BIOL 45: INTRODUCTION TO HUMAN NUTRITION

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2023
Units:	4
Hours:	4 lecture per week (48 total per quarter)
Prerequisite:	BIOL 1A or 40A.
Advisory:	One of the following: ENGL 1A or 1AH or ESLL 26.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	CSU/UC
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Student Learning Outcomes

- Upon successful completion of the course, students will be able to utilize the dietary Guidelines for Americans to plan a diet for both healthy individuals as well as individuals at increased risk for chronic illnesses such as heart disease and type 2 diabetes.
- Upon successful completion of the course, students will be able to utilize dietary analysis software to analyze current dietary intake and subsequently make suggestions for appropriate dietary modifications, and explain the rationale for these recommendations.
- Upon successful completion of the course, students will be able to interpret food labels, explain the rationale for the information, and teach a potential patient how to use the labels to make informed dietary choices.

Description

Introduction to the medical aspects of nutrition, intended for students wishing to pursue a career in health care. Biological function and chemical classification of nutrients. Nutritional needs throughout the lifespan. Effects of nutritional deficiencies and excesses. Recommended nutrient intakes and the role of diet in the development of chronic disease.

Course Objectives

The student will be able to:

1. Explain the scientific basis for and the uses of various food and nutrient guides across the lifespan
2. Outline basic steps used in evaluation of nutritional status and discuss limitations of the various techniques
3. Describe the chemical structure and biological functions of macronutrients and recall recommendations and major food sources for each
4. Discuss the major steps of macronutrient metabolism
5. Recall the factors influencing energy balance and appraise the role that they play in the management of weight control
6. Describe the major roles of vitamins and minerals and relate the effects of deficiencies and excesses to their metabolic functions
7. Assess the nutritional adequacy of a diet of a healthy person and propose specific changes that will reduce the possibility of chronic disease and malnutrition
8. Describe appropriate food safety practices and mechanisms for prevention of food-borne illness
9. Critically evaluate resources for current nutrition information
10. Discuss the role of the human gut microbiome in maintaining homeostasis and in moderating risk for chronic diseases

Course Content

1. Principles of scientific inquiry
   a. Scientific method
   b. Advantages and limitations to epidemiology and experimental research in the development of nutritional theories
      i. Scientific basis for the development of various food and nutrient guides including the Dietary Reference Intakes (DRIs)
      ii. Criteria for and use of the Dietary Reference Intakes across the lifespan including use of food labels
      iii. Role and use of food-based guides, including the Dietary Guidelines for Americans and the Food Guide Pyramid
2. Nutritional assessment techniques
   a. Methods for determining food intake
      i. 24 hour recall
      ii. Food diary
   b. Anthropometric assessments
   c. Physical examination
   d. Assessment of socioeconomic and educational status
   e. Biochemical tests
3. Macronutrients (carbohydrates, lipids, and proteins)
   a. Chemical structure
   b. Biological functions
   c. Food sources
   d. Recommendations across the lifespan
4. Energy metabolism
   a. Role of ATP
   b. Roles of enzymes and hormones
   c. Major steps of digestion, absorption, and energy metabolism of macronutrients
5. Energy balance and weight control
   a. Components of caloric expenditure
   b. Methods to assess weight and body fatness
   c. Treatments for overweight and obesity
   d. Role of overweight and obesity in chronic disease
6. Micronutrients
   a. Biological functions
   b. Food sources
   c. Major deficiency and toxicity diseases
7. Dietary analysis
   a. Major risk factors for development of chronic diseases, including atherosclerosis, hypertension, osteoporosis
   b. Role and use of food-based guides for prevention of chronic disease, including Dietary Guidelines for Americans, MyPlate guidelines, and DRIs
8. Food safety and food-borne illness

   a. Safe food handing techniques
   b. Common causes of food-borne illness
   c. Identification of populations at high risk for food-borne illness
   d. Prevention of food-borne illness
9. Critical evaluation of resources of information for current topics in nutrition
   a. Peer-reviewed scientific journals
   b. Internet sources of information
10. Role of human microbiome in nutritional health
   a. Effect on energy balance, nutrient metabolism
   b. Role in gastrointestinal tract health and chronic disease

Lab Content

Not applicable.

Special Facilities and/or Equipment

1. Projector, DVDs, access to computers and the internet.
2. When taught via Foothill Global Access, on-going access to computer with email software and hardware; email address.

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

Computer analysis of a five-day dietary intake used to evaluate application of dietary methodologies
Detailed written analysis of the results of computerized dietary analysis reports, requiring students to:
1. Use diction and tone appropriate to the academic community
2. Demonstrate the ability to draw reasoned inferences based on reading personal data
3. Substantiate their conclusions, using logical and systematic organization and supporting evidence
When taught exclusively online, students will be required to participate in weekly, graded online discussions
May include written examinations designed to test both memorization and critical thinking skills
May include open-book, open-note quizzes

Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

Lecture
Discussion
Cooperative learning exercises
Electronic discussions/chat

Representative Text(s) and Other Materials

Byrd-Bredbenner, C., et al.. Wardaw's Perspectives in Nutrition, 12th ed.. 2022.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

1. Weekly reading assignments of approximately 30-60 pages of material
2. Written analysis of a five-day dietary intake

Discipline(s)

Biological Sciences or Health or Nutritional Science/Dietetics