of Americans

14. Explain use of nutrients listed and Daily Reference Value on nutritional label as tools for making healthy food choices.

Assessment Strategies

- 14.1. in classroom assessment activities, on a quiz, on a worksheet, and on a comprehensive examination

Criteria

Your performance will be successful when:

- 14.1. you list all components of a nutritional label
- 14.2. you describe the rationale for items included on the label
- 14.3. you identify items listed in Daily Reference Values
- 14.4. you list the health claims permitted
- 14.5. you analyze two food labels on worksheet accurately interpreting requested data

15. Relate nutritional needs to "at risk" groups within each human life cycle stage.

Assessment Strategies

- 15.1. in classroom assessment activities, on worksheets, on quiz, and on comprehensive examination.

Criteria

Your performance will be successful when:

- 15.1. you identify lifestyle changes that impact nutritional risk
- 15.2. you list three specific nutrients whose deprivation indicates risk during pregnancy
- 15.3. you identify two nutrients whose deficiency places children at nutritional risk
- 15.4. you list three nutritional risk factors for the elderly

16. Identify nutritional needs during pregnancy, lactation, infancy, toddlerhood, childhood, adolescence, early, middle and late adulthood.

Assessment Strategies

- 16.1. in classroom activities, on a quiz, and on comprehensive examination

Criteria

Your performance will be successful when:

- 16.1. you list unique nutrient needs for pregnancy and lactation
- 16.2. you identify advantages of breast feeding
- 16.3. you define growth pattern of infancy
- 16.4. you identify unique eating patterns of toddlers

17. Differentiate between physical changes of growth years and physiological changes in middle to late adulthood.

Assessment Strategies

- 17.1. in classroom assessment activities, on quiz, and on comprehensive examination

Criteria

Your performance will be successful when:

- 17.1. you relate physical and nutritional concerns for older adulthood
- 17.2. you identify nutritional growth parameters for infancy, childhood, adolescence
- 17.3. you compare physiological changes to different stages in human life cycle
- 17.4. you contrast physiological changes of infancy and older adulthood that could relate to nutritional status

18. Identify effect of lifestyle choices on longevity.

Assessment Strategies

- 18.1. in classroom assessment activities, on a quiz, and on a comprehensive examination

Criteria

Your performance will be successful when:

- 18.1. you list lifestyle nutritional concerns of middle adulthood
- 18.2. you relate physical and nutritional concerns for older adulthood
- 18.3. you describe three nutritional choices that are related to longevity
- 18.4. you relate nutritional choices from Dietary Guidelines to longevity

19. Calculate nutritional needs during life cycle utilizing standard tools of assessment.

Assessment Strategies

- 19.1. in classroom assessment activities, on a worksheet, on a quiz, and on comprehensive examination

Criteria

Your performance will be successful when:

- 19.1. you determine calorie and protein needs for a four-pound infant using standards
- 19.2. you accurately calculate your own nutritional needs for calories, protein, and grams of fiber, fat, and carbohydrate
- 19.3. you identify calcium needs and appropriate foods containing calcium for pregnant females

20. Describe the role of exercise in health prevention, maintenance, and fitness goals.

Assessment Strategies

- 20.1. in classroom assessment activities, on worksheets, on quizzes, and on a comprehensive examination.

Criteria

Your performance will be successful when:

- 20.1. you identify AHA, ADA, ACS risk factors for disease prevention for cardiovascular disease, diabetes, cancer, and obesity
- 20.2. you identify value of exercise in disease prevention
- 20.3. you describe appropriate behavioral interventions for implementing exercise plans
- 20.4. you list nutritional choices according to guidelines and standards that help prevent identified diseases
- 20.5. you list overconsumption of fat, calories and sodium as contributing to nutritional excesses
- 20.6. you identify fruits and vegetables and foods related to nutritional deficiencies
- 20.7. you relate hypertension, lipid abnormalities, obesity, and limited exercise as lifestyle choices contributing to diabetes

- 20.8. you define Type 1 and Type 2 Diabetes using ADA criteria
- 20.9. you interpret BMI calculations relating to obesity
- 20.10. you identify contributing factors of environment and genetics to obesity
- 20.11. you list five health consequences of obesity
- 20.12. you relate use of Dietary Guidelines to identified disease prevention
- 20.13. you write menus for identified diseases using disease-specific guidelines and with > 95% accuracy

21. Describe the role of nutritional choices on risk for cardiovascular disease, cancer, diabetes, and obesity.

Assessment Strategies

- 21.1. in classroom assessment activities, on worksheets, on quizzes, and on a comprehensive examination

Criteria

Your performance will be successful when:

- 21.1. you list two nutritional choices that relate to the risk of cardiovascular disease
- 21.2. you explain the relationship of high fat and low fiber intake to the risk of cancer
- 21.3. you identify sweetened beverages as a potential contributor to obesity
- 21.4. you explain the role of excessive caloric intake to the risk for Type 2 Diabetes

