

## University Core Competency

**Natural Sciences.** To understand the universe through the study of life and physical sciences.

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**Approved by:**

**Date:**

**Northwestern Mission.** Northwestern State University is a responsive, student-oriented institution that is committed to the creation, dissemination, and acquisition of knowledge through teaching, research, and service. The University maintains as its highest priority excellence in teaching in graduate and undergraduate programs. Northwestern State University prepares its students to become productive members of society and promotes economic development and improvements in the quality of life of the citizens in its region.

**Northwestern Core Curriculum.** Northwestern has a broadly-based core curriculum that is central to the University's mission and consistent with the Louisiana Board of Regents' requirements for general education survey courses applicable to all students regardless of their major. The core encompasses the knowledge and abilities that Northwestern believes are essential to college graduates. Its requirements are designed to improve students' writing and speaking, to expand students' aptitude in mathematics and its applications, to strengthen students' understanding of biological, physical, social, and behavioral sciences, and to develop an appreciation and knowledge of the arts and humanities.

The goal of the core curriculum is for undergraduate students, depending on their respective degree program, to obtain appropriate learning outcomes for this general education competency.

**Methodology:** The assessment process includes:

- (1) Data from assessment tools (direct and quantitative) are collected and returned to the executive director;
- (2) The executive director will analyze the data to determine whether the applicable outcomes are met;
- (3) Results from the assessment will be discussed with the appropriate staff; Individual meetings will be held with staff as required;
- (4) The executive director, in consultation with the staff and senior leadership, will determine proposed changes to measurable outcomes, assessment tools for the next assessment period and, where needed, service changes.

**NOTE:** Each student is required to complete 3 separate natural science courses (9 credit hours total):

- one introductory physical science course (either SCI1010, CHEM1030, CHEM1070, or PHYS2030)

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- one introductory biological science course (either SCI1020, BIOL1010, or BIOL2250)
- either a second physical science course (either SCI2010 or CHEM1040) or a second biological science course (either SCI2020 or BIOL2260).

Students in can be broadly categorized into three different groups: (1) non-science majors, (2) science majors, or (3) nursing/allied health majors. For each of these three groups of students, there is a typical series of natural science courses that are taken but the timing and order of these courses varies significantly among the groups. The course series taken by the different student groups is as follows:

- Non-science majors – SCI1010, SCI1020, and then either SCI2010 or SCI2020
- Science majors – BIOL1010, CHEM1030, and CHEM1040
- Nursing/allied health majors – BIOL2250, BIOL2260, and CHEM1070

If the natural science competencies were assessed in EACH of the natural science core courses, every student would be assessed a total of three times which would be redundant and skew the collected data. Therefore, a representative set of courses were selected to assess the natural sciences competencies. The courses selected for assessment are

- BIOL1010 – taken by all science majors
- BIOL2250 – taken by all nursing/allied health majors
- SCI1020 – taken by all non-science majors

By assessing students in EACH of these selected courses every Fall and Spring semesters, we are monitoring the learning outcomes of 75% of the students in University core natural science courses.

### Service Learning Outcomes (SLO):

#### SLO 1. Students will identify the parts of the scientific method and design scientifically-sound experiments.

**Measure 1.1.** Students will identify the parts of the scientific method.

Throughout the indicated courses, students will learn about the parts of the scientific method including observations, hypotheses, and the various forms of experimental variables. Each student is required to pass a quiz covering these concepts. The target is to have 70% of students attain a quiz grade of  $\geq 70\%$ .

Course Name	Methodology	Target	Term
SCI1020	Quiz	70%	Fall and Spring
BIOL 1010	Quiz	70%	Fall and Spring
BIOL2250	Quiz	70%	Fall and Spring

**Finding. Target Met / Not Met.**

**Graph.**

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### Analysis.

### Decision or action to drive future improvement.

**Measure 1.2.** Students will demonstrate the ability to recognize scientifically-sound experiments.

Throughout the indicated courses, students will learn how to use their knowledge of the parts of the scientific method to design scientifically-sound experiments. This will require the ability to identify relevant dependent and independent variables and understand how to use them to design appropriate experiments to test a given hypothesis. Each student is required to pass a quiz covering these concepts. The target is to have 70% of students attain a quiz grade of  $\geq 70\%$ .

Course Name	Methodology	Target	Term
SCI1020	Quiz	70%	Fall and Spring
BIOL 1010	Quiz	70%	Fall and Spring
BIOL2250	Quiz	70%	Fall and Spring

### Finding. Target Met/ Not Met.

### Graph.

### Analysis.

### Decision or action to drive future improvement.

## SLO 2. Students will analyze scientific data to draw conclusions about the natural and physical world

**Measure 2.1.** Students will demonstrate their ability to make experimental predictions.

Throughout the indicated courses, students will learn how to use their knowledge of the scientific method and experimental design to make predictions of experimental results. This will require the ability to interpret experimental design to use those interpretations to predict the results of the executed experiments. Each student is required to pass a quiz covering these concepts. The target is to have 70% of students attain a quiz grade of  $\geq 70\%$ .

Course Name	Methodology	Target	Term
SCI1020	Quiz	70%	Fall and Spring
BIOL 1010	Quiz	70%	Fall and Spring

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BIOL2250	Quiz	70%	Fall and Spring
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**Finding. Target Met / Not Met.**

**Graph.**

**Analysis.**

**Decision or action to drive future improvement.**

**Measure 2.2.** Students will analyze scientific data to draw conclusions about the natural and physical world.

Throughout the indicated courses, students will learn how to use their knowledge of the scientific method and experimental design to analyze scientific data and to make conclusions based on that data analysis. This will require the ability to interpret scientific data presented in verbal, tabular, or graphic form then use those interpretations to provide scientific explanations for those results. Each student is required to pass a quiz covering these concepts. The target is to have 70% of students attain a quiz grade of  $\geq 70\%$ .

Course Name	Methodology	Target	Term
SCI1020	Quiz	70%	Fall and Spring
BIOL 1010	Quiz	70%	Fall and Spring
BIOL2250	Quiz	70%	Fall and Spring

**Finding. Target Met/ Not Met**

**Graph.**

**Analysis.**

**Decision or action to drive future improvement.**

**Summary Comments:**