

COURSE OUTLINE

1. **Bio101: Introduction to Nutrition**

Prerequisites:

Credits: 3 hours

2. **Course Description:** This course is an introductory course to the science of nutrition as it applies to everyday life. The approach is to teach students how to apply the logic of science to their own nutritional concerns. Topics include the six major nutrients: carbohydrates, lipids (fats), protein, vitamins, minerals, and water. The course will also examine energy balance, weight control, the digestive process, nutrition fads, supplements, fiber, and disease as they relate to nutrition and fitness. The course will include two student projects: one involving a personal dietary assessment and the other involving a current nutritional topic.
3. **Course Goals:** “Introduction to Nutrition” will provide students with basic information about human nutrition with the aim of teaching them what constitutes good nutrition and how to improve their own.
4. **Course Outcomes:** At the conclusion of the course, students will be able to
 1. Identify the six major nutrients, their functions in the human body, dietary sources, and their importance in health;
 2. Name the parts and functions of the human digestive system;
 3. Develop the skills to discern reliable nutrition information from fads and nutrition quackery;
 4. Design a personalized healthy meal plan that can be utilized daily;
 5. Recognize and improve unhealthy meal plans;
 6. Evaluate the benefits and the limitations in vegetarianism and its role in health promotion. Learn to plan a balanced vegetarian diet;
 7. Identify and evaluate the economic and business opportunities of select nutritional topics, including nutraceuticals, food safety technologies, and phytonutrients;
 8. Compare and contrast weight control plans, identifying where they may create disorders and dietary deficiencies;
 9. Create and begin a physical fitness regime; and
 10. Recognize the nutritional requirements and the reasons for these in each phase of the human life cycle.

5. **Course Concepts:**

1. Labeling; scientific method; quackery; food pyramids; dietary influences
2. Digestive system; carbohydrates; dietary fiber; enzyme; coenzyme; digestive system diseases; monosaccharides; disaccharides; polysaccharides;
3. Lipids (fats); cardiovascular disease; the cancer connection; artificial lipids
4. Proteins; protein deficiency and excess; amino acids; vegetarian diets;
5. Vitamins; phytonutrients; phytochemicals
6. Minerals; water; nutritional supplements; nutraceuticals
7. Food safety; food borne diseases; food additives
8. Weight control; fad diets; surgery; physical activity
9. Weight management; eating disorders;
10. Nutrition throughout the life cycle; pregnancy; infancy; adolescence; adulthood; senescence

6. Required Texts:

Wardlaw, Gordon W. *Contemporary Nutrition*. 5TH edition. Columbus, Ohio: McGraw-Hill, 2002. ISBN 0072316160

7. Recommended Reading:

8. Additional Resources

- THE LAWRENCE ROBERGE EDUCATIONAL AND INFORMATIONAL LINK SITE

<http://pages.mapinternet.com/lroberge/BIOLINK1.HTM>

-Son of Citation Machine

<http://citationmachine.net/>

COURSE SYLLABUS

Course Number: Bio101

Course Title: Introduction to Nutrition

Faculty: Lawrence F. Roberge

Preliminaries:

Class Participation and Performance Requirements:

Students are ultimately responsible for participating in the course through the following academic activities: uploading assignments, posting to discussion topics, responding to instructor inquiries, submitting written papers and taking quizzes and exams. Students are expected to be involved in ongoing instructional activities based on the recommended schedule for course completion as detailed in the syllabus. In order to actively participate in a course, students must make contact with their faculty mentor on a regular basis through one of the following methods:

- Uploading weekly written discussion topic responses into the Discussion section of the course delivery system for grading by your Instructor.
- Participation in discussion threads with the instructor and other students.
- Posting of other assignments as identified by the course instructor.

Discussion Questions:

Each week the student must post answers to TWO discussion questions. The original posting replies must be at least 250 words; follow academic integrity; fulfill the discussion question requirements, and properly cite the sources of information (use **CHICAGO** style). Each posting must be completed by the end of the assignment week it is scheduled on and will be graded at that time. Students must also respond to other students or the professor's discussion reply posting. A good reply posting is NOT merely "I agree" or "thanks", but contribute to the discussion by offering over two lines of text that offer further information, make follow up inquiries, or provide follow up opinions supported by solid cited information.

