# 03_Macromolecule, Micronutrients, & Energy Metabolism

Content Area: **Science**
Course(s):
Time Period: **Full Year**
Length: **15 blocks**
Status: **Published**

## General Overview, Course Description or Course Philosophy

- The course tests the students' understanding of the relationships between diet, lifestyle, and the prevention of disease. The student is expected to understand digestion, absorption, and metabolism of protein, carbohydrates, fat, vitamins, and minerals. Additionally, evaluating nutrition claims and food labels are expected student learning outcomes. This is a Rutgers University Course and students receive 3 college credits for passing the end of semester examination provided by the university. There is an examination fee associated with this course for college credit. All information discussed in the course description is the basis of the examination at the end of the semester.

## OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS

1. Roles of Carbohydrates (sugar, starch, and fiber), Lipids (triglycerides, phospholipids, and sterols), and Protein
2. What is a calorie
3. Nutrient metabolism
4. Weight management, Diets, and energy sources; Body Composition; Metabolic
5. Syndrome; Eating Disorders
6. Difference in Fat-soluble vitamins & Water-soluble vitamins
7. Types of Minerals, Phytochemicals, Functional foods
8. Investigation Osteoporosis

## CONTENT AREA STANDARDS

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| SCI.HS-LS1-3 | Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. |
| SCI.HS-LS1-2 | Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. |

## RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion Standards are Required)

VHEL.9-12.9.4.12.H.2

Cumulative Progress Indicator] - Demonstrate language arts knowledge and skills required to pursue the full range of postsecondary education and career opportunities.

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| VHEL.9-12.9.4.12.H.(5).2 | Apply biochemistry, cell biology, genetics, mathematics, microbiology, molecular biology, organic chemistry, and statistics concepts to conduct effective biotechnology research and development. |
| VHEL.9-12.9.4.12.H.(5).5 | Identify and explain processes used for biotechnology product design, development, and production and describe how they work together to demonstrate an understanding of the biotechnology product development process. |
| VHEL.9-12.9.4.12.H.3 | Demonstrate science knowledge and skills required to pursue the full range of postsecondary education and career opportunities. |
| VHEL.9-12.9.4.12.H.4 | Demonstrate knowledge of human structure and function as well as diseases and disorders to pursue the full range of postsecondary education and career opportunities in this cluster. |
| VHEL.9-12.9.4.12.H.10 | Develop and deliver formal and informal presentations using appropriate media to engage and inform audiences. |

## STUDENT LEARNING TARGETS

### Declarative Knowledge

Students will understand that:

- There are roles of Carbohydrates (sugar, starch, and fiber), Lipids (triglycerides, phospholipids, and sterols), and Protein
- You obtain calories from food
- How nutrients are metabolized
- There are Weight management methods
- Diets, and energy sources; can affect Body Composition & Metabolism
- Eating Disorders are a condition
- Difference in Fat-soluble vitamins & Water-soluble vitamins
- We have different types of Minerals, Phytochemicals, Functional foods
- Osteoporosis can be genetic and/or dietary related

### Procedural Knowledge

Students will be able to:

- Identify roles of Carbohydrates (sugar, starch, and fiber), Lipids (triglycerides, phospholipids, and sterols), and Protein
- Calculate caloric intake
- Demonstrate how nutrients are metabolized
- Identify weight management methods
- Investigate diets, and energy sources; can affect Body Composition & Metabolism
- Recall various eating disorders
- Explain the difference in Fat-soluble vitamins & Water-soluble vitamins
- Discuss the different types of Minerals, Phytochemicals, Functional foods
- Explain how Osteoporosis can be genetic and/or dietary related

## EVIDENCE OF LEARNING

### Formative Assessments

- Attendance/Participation/Group Discussion – Students are expected to attend all classes and participate in classroom discussions and group activities.
- Unit Assignments – Each unit will have specific assignments geared to meet unit objectives. These assignments can be completed as homework or in class, as time permits.
- Course Projects – There will be four major projects due throughout the course. Each project will have specific directions for completion and students are expected to work individually on these projects.

### Summative Assessments

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    - Benchmarks – departmental benchmark given at the end of MP1, MP2, and MP3
    - Alternative Assessments
        - Lab inquiries and investigations
        - Lab Practicals
        - Exploratory activities based on phenomenon
        - Gallery walks of student work
        - Creative Extension Projects
        - Build a model of a proposed solution

- Let students design their own flashcards to test each other
- Keynote presentations made by students on a topic
- Portfolio

## RESOURCES (Instructional, Supplemental, Intervention Materials)

Whitney, E., Rolfes, S. Understanding Nutrition, 13 th edition. Belmont: Wadsworth Publishing Co. 2013.

## INTERDISCIPLINARY CONNECTIONS

## ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS

See link to Accommodations & Modifications document in course folder.