Course Outline for Nutrition 1

INTRODUCTION TO NUTRITION SCIENCE

Catalog Description:

NUTR 1 - Introduction to Nutrition Science 3.00 units
Scientific concepts of nutrition related to the function of nutrients, sources and recommended intakes. Nutritional assessment and the role of nutrition in the maintenance of health.
Strongly Recommended: CHEM 30A (completed with a grade of "C" or higher) and, MTH 53 (completed with a grade of "C" or higher) and, ENGL 1A (completed with a grade of "C" or higher)

Grading Option: Optional

Discipline:

<table>
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<tr>
<th>Units</th>
<th>Contact Hours</th>
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<tbody>
<tr>
<td></td>
<td>Week</td>
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<tr>
<td>Lecture</td>
<td>3.00</td>
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<tr>
<td>Laboratory</td>
<td>0.00</td>
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<tr>
<td>Total</td>
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Prerequisite Skills:
None

Measurable Objectives:

Upon completion of this course, the student should be able to:
1. describe nutrition as an evolving science;
2. evaluate the credibility of nutrition information and misinformation;
3. evaluate the efficacy and safety of nutrition trends and controversies based on established nutrition science;
4. apply established standards/tools/guidelines to make informed decisions regarding food choices and diet;
5. utilize the information presented on a food label to make informed choices regarding food products;
6. describe the characteristics, functions and sources of the energy-yielding nutrients: carbohydrates, lipids, and proteins;
7. describe the characteristics, functions and sources of the non-energy-yielding nutrients: vitamins, minerals, and water;
8. describe the characteristics, functions and sources of non-nutrients including phytochemicals;
9. describe the processes of digestion, absorption and metabolism, including substrates, location, and outcome;
10. describe energy balance and its role in body weight and body composition;
11. explain the role of nutrition in health promotion, prevention of lifestyle-driven diseases, and chronic disease risk reduction;
12. evaluate diet in terms of nutrients required and food sources;
13. analyze nutritional intake compared to scientifically-derived recommendations and make recommendations for improvement;
14. identify the importance and content of good nutrition throughout the lifespan including: pregnancy, lactation, infancy, childhood, adolescence, and older adulthood;
15. prevent food borne illness through proper handling and preparation of food items;
16. describe the connection between conventional vs. sustainable agricultural practices, quality of food, and the effects on our environment;
17. utilize a computer database to evaluate a personal diet record;
18. describe food insecurity, world hunger, its causes, and effects;
19. describe different cultural preferences of food and social connections that effect dietary choices.

Course Content:

1. Food choices and human health
   A. The role of nutrition in the prevention of disease
   B. Chemical elements in foods
   C. The role of scientific research
   D. Cultural preferences and social connections that effect food choices
2. Nutrition standards and guidelines
   A. Nutrient recommendations
   B. Planning and assessing diets with current nutrition tools
      a. Adequacy, Balance, Calorie Control, Moderation, Variety
      b. Nutrient Density
   c. USDA Food Guide
   d. Dietary Reference Intakes (DRI)
      a. Recommended Dietary Allowances (RDA)
      b. Adequate Intakes (AI)
      c. Estimated Average Requirements (EAR)
      d. Tolerable Upper Level Intakes (UL)
   C. Food Labels
      a. Requirements of the Nutrition Education and Labeling Act
      b. The Nutrition Facts Panel
Nutrient claims permitted on labels
d. Health claims permitted on labels and degree of evidence required

3. Nutrient characteristics, functions, sources, deficiencies and excesses:
   a. Carbohydrates
   b. Fats
   c. Proteins
   d. Vitamins
   e. Minerals
   f. Water

4. Biology and physiology of the digestive system
   a. Structures and functions of gastrointestinal tract
   b. Process of digestion including foods, substrates, location, and outcome
   c. Role of enzymes in digestion
   d. Absorption of nutrients
   e. Overview of metabolism of carbohydrates, fats, (and minimally proteins) in energy production.

5. Malnutrition
   a. Undernutrition
   b. Deficiencies
   c. Toxicities
   d. Obesity

6. Energy balance and body composition

7. Nutrients, physical activity, and metabolism
   a. Benefits of physical activity
   b. Fueling the body
   c. Fluids and temperature regulation

8. Role of physical activity and nutrition in health promotion and disease risk reduction
   a. Cardiovascular diseases
   b. Hypertension
   c. Cancer
   d. Type 2 Diabetes
   e. High cholesterol
   f. Obesity
   g. Osteoporosis

9. Nutritional needs throughout the life cycle
   a. Pregnancy
   b. Fetal needs
   c. Infancy
   d. Child
   e. Adolescent
   f. Adult
   g. Older adult

10. Food Technologies
    a. Pasteurization
    b. Irradiation
    c. Genetically Modified Organism

11. Hunger and the global environment
    a. Food insecurity, world hunger
    b. Environmental degradation
    c. Sustainable agriculture, the “slow food” movement
    d. Conventional agriculture
    e. Organic foods

Methods of Presentation
1. Lecture/Discussion
2. Media presentations
3. Audio visual aids
4. Presentation

Assignments and Methods of Evaluating Student Progress

1. Typical Assignments
   a. Reading 1) Read the chapter on Carbohydrates: sugar, starch, glycogen and fiber 2) Read the controversy about alternative sweeteners
   b. Discussion 1) Should a person avoid carbohydrates to lose weight? 2) To what degree are sugar and alternative sweeteners “bad” for you?
   c. Food label 1) Based on the following food label: 2) How many calories are there in the entire package? 3) How many trans fats does this food contain? 4) If you ate half of the package, how much sugar would you be consuming?
   d. Diet analysis 1) Keep a food diary of everything you eat and drink for 7 consecutive days 2) Analyze your nutrient intake using computer-based tools 3) Compare and contrast your food intake to nutrient recommendations 4) Evaluate how your diet may increase or decrease your risks for developing chronic, lifestyle-related diseases discussed in class. 5) Make recommendations for changes that will improve your diet to increase longevity and decrease risk of lifestyle-related diseases.

2. Methods of Evaluating Student Progress
   a. Exams/Tests
   b. Class Participation
   c. Assigned activities
   d. Final Examination
   e. Dietary Analysis

3. Student Learning Outcomes
   Upon the completion of this course, the student should be able to:
   a. Analyze personal dietary intakes compared to established nutrient recommendations.
   b. Based on dietary analysis, student will suggest substitutions of food items that will enhance health and aid in prevention of disease.
   c. Calculate calories per serving from any given macronutrient in any given food label.
   d. Discuss and differentiate between strengths and weaknesses of their personal dietary intakes.

Textbooks (Typical):
Special Student Materials

Abbreviated Class Schedule Description:

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