Students will be assessed on the basis of performance on three exams, completion of two written projects, and performance on ten quizzes.

- Each of 20 discussion questions is valued at 1%, (total 20%)
- Each of 10 quizzes is valued at 2%, (total 20%)
- Project One is valued at 15%
- Project Two is valued at 15%
- Each of three exams is valued at 10%

Project One: In this course, students will have two projects. Each student will create a short submission on a nutritional subject. See WARDLAW: Appendix E for the assessment instruction. Do Sections I to VI. Record only ONE DAY (weekday or weekend) of what you consume. Use as a measurement of the nutrients of the consumed food Appendix A in the textbook (WARDLAW).

As part of the assessment for Project One, answer the following questions:

- What RDA's were met and which ones were not met?
- Did you consume multi-vitamins or other nutritional supplements and why?
- What is your activity lifestyle: sedentary, active? Do you exercise?
- What would you change to meet the RDA's?
- What methods could be done to increase your caloric metabolism?

Also, include any water or alcoholic beverage consumed. NOTE: although this looks like a lot of work, it will be a lot easier, if you record what you eat when you eat it (Yes, even snacks!). Then, it becomes a simple matter of plugging in the data.

This assignment is due by the end of Week 5.

Project Two: Based on a major nutritional topic, the student will select an issue to discuss. The student must review the topic for approval with the instructor at least 3 weeks prior to submission. The total length of each student write-up should be at least 4 to 5 pages (**SINGLE SPACED**) (not including the bibliography page). Each paper must include at least 10 bibliographic references.

The student will cover the following points:

1. Describe the nutritional topic.
2. How does the topic affect the individual's health?
3. Describe how this topic affects the physiology, growth, aging, metabolism, body weight of the individual? What role, if any, does this topic play in the prevention of disease?
4. What, if any, government regulation or guidelines must be added or removed regarding this topic. Why?
5. Describe what business or economic opportunities exist regarding this issue.
6. What public education or medical research has been done, or needs to be done, regarding this issue?
7. Finally, how has this issue been abused or subjected to quackery? What has been the consequences?

NOTE: IT IS CRITICAL THAT YOU CHECK ON THE VALIDITY OF REFERENCES! REMEMBER TO CONSIDER THE SOURCE OF THE ARTICLE OR WEB PAGE AS WELL AS THE CONTENT! Quackery comes in many forms and sometimes tries to appear as "official" or "scientific".

This assignment is due by the end of Week 9.

You may use whatever resources are available (e.g. library, computer databases, etc.). The WARDLAW text includes various INTERNET sites (SEE APPENDIX I). These are helpful, but do not limit yourself to just those sites.

Consider using my web page to locate research papers and material on nutritional topics:

- THE LAWRENCE ROBERGE EDUCATIONAL AND INFORMATIONAL LINK SITE

<http://pages.mapinternet.com/lroberge/BIOLINK1.HTM>

**-NOTE: Yorktown University requires citations in CHICAGO format.
Use Son of Citation Machine to make the citations.**

-Son of Citation Machine
<http://citationmachine.net/>

Assessments percentages:

Discussion questions	20
2 projects	30
10 quizzes	20
3 exams	30
Total	100%

Yorktown University official grade and writing rubrics are located at
http://www.yorktownuniversity.com/grad_rubrics.cfm

Academic Integrity

Available both in the student and faculty handbooks.

Recommended schedule for course completion

Session 1: Introduction to Nutrition: The challenge in studying nutrition is to understand both the hard science as well as the social and business complexities. In doing so, a well-informed public can decipher the valuable nutritional data from pseudo-science..

Lectures

5 audios

Introduction (535 words)

Notes for Introduction to Nutrition (1200 words).

Imbalance of food pyramid (chart)

Assignments

Required readings: Wardlaw, Chaps 1—2

Review quiz: Week 01

Discussion Question(s):

1. Provide a real life example of food quackery (e.g. infomercial, email ad, news paper ad, magazine article, radio program, etc.). Cite details of what the example is stating. How do the claims of the example seem to fit the criteria of food quackery? How do the claims contradict nutritional science?

