Numerical Literacy

GenEd Course Proposal Guide

Numerical Literacy Capacity Requirements

A student's capacity for Numerical Literacy prepares them to reason well and solve quantitative problems situated within a variety of disciplinary and interdisciplinary contexts. Students learn to ask quantitative questions about their world, identify appropriate methods to interpret data, and clearly communicate their results in a variety of formats.

Students who have developed their capacity for Numerical Literacy will:

(Please see notes at the end of this document for detailed examples of proficiency skills.**)**

1. *Evaluate data.*
2. *Apply mathematical operations accurately.*
3. *Express numerical data or quantitative information effectively.*
4. *Draw valid conclusions based on quantitative data and mathematical procedures.*

All lower-division courses approved for the Numerical Literacy capacity must provide substantial opportunities for students to practice and apply proficiencies 1 through 3.

All upper-division courses approved for the Numerical Literacy capacity must provide substantial opportunities for students to practice and apply proficiencies 1 through 4.

All Numerical Literacy courses must include a signature assignment in which students exhibit evidence of their developing capacity.

Examples of signature assignments may include but are not limited to:

- **Process artifacts**, *such as lab journals, field diaries, literature reviews, recorded observations, sketches, drafts, mockups, and prototypes, etc.*
- **Culminating artifacts**, *such as papers, essays, videos, articles, reports, presentations, podcasts, designs, programs, exhibitions, demonstrations, other performances, and various media, etc.*

All lower-division courses approved for the Communication & Expression capacity will also be mapped to the E, F, and/or G strand of University Studies for backward compatibility (no additional application is required).

Wherever possible, upper-division courses approved for the Communication & Expression capacity will also be mapped to the H, I, or J strand of University Studies for backward compatibility, *but this is not a requirement*.

Required Materials to Submit with Application

The Capacity Course Application can be found here and is due Friday, April 1, 2022.

While completing your application, you will need to upload the following deliverables:

a) a complete **course design map** (see: **template** & **instructions**) that demonstrates how each capacity proficiency will be taught and assessed in your course.

b) a complete **syllabus** for the proposed course (we encourage you to use **this template** if it is helpful; see **template instructions here**). Whatever format you choose, your syllabus must include:

- these **GE Syllabus Common Elements**;
- a list of course learning outcomes that clearly align with required capacity proficiencies;
- a clear list of assignments used to assess all capacity proficiencies.

Course Review Process

Each Capacity Course Application will be reviewed and evaluated by Capacity Mentors using a copy of **this checklist**. Applications that clearly meet the outlined requirements above will move forward to the University Studies Committee, then Faculty Senate, with a recommendation to approve provisionally for 2 or 3 years. This determination must be unanimous among reviewing mentors.

Applications that do not clearly meet the requirements will be returned to course developers with feedback for further clarification or revision.

If Capacity Mentors cannot reach a consensus recommendation, the application will be elevated for a full review by the entire University Studies Committee, which will have the final say.

Course Development Support

PLEASE NOTE THE FOLLOWING ELIGIBILITY GUIDELINES:

- **Support for Courses That Exist in AY 21-22 Catalog:** $1,500 stipend per approved application of an existing course (limit 1 stipend per capacity, capped at 2 stipends per faculty member).
- **Support for New Courses Proposed for the AY 22-23 Catalog:** $2,000 stipend per approved application of a newly created course (limit 1 stipend per capacity, capped at 2 stipends per faculty member, subject to Undergraduate Curriculum approval of new course).
- **Aggregate limit:** faculty may receive up to four stipends between the existing and new course categories, but no more than 1 stipend in any capacity.
- **Course Release Option:** Faculty may request 2 ELU release per approved application in place of stipend, up to 4 ELU of release.

Numerical Literacy Capacity Notes

Below we outline the kinds of skills students should exhibit in each proficiency in greater detail.

Students who have developed their capacity for Numerical Literacy will:

1. ***Evaluate data.***

   Example skills:

   - ❖ Describe how data are gathered and organized.
   - ❖ Describe and differentiate types of data.
   - ❖ Assess the quality of data.
   - ❖ Understand the limitations and analysis of both data and sampling.

2. ***Apply mathematical operations accurately.***

   Example skills:

   - ❖ Show proficiency with number systems, mathematical operations and mathematical properties.
   - ❖ Reach valid conclusions relying on logical arguments/proofs.
   - ❖ Use computational tools or algorithmic procedures to automate quantitative analysis and decision-making.

3. ***Express numerical data or quantitative information effectively.***

   Example skills:

   - ❖ Use mathematical notation appropriate to the description of quantitative values and concepts.
   - ❖ Express logical reasoning with accuracy and validity.
   - ❖ Represent mathematical or quantitative results via visual representations.

4. ***Draw valid conclusions based on quantitative data and mathematical procedures.***

   Example skills:

   - ❖ Interpret the results of mathematical or quantitative inquiries.
   - ❖ Construct valid arguments based on quantitative data and mathematical or algorithmic procedures.
   - ❖ Rigorously assess mathematical or quantitative reasoning by others.