

UK LEVEL: 5
UK CREDITS: 15

(Previously: BMS 3425 Human Nutrition)
(Updated: Fall 2024)

PREREQUISITES:

BI 1000 Introduction to Biology I
BI 1101 Introduction to Biology II
CH 2015 General Chemistry

CATALOG DESCRIPTION:

An integrated overview of the physiological requirements and functions of major nutrients for humans, the connection between nutrition and disease, the role of nutrients in growth and health through the life cycle and in physical activity, dietary requirements, as well as issues of food safety, food security and contemporary challenges of nutrition and the food system.

RATIONALE:

The course is designed for life sciences majors and students interested in learning more about nutrition and human health. It provides an understanding of the basics of human nutrition and the relationships between nutrition, health, and disease. Our world faces major contemporary challenges in relation to food availability, production and consumption. Poverty and overpopulation in the less-developed countries lead to malnutrition, hunger and deficiency diseases; on the other side, affluence and changing lifestyles in the developed countries, result in over nutrition, obesity, cardiovascular diseases and cancer. This course provides essential knowledge and skills that help students better understand the role of nutrition in health promotion and disease prevention, evaluate its role in different life stages and conditions and make more informed personal health choices. This knowledge is vital for students aiming at careers in the biomedical and health professions.

LEARNING OUTCOMES:

As a result of taking this course, the student should be able to:

1. Demonstrate knowledge and understanding of the major macro and micronutrients and how they function in the human body.
2. Explain the role of key nutrients in the prevention of disease, and discuss major nutrition-related diseases.
3. Discuss the role of nutrition through different stages of the life cycle, as well as its role in physical activity.
4. Critically discuss advances and challenges in food safety, food technology and global food production, and propose sustainable solutions.
5. Analyze data and information from scientific research articles related to nutrition.

METHOD OF TEACHING AND LEARNING:

In congruence with the teaching and learning strategy of the college, the following tools are used:

- Lectures and class discussions.
- Homework assignments.
- Office hours held by the instructor to provide further assistance to students.
- Use of library facilities for further study and preparation for the exams
- Use of the Blackboard course management platform to further

support communication, by posting lecture notes, assignment instruction, timely announcements, formative quizzes and online submission of assignments.

ASSESSMENT:

Summative:

1 st assessment: It includes the following components: <ul style="list-style-type: none"> a) Systematic Review on a specific nutrition topic, leading to a written report (1,500 words): 15% b) Oral Presentation of the Systematic Review: 20% c) Critical Reflection on a scientific article or report, leading to a written report (1,500 words): 15% 	50%
2 nd assessment: Final examination (2 hours) (essay questions)	50%

Formative:

Essay questions/problems (in-class or as homework assignments)	0
In-class or online quizzes	0

The formative assessments [essay questions as homework assignments] aim to prepare students for the summative assessments.
 The First Assessment [Systematic Review, Oral Presentation and Critical Review] tests Learning Outcomes 1, 2, 3, 4 and 5.
 The Second Assessment [Final examination] tests Learning Outcomes 1, 2, 3, and 4.

The final grade for this module will be determined by averaging all summative assessment grades, based on the predetermined weights for each assessment.

INDICATIVE READING:

REQUIRED READING:
 Sizer, F. and Whitney, E. (2023) *Nutrition: Concepts and Controversies*. 16th edition. Cengage Learning.

RECOMMENDED READING:

- *Encyclopedia of Human Nutrition* (2005). 2nd edition. London: Academic Press.
- Shils, Olson, Shike, and Ross (Eds.), (1999). *Modern Nutrition in Health and Disease*, 9th edition. Williams and Wilkins.
- Linder, Ed. (1991). *Nutritional Biochemistry and Metabolism*, 2nd edition. Elsevier.

Other sources, including journal and newspapers' articles, research papers etc. are recommended by the instructor throughout the semester.

INDICATIVE MATERIAL:
 (e.g. audiovisual, digital material, etc.)