22. Identify physiological consequences of nutritional deficiencies/excesses on identified diseases.

Assessment Strategies

- 22.1. in classroom assessment activities, on worksheets, on quizzes, and on a comprehensive examination

Criteria

Your performance will be successful when:

- 22.1. you list specific levels of nutritional excess for fat and sodium related to hypertension
- 22.2. you explain the role of substituting nutrient-dense foods for calorie-dense foods in treating obesity and diabetes
- 22.3. you identify the role of complex carbohydrates in treating diabetes
- 22.4. you identify one nutrient excess related to cancer and obesity

23. Identify physiological consequences of nutritional and lifestyle choices on glucose metabolism.

Assessment Strategies

- 23.1. in classroom assessment activities, on worksheets, on quizzes, and on a comprehensive examination

Criteria

Your performance will be successful when:

- 23.1. you explain the physiology of Type 1 Diabetes
- 23.2. you explain the physiology of Type 2 Diabetes
- 23.3. you list three food groups that impact blood glucose excursions
- 23.4. you identify the role of exercise and weight management on diabetes treatment

24. Explain health consequences of obesity.

Assessment Strategies

- 24.1. in classroom assessment activities, on quiz, and on comprehensive examination

Criteria

Your performance will be successful when:

- 24.1. you complete nutritional calculations using standards with 95% accuracy
- 24.2. you identify three environmental factors contributing to obesity
- 24.3. you list four health consequences of obesity
- 24.4. you identify the BMI as one standard for assessing weight status

25. Analyze research sources describing lifestyle changes that impact nutritional interventions.

Assessment Strategies

- 25.1. in classroom assessment activities, on worksheets, on quizzes, and on a comprehensive examination

Criteria

Your performance will be successful when:

- 25.1. you identify AHA guidelines for sodium and fat as a component for cardiovascular disease prevention
- 25.2. you list ACS nutritional guidelines for lowering the risk of cancer
- 25.3. you utilize the Food Guide Pyramid as a tool for preventing obesity
- 25.4. you list ADA guidelines for decreasing the risk of Type 2 Diabetes
- 25.5. you identify ADA/AHA/NIC/ACS as credible nutrition information resources

26. Describe nutritional interventions appropriate for identified diseases.

Assessment Strategies

- 26.1. in classroom assessment activities, on worksheets, on quizzes, and on a comprehensive examination

Criteria

Your performance will be successful when:

- 26.1. you prepare a one-day menu meeting DASH diet guidelines
- 26.2. you prepare a one-day menu using carbohydrate counting standards
- 26.3. you prepare a one-day menu for cancer risk reduction identifying three foods containing phytochemicals
- 26.4. you identify three lifestyle choices for obesity management

27. Identify how food procurement and production of resources contributes to global environmental problems

Assessment Strategies

- 27.1. in classroom assessment activities, on quiz, and on comprehensive examination

Criteria

Your performance will be successful when:

- 27.1. you list environmental impact of global food production
- 27.2. you trace production of three food items in the food supply from inception to consumption
- 27.3. you identify global deficiencies in food production
- 27.4. you list populations at nutritional risk due to deficits in food production
- 27.5. you identify energy utilization concerns in food production
- 27.6. you list food production practices that contribute to resource waste
- 27.7. you conduct energy audit and develop action plan meeting criteria
- 27.8. you identify five major hazards in food supply meeting FDA criteria
- 27.9. list outlines acceptable food handling procedures according to Food Code; US or state
- 27.10. you identify three educational tools for food safety meeting criteria

28. Describe global environmental problems in food production.

Assessment Strategies

- 28.1. in classroom assessment activities, on worksheets, on quizzes, and on a comprehensive examination

Criteria

Your performance will be successful when:

- 28.1. you identify the impact of environmental degradation on the world food supply
- 28.2. you explain the role of poverty and overpopulation to efficient food distribution/production
- 28.3. you identify PEM and Iron deficiency anemia as two nutritional disorders related to ineffective food distribution/production
- 28.4. you identify overweight and obesity as nutritional excesses related to economics in developing countries

29. Identify environmentally-conscious decisions that minimize impact on environment.

Assessment Strategies

- 29.1. in classroom assessment activities, on worksheets, on quizzes, and on a comprehensive examination

Criteria

Your performance will be successful when:

- 29.1. you identify the role of energy utilization during food production to energy conservation
- 29.2. you list four food production practices that contribute to waste
- 29.3. you conduct a home energy audit using guidelines
- 29.4. you develop an intervention plan utilizing results of an energy audit

30. Describe food safety standards.

Assessment Strategies

- 30.1. in classroom assessment activities, on worksheets, on quizzes, and on a comprehensive examination

Criteria

Your performance will be successful when:

- 30.1. you list four bacteria and one virus as food-borne pathogens
- 30.2. you identify five food handling procedures to prevent food-borne illnesses
- 30.3. you list safe food storage, holding and serving temperatures utilizing the Food Code standards
- 30.4. you list FIGHT BAC as an acceptable educational tool for food safety standards