

**Quantitative Literacy Rubric**

| <p align="center"><u>Criteria</u></p> <p align="center">Students will<br/><b>Learn to:</b></p>                                | <p align="center"><u>Outcome 1</u></p> <p align="center">The student who<br/><b>achieves proficiency</b><br/>will:</p>   | <p align="center"><u>Outcome 2</u></p> <p align="center">The student who<br/><b>approaches proficiency</b><br/>will:</p>   | <p align="center"><u>Outcome 3</u></p> <p align="center">The student who<br/><b>lacks proficiency</b><br/>will:</p>                                    |
|---|--|--|--|
| <p><u>Interpret</u> data or stimuli presented in mathematical forms such as graphs, equations, tables.</p>                    | <p>Identify, infer, or predict, from the mathematical stimulus (graph, table, equation, etc.), behaviors of the data or the phenomena producing the data, or relationships among the data or phenomena</p> | <p>Identify the type of information portrayed; e.g., variables and their dependence relationships, the type of graph or statistical display of data (exponential, sigmoid, logarithmic, box plot, histogram, etc.)</p> | <p>At a maximum be able to identify that information is portrayed in a mathematical or statistical form</p>  |
| <p><u>Apply</u> relationships and algorithms akin to mathematics appropriately.</p>   | <p>Assess the utility, relevance, or limitations of an algorithm, mathematical or statistical relationship, or discipline; e.g., that calculus methods may applied to motion</p>                           | <p>Be able to see that a mathematical or statistical relationship may be useful, but not be certain and not able to identify limitations</p>   | <p>Fail to recognize the utility of mathematics or statistics in a circumstance that is clearly quantitative</p>                                       |
| <p><u>Calculate:</u> Execute computations and algorithms that are important and relevant to a given context or discipline</p> | <p>Correctly and completely execute the steps of many given algorithms appropriate to the context or discipline</p>  | <p>Correctly execute the steps of most of the algorithms or most of the steps of the algorithms relevant to a given context or discipline</p>  | <p>Incorrectly execute the steps of most of the algorithms akin to a given discipline</p>  |
| <p><u>Evaluate</u> the appropriateness of given mathematical models or statistical methods</p>                                | <p>Identify explicit and implicit relationships of a model's components and determine whether conclusions made from the model will be relevant</p>   | <p>Identify relationships in a model or at least have suspicions about the model's relevance</p>   | <p>At a maximum be able to indicate that a model is being used to some ends</p>  |
| <p><u>Create</u> mathematical models or statistical methods in order to solve a problem or explain a phenomenon</p>           | <p>Precisely define variables and parameters and their interactions and assemble them into a model that is relevant</p>  | <p>Identify some relationships in the problem or phenomenon that could be part of a mathematical or statistical model</p>  | <p>Be unable or unwilling to use mathematical, statistical, or quantitative in general, representations to solve a problem or explain a phenomenon</p> |

## **R470 language for Qs:**

**3.2.2. Quantitative Literacy (3-4 credits):** Students may satisfy this requirement by completing at least one institutionally-approved mathematics course that clearly demonstrates quantitative reasoning skills beyond those found within required high school Mathematics courses and that is an appropriate introductory university level. Approved courses will significantly focus on the following:

- (1) Interpretation-explain information presented in mathematical forms (e.g., equations, graphs, diagrams, and tables);
  - (2) Representation-convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, and tables);
  - (3) Calculation-demonstrate the ability to successfully complete basic calculations to solve problems;
  - (4) Application/Analysis- make judgments and draw appropriate conclusions based on quantitative analysis of data, recognizing the limits of this analysis;
  - (5) Assumption-make and evaluate important assumptions in estimation, modeling, and data analysis;
  - (6) Communication-express quantitative evidence in support of the argument or purpose of the work (in terms of what evidence is used and how it is formatted, presented, and contextualized); and
  - (7) Creation-demonstrate the ability to problem solve using quantitative literacy across multiple disciplines.
- Traditionally, this requirement has been fulfilled by completion of MATH 1030 Quantitative Reasoning, MATH or STAT 1040 Statistics, MATH 1050 College Algebra, or other institutionally-approved courses.