REQUIRED MATERIAL:
 N/A

RECOMMENDED MATERIAL:
 N/A

COMMUNICATION REQUIREMENTS:	Verbal and written skills using academic / professional English
SOFTWARE REQUIREMENTS:	MS Office and Blackboard CMS Enter any additional s/w requirements.
WWW RESOURCES:	<ul style="list-style-type: none"> • American Society for Nutrition: http://www.nutrition.org/ • Food and Agricultural Organization: http://www.fao.org • International Food Information Council (IFIC) Foundation: https://foodinsight.org/ • National Institute for Occupational Safety and Health (NIOSH), Pocket Guide to Chemical Hazards: http://www.cdc.gov/niosh/npg/npg.html • Nature (Journal): https://www.nature.com/ • Science (Journal): http://www.sciencemag.org/ • Scientific American (Journal): www.sciam.com • World Health Organization: http://www.who.int/en/
INDICATIVE CONTENT:	<p>INTRODUCTION TO NUTRITION The Diet-Health Connection Healthy People 2030 Nutrition as a Science: Different Research Designs in Action Behavioural Modification</p> <p>NUTRITION TOOLS Dietary Reference Intakes (DRIs) Dietary Guidelines for Americans Labels and Claims: Nutrient, Health, & Structure-Function Claims Nutraceuticals: Superfoods, Functional Foods, Phytochemicals & Health Supplements</p> <p>THE REMARKABLE HUMAN BODY Hormonal & Nervous System Cooperation Digestive System: Mechanical, Chemical & Biochemical Aspects of Digestion Absorption of Nutrients in the Circulatory & Lymphatic System Gut Microbiota; Common Digestive Problems</p> <p>CARBOHYDRATES Digestion, absorption, metabolism and storage of carbohydrates Fiber: Soluble & Insoluble, Effects on Digestive Tract Lactose Intolerance Too Little Carbohydrate: Production of Ketone Bodies; Ketosis Blood Glucose Regulation: Insulin & Glucagon, Diabetes Type 1 & 2, Hypoglycaemia</p> <p>LIPIDS Digestion & Absorption of Lipids; Storing and Using Body's Fat Lipoproteins & Heart Disease Risk; Lipid Profile Food Cholesterol vs Blood Cholesterol: Dietary Fat, Cholesterol & Health Essential Polyunsaturated Fatty Acids; Effects of Processing on Unsaturated Fats</p> <p>PROTEINS AND AMINO ACIDS Digestion, absorption and metabolism of proteins; Different Roles of Proteins Protein & Amino Acids Supplements: Pros and Cons Protein Deficiency vs Overconsumption Gluten, Gluten-free Diet & Health Vegetarian Diet Protocols vs Meat Eater's Diet</p> <p>THE VITAMINS Roles, sources, deficiency & toxicity of fat-soluble vitamins Roles, sources, deficiency & toxicity of water-soluble vitamins Medical conditions from vitamin deficiencies Health supplements: Pros & Cons</p> <p>WATER AND MINERALS The body's water balance; Effects of Mild and Severe Dehydration Fluid and electrolyte balance; Acid-base balance Major minerals: functions, sources, deficiencies and toxicities; Calcium Balance</p>

and Bone Health; Sodium and Blood Pressure
Trace minerals: functions, sources, deficiencies & toxicities; Hyper- and Hypothyroidism; Iron Deficiency Anaemia
ENERGY BALANCE AND HEALTHY BODY WEIGHT
Obesity & Chronic Diseases
Hormonal and Nervous System Control of Appetite and Hunger
Inside- and Outside- the-Body Theories of Obesity
Medical Treatment of Obesity: Medications & Surgical Procedures
Eating Disorders
PERFORMANCE NUTRITION
Benefits Of Physical Fitness & Muscle Training; Muscle Adaptability
Athletes' Special Nutritional Needs
Diet To Support Physical Performance
Ergogenic Aids: Breakthroughs, Gimmicks, and/or Dangers
DIET AND HEALTH
Effects of Malnutrition on Body's Defence Systems
Risk Factors for Chronic Diseases
Diet and Cardiovascular Diseases, Hypertension, and Cancer
Nutritional Therapeutic Protocols for Chronic Diseases: Intermittent Fasting, Ketogenic Diet, Mediterranean Diet
Nutritional Genomics
FOOD SAFETY AND FOOD TECHNOLOGY
Microbial Foodborne Illnesses; Core Practices to Prevent Them
Natural Toxins, Residues, and Contaminants in Food
Organic Vs Conventional Foods
Food additives; Food-processing techniques
Genetic Engineering in Food Production
LIFE-CYCLE NUTRITION: MOTHER, INFANT, CHILD, TEEN, & OLDER ADULT
Nutrition Before & During Pregnancy; Alcohol Intake During Pregnancy
Diabetes, Hypertension, & Preeclampsia in Pregnancy
Nutrition During Lactation
Nutrition for Infants & Children; Childhood Obesity
Nutrition for Early & Middle Childhood, & Adolescence
Nutrient Needs of Older Adults; Nutrient-Drug Interactions
HUNGER & THE FUTURE OF FOOD
Food Insecurity in the United States: Food Deserts & Food Banks
Poverty & Starvation in the Developing World
World Food Supply; Sustainable Food Supply
Low-Input Agriculture; Importance to Future Food Production