2. Compare and contrast a nutrient dense and nutrient empty food (your choices!). Describe each food for energy density, nutrient density, and amount of simple sugars versus complex carbohydrates. What food is more affordable (especially for low and middle income adults) and why? Which food is more attractive to children and adolescents and why?

Session outcomes: 4:1, 4:3

Session 2: Digestive System and carbohydrates: How food breaks down once it's ingested; where does it go; how is it absorbed and used or expelled. Leading diseases related to the malfunction of the digestive system.

Lectures

4 audio

Lecture Notes (1600 words)

Assignments

Required readings: Wardlaw, Chaps 3—4

Review quiz: Week 02

Discussion Question(s):

1. Name at least one digestive enzyme in each of the following systems (stomach, pancreas, and small intestine) and describe how each acts on food. Describe what happens to the digestion of food if that enzyme was lacking in the body.
2. Describe the health benefits of soluble and insoluble fiber. What foods are high in each type of fiber and what meals do these foods commonly appear in?

Session outcomes: 4:1, 4:2

Session 3: Lipids. This session surveys the variety of lipids, commonly called fats, in the human body, their role in human nutrition, both beneficial and harmful. Fad diets that result in the mismanagement of good nutritional principles based on faulty knowledge of how lipids work. How and why heart disease occurs.

Lectures

6 audio

Lecture Notes (1300 words)

Assignments

Required readings: Wardlaw, Chap. 5

Review quiz: Week 03

Discussion Question(s):

1. What types of lipids are essential in the diet and how are these lipids important for brain development and neural function?
2. Describe the digestion of lipids from foods to the blood stream. NOTE: consider that if fats and oils do not mix with water; explain how do lipids get absorbed and transported through the watery medium of the blood.

Session outcomes: 4:1, 4:3

Session 4. Proteins. Amino acids are the building blocks of all proteins. Of the twenty proteins, the human body must introduce nine into the body for well-balanced nutrition. Knowledge of complete versus incomplete proteins and how to complete incomplete proteins by complementing the types of protein is essential to good nutrition and healthy vegetarianism.

Lectures

7 audio

Lecture Notes (1600 words)

Assignments

Required readings: Wardlaw, Chap. 6

Review quiz: Week 04

EXAM ONE

Discussion Question(s):

1. What are the advantages and disadvantages (i.e. health hazards) to a vegetarian diet?
2. What are the advantages and disadvantages to a high protein, low carbohydrate diet (e.g. Atkins Diet)?

Session outcomes: 4:1, 4:4, 4:6

Session 5: Vitamins and phytochemicals. What they are, how the body uses them, which ones must we introduce into our diets. Vitamins are not the source of energy but are necessary to release energy from proteins, lipids, and carbohydrates through metabolic activity.

Lectures

9 audio

Lecture Notes (1068 words)

Assignments

Required readings: Wardlaw, Chap. 8

Review quiz: Week 05

Discussion Question(s):

1. Compare and contrast the differences between fat soluble and water soluble vitamins. Include in your discussion the absorption from foods, storage in the body, excretion of the excess vitamins, and toxicity of over dosage of the vitamins.
2. Review TABLE 2.1, Page 35-Phytochemical compounds. Select three phytonutrients and describe what foods they are found in. Furthermore, discuss some of the advantages of consuming these phytonutrients.

Session outcomes: 4:1, 4:5, 4:7

NOTICE: Project ONE is due by the end of this week.

Session 6: Water, minerals, nutraceuticals. Seventy percent of the body is water. It is a critical nutrient for life sustenance. Minerals work in a variety of ways to balance human health, such as calcium and phosphorous in bones and iron in blood. But too much of one mineral can become toxic. How much is enough? Nutraceuticals are dietary supplements, which present a new field of study and business opportunities.

