

Minnesota State College Southeast

NATS 0510: Science Foundations

A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 3

Lab Hours/Week: 2

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: None

The purpose of this course is to introduce basic scientific principles and theories for students intending to take Human Anatomy (BIOL 2511) or other introductory science courses. It is intended for students with no recent background in biology. *Ten core objectives will be covered in every class, while the remaining five objectives will be tailored toward a particular career focus as noted by the course emphasis. (Prerequisite: None) (4 Credits: 3 lecture/1 lab)

B. COURSE EFFECTIVE DATES: 02/02/2015 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Scientific basics: terminology, scientific method
2. Levels of biological organization and structure from atom to organism including cellular function
3. Rudimentary chemistry concepts
4. Dimensional analysis utilized in mathematical problem solving
5. *Scientific principals as they relate to the specific career goals of the student

D. LEARNING OUTCOMES (General)

1. CORE PRE-BIOLOGY OBJECTIVES:
 - Describe the structure of a cell and the function of the organelles within a typical cell
 - Define and describe the role of energy (ATP) within a cell
 - List and describe the levels of biological organization from atom to organism
2. CORE PRE-CHEMISTRY OBJECTIVES:
 - Describe the relationship between subatomic particles, atoms, and molecules including the forces that govern molecular reactions
 - Compare and contrast the major classes of bioorganic molecules (carbohydrates, lipids, and proteins).
 - Describe the structure and unique properties of water
3. CORE PRE-PHYSICS OBJECTIVES:
 - Utilize dimensional analysis to solve mathematical problems related to scientific measurements in both metric and US systems
 - Utilize the scientific method as an approach to scientific inquiry and critical thinking
 - Plot and interpret scientific graphs and figures
4. CORE SCIENCE LAB SKILLS:
 - Demonstrate safe and effective use other science lab equipment including a light microscope
5. *ADDITIONAL OBJECTIVES FOR HEALTHCARE EMPHASIS:
 - Anatomy: Identify and describe the major anatomical features of each organ system of the body.
 - Physiology: Describe the relationship of form to function in the various organ systems.
 - Nutrition & Wellness: Explain the importance of nutrition and wellness in preventative medicine.
 - Medical Mathematics: Demonstrate confidence in performing calculations used frequently in healthcare.
 - Careers in Healthcare: Recognize the variety of healthcare careers and programs available to students.
6. *ADDITIONAL OBJECTIVES FOR OTHER EMPHASIS:
 - Nutrition & Wellness: Explain the importance of nutrition and wellness as it relates to your life (all)
 - CAD/physics: Utilization of introductory geometry and trigonometry concepts
 - Criminal Justice: Demonstrate basic forensic science lab skills
 - Early Childhood: Demonstrate understanding of developmental biology
 - Individual Studies: Investigate and demonstrate knowledge of current environmental issues

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted