

## General Education Curriculum: Natural Scientific Inquiry (NSI) Rubric

The Natural Scientific Inquiry (NSI) rubric was developed through consultation with NSI instructors, students, and the General Education Oversight Committee at Wayne State University (WSU). The rubric was modeled after VALUE rubrics created by the Association of American Colleges and Universities (AAC&U). The rubric articulates fundamental criteria for each learning outcome required for NSI under the General Education program. It contains performance descriptors demonstrating progressively higher levels of learning. The rubric is intended for evaluating and discussing student learning within the General Education curriculum, not for grading and not for evaluation of instructors.

NSI is a Group (Inquiry) requirement of the General Education program at WSU. The overall goal of the inquiry courses is to “help introduce students to the different perspectives, methodologies, and questions that shape the production of knowledge.” (See the [Academic Bulletin](#).)

### NSI has four program learning outcomes:

*After successful completion of the NSI requirement, students will be able to:*

- (1) Explain scientific concepts related to natural phenomena.
- (2) Discriminate between valid and invalid inferences made using scientific concepts and evidence.
- (3) Describe the relevance of scientific concepts to historical or contemporary societal subjects.
- (4) Describe data collected via the scientific method (required for lab courses only, optional for non-lab courses).

### Glossary for Terms and Concepts Used in the Rubric

*The definitions that follow were developed to clarify terms and concepts used in this rubric only.*

- **Describe data** – Any form of presenting, organizing, representing, or explaining data.
- **Inference** – The process of drawing conclusions about observable phenomena based on reasoning and using data.
- **Natural phenomena** – Any state or process known through the senses (i.e. observable, measurable) rather than solely by intuition or reasoning.
- **Scientific concepts** – Theories, principles, ideas, or methods formulated to explain facts or phenomena in the natural world and confirmed through experiment or observation.
- **Societal subject** - Issues and/or events that affect or occur within or among human populations.

## How to Use the Rubric

- Instructors teaching NSI courses select one or more assignments that elicit the NSI learning outcomes at the “Meets expectations” level or higher.
- Instructors use the rubric to score their students’ work on a 4-point rubric scale. The scores are separate from students’ course grades.
  - Details for reporting the results for your course(s) are provided on the [GEOC website](#).
- The “Meets Expectations” level is the program target for student performance.
- The rubric scale is implicational: A “Meets expectations” score indicates that the student has met the criteria for “Partially meets expectations” AND “Meets expectations”. An “Exceeds expectations” score indicates that the student has met the criteria for “Partially meets expectations”, “Meets expectations”, AND “Exceeds expectations”.
  - If a student did not submit part or all of the selected assignment(s), instructors should note "Student did not complete assignment" instead of one of the above scores for each relevant learning outcome. A “did not submit” option is displayed in the Canvas version of the rubric.
- Gen Ed includes many different disciplines that may use the same word differently. For example, “explain” and “analyze” imply similar levels of difficulty in some disciplines but different levels in others. As such, when using the rubric, instructors should consider the location of these words on the scale when scoring student artifacts.
  - For instance, if “explain” is in the “Meets expectations” column and “analyze” is in the “Exceeds expectations” column, instructors should interpret “explain” as a lower level of difficulty. In your discipline, “describe” (or some other word) might be the term used to indicate that lower level instead.

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<b>Learning Outcomes (The student...)</b>	<b>Exceeds expectations</b>	<b>Meets expectations</b>	<b>Partially meets expectations</b>	<b>Does not meet expectations</b>
LO1: Explains scientific concepts related to natural phenomena.	Applies scientific concepts related to natural phenomena.	Explains scientific concepts related to natural phenomena.	Identifies scientific concepts related to natural phenomena.	Does not identify scientific concepts related to natural phenomena.
LO2: Discriminates between valid and invalid inferences made using scientific concepts and evidence.	Creates valid inferences using scientific concepts and evidence.	Discriminates between valid and invalid inferences made using scientific concepts and evidence.	Identifies inferences made using scientific concepts and evidence.	Does not identify inferences made using scientific concepts and evidence.
LO3: Describes the relevance of scientific concepts to historical or contemporary societal subjects.	Applies scientific concepts to evaluate historical or contemporary societal subjects.	Describes the relevance of scientific concepts to historical or contemporary societal subjects.	Identifies scientific concepts related to a historical or contemporary societal subject.	Does not identify scientific concepts related to a historical or contemporary societal subject.
*LO4: Describes data collected via the scientific method.	Relates data collected via the scientific method to stated hypotheses.	Describes data collected via the scientific method.	Identifies data collected via the scientific method.	Does not identify data collected with the scientific method.

\*LO4 is required for lab courses only (optional for non-lab courses)

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