Lectures

8 audio

Lecture Notes (880 words)

Assignments

Required readings: Wardlaw, Chap. 9

Review quiz: Week 06

Discussion Question(s):

1. Select THREE minerals (at least ONE must be a micronutrient) and discuss the absorption from foods, storage in the body, excretion of the excess minerals, and toxicity of over dosage of the minerals.
2. Discuss three important roles of water in the diet. What are the challenges to obtaining safe drinking water in Western nations as well as in developing nations?

Session outcomes: 4:1, 4:6

Session 7: Food safety and technology issues. Basic principles in food safety from preservation, such as drying, smoking, and salting, to proper cooking methods. The government's role in protecting us from bad food processing, transport, and delivery that insures public safety.

Lectures

9 audio

Lecture Notes (1000 words)

Assignments

Required readings: Wardlaw, Chap. 16

Review quiz: Week 07

EXAM TWO

Discussion Question(s):

1. Review TABLE 16.2, Pages 544-545. Select one food borne pathogen from each list (bacteria, viral, and parasite). Discuss their sources, symptoms, and methods of prevention. Also, discuss the challenges of keeping these organisms from entering the food chain.
2. Discuss the advantages and disadvantages to food irradiation, including specific examples of foods that have undergone food irradiation. How does this technology reduce grocer produce losses as well as enhance food shelf life?

Session outcomes: 4:7

Session 8: Weight control and fad diets. Distinguishing the difference between hunger and appetite is the crux of weight management. What is the role of calories in human nutrition: How to measure the intake (food) and output of calories (energy). genetic and ethnic patterns in metabolism and weight management. Weight control mechanisms, diets, surgery, exercise.

Lectures

8 audio

Lecture Notes (1500 words)

Assignments

Required readings: Wardlaw, Chaps 10, 11

Review quiz: Week 08

Discussion Question(s):

1. Discuss the three key elements to a healthy and successful weight loss program. How do fad diets fail to achieve successful long term weight loss or endanger the health of the individual?
2. Discuss the role of nature versus nurture in weight control. Include discussion on the influences of culture, ethnicity, advertisement, cost of food (economics), as well as education.

Session outcomes: 4:4, 4:5, 4:8

Session 9: Weight management and eating disorders. Weight loss triangle: controlling energy intake; performing regular physical activities; and controlling problem behaviors. Physical activity affects the nutrient use of the body and reduces the incidences of diseases. Designing a physical fitness program, including endurance, resistance, and

flexibility training. Anorexic eating disorders created by career or athletic training requirements. Binge eating is typically spurred by emotional needs.

Lectures

8 audios

Lecture Notes (1600 words)

Assignments

Required readings: Wardlaw, Chap. 10

Review quiz: Week 09

Discussion Question(s):

1. Discuss one major eating disorder from the textbook chapter. Include in your discussion symptoms, motivating factors, health risks, therapy, and age or sex of those most likely to be afflicted with this eating disorder. What is necessary to reverse the occurrence of this disorder?
2. Describe and discuss one medical treatment to achieve weight loss (either drug or surgical procedure). Describe the process, reasoning to use this procedure, adverse effects to this treatment, success rate, long term hazards, and medical costs.

Session outcomes: 4:4, 4:8, 4:9

NOTICE: Project TWO is due by the end of this week.

Session 10: Nutritional needs through a normal life span: From pregnancy and fetal development to adolescence, adulthood, and senescence. Not only proper energy intake but commensurate energy output comprises the formula for a healthy life span. Other factors can affect these, such as socialization, disease, and restraints due to aging, but an aware, knowledgeable, disciplined approach is the key to long healthy life

Lectures

6 audios

Lecture Notes (2500 words)

Assignments

Required readings: Wardlaw, Chaps. 12—14

EXAM THREE

Discussion Question(s):

1. Describe what TWO key nutrients that are necessary during pregnancy. Describe the role of the nutrients for both the mother and the developing

embryo/fetus. Furthermore include the risk factors of overdosing on the nutrient as well as the defects associated with deficiencies of the nutrient.

2. Discuss one important nutritional health issue for adolescents. Describe the issue, the motivating factors, the health risks, the long term affects, and the means to overcome this issue.

NOTE: this discussion topic can NOT be the same as the discussion topic for Week 9.

Session outcomes: 4:1, 4:10