Liberal Studies Program

Learning Outcomes and Writing Expectations
Math and Computing Domain
Approved by Liberal Studies Council (November 2020) and Faculty Council (January 2021)

Statistical Reasoning

Learning Outcomes:
Students will have demonstrated knowledge of Statistical Reasoning when they are able to:

1. Recognize and explain statistically based results from real data (either primary or secondary) and evaluate whether reported conclusions reasonably follow from the study and analysis conducted.
2. Use statistical software to produce and interpret graphical displays and statistical summaries.
3. Recognize and explain the roles of variability and randomness in interpreting data and drawing conclusions.
4. Explain common ethical issues associated with sound statistical practice, including those associated with research design, and their impact on statistical decision-making.
5. Measure the strength of association between variables and identify possible effects of confounding or interacting variables on the interpretation of the association.
6. Apply basic ideas of statistical inference, including confidence intervals or hypothesis testing, in a variety of settings.

Computational Reasoning

Learning Outcomes:
Students will have demonstrated knowledge of Computational Reasoning when they are able to:

1. Apply computational thinking skills to analyze and design solutions to problems or to express a creative concept.
2. Develop, express, trace, and analyze algorithms.
3. Apply fundamental concepts of programming in implementing algorithms.
4. Create original artifacts using computational tools and techniques.
5. Apply computational tools to transform and manipulate data.
6. Explain the potential harms and benefits of computing in a number of contexts.

Writing Expectations:

Courses in the Math and Computing Domain will require both formal writing (e.g. exams, essays, take-home essay exams, critical analyses, reaction papers to readings, essays answering questions posed by the instructor, or technical reports) and supplemental written elements that

are appropriate for the subject of the course, such as problem-sets, computer code, statistical formulas, graphs, charts, and diagrams.

1. Students will demonstrate skills in writing at an appropriate level of detail (including the ability to summarize effectively), choosing an effective format, paraphrasing and citation of sources as required, technical accuracy, and quality of expression, including grammar, spelling and word usage.
2. Students will be required to write the equivalent of a minimum of five to ten pages, distributed across a series of assignments. Specific types of writing required will be a part of the description of assignments appropriate to the topics covered.