

**GENERAL EDUCATION COURSE ASSESSMENT PLAN (CAP)**

**Mathematical Sciences**

***Please complete the following form and send to:*** ***gened@gvsu.edu******.***

**Course:**

**Course title:**

**Faculty member developing/revising the CAP:**

**Unit head name:**

**Date submitted/revised:**

**Please complete the following for each student learning outcome (goal):**

***1. Student Learning Outcome:*** *The introduction of computer science, logic, mathematics, or statistics as a way of knowing, including an examination of principles and questions that define the field.*

**How will you TEACH (e.g., assign readings, discuss in class, use a handout, provide models, etc.) students about the student learning outcome? As appropriate, please describe the role of both the students and the instructor.**

**How will you ASSESS or measure how well individual students have learned this objective (e.g., assign a research paper, require group presentations, include a short-answer question on an exam, etc.)?**

***2. Student Learning Outcome:*** *An analysis of problem solving, including recognition of key problem elements, the choice of suitable methods for solving a problem, and the appropriate application of these methods.*

**How will you TEACH (e.g., assign readings, discuss in class, use a handout, provide models, etc.) students about the student learning outcome? As appropriate, please describe the role of both the students and the instructor.**

**How will you ASSESS or measure how well individual students have learned this objective (e.g., assign a research paper, require group presentations, include a short-answer question on an exam, etc.)?**

**Choose one of the following - either 3a or 3b:**

***3a. Critical and Creative thinking uses systematic reasoning to examine and evaluate ideas, leading to new ways of thinking or doing.*** *People with a general education think logically and creatively. Expressiveness, imagination, and originality are needed for innovation. Innovative ideas must be subject to critical evaluation, which involves distinguishing information, judgment, and assumption; evaluating evidence and the logic of arguments; identifying and assessing differing perspectives and assumptions; and reasoning systematically in support of arguments.*

***Student Learning Outcome:*** *Assess differing perspectives and assumptions***.**

**How will you TEACH (e.g., assign readings, discuss in class, use a handout, provide models, etc.) students about the student learning outcome? As appropriate, please describe the role of both the students and the instructor.**

**How will you ASSESS or measure how well individual students have learned this objective (e.g., assign a research paper, require group presentations, include a short-answer question on an exam, etc.)?**

***Student Learning Outcome:*** *Evaluate evidence and the logic of arguments.*

**How will you TEACH (e.g., assign readings, discuss in class, use a handout, provide models, etc.) students about the student learning outcome? As appropriate, please describe the role of both the students and the instructor.**

**How will you ASSESS or measure how well individual students have learned this objective (e.g., assign a research paper, require group presentations, include a short-answer question on an exam, etc.)?**

***Student Learning Outcome:*** *Formulate novel approaches or create alternative interpretations*.

**How will you TEACH (e.g., assign readings, discuss in class, use a handout, provide models, etc.) students about the student learning outcome? As appropriate, please describe the role of both the students and the instructor.**

**How will you ASSESS or measure how well individual students have learned this objective (e.g., assign a research paper, require group presentations, include a short-answer question on an exam, etc.)?**

***Or, select Student learning outcome 3b***

***3b. Quantitative Literacy******is a competency and comfort in working with numbers.*** *People with a general education apply mathematical and statistical methods to solving problems in everyday life. They understand and can create sophisticated arguments supported by quantitative evidence, and they can clearly communicate those arguments in a variety of formats (using words, tables, graphs, and mathematical equations as appropriate).*

***Student Learning Outcome:*** *Interpret information appearing in the form of graphs, tables, numerical summaries, equations, and text.*

**How will you TEACH (e.g., assign readings, discuss in class, use a handout, provide models, etc.) students about the student learning outcome? As appropriate, please describe the role of both the students and the instructor.**

**How will you ASSESS or measure how well individual students have learned this objective (e.g., assign a research paper, require group presentations, include a short-answer question on an exam, etc.)?**

***Student Learning Outcome:*** *Evaluate underlying assumptions as necessary, recognizing that mathematical and statistical methods have limits.*

**How will you TEACH (e.g., assign readings, discuss in class, use a handout, provide models, etc.) students about the student learning outcome? As appropriate, please describe the role of both the students and the instructor.**

**How will you ASSESS or measure how well individual students have learned this objective (e.g., assign a research paper, require group presentations, include a short-answer question on an exam, etc.)?**

***Student Learning Outcome:*** *Solve problems using appropriate arithmetical, algebraic, geometric, or statistical techniques.*

**How will you TEACH (e.g., assign readings, discuss in class, use a handout, provide models, etc.) students about the student learning outcome? As appropriate, please describe the role of both the students and the instructor.**

**How will you ASSESS or measure how well individual students have learned this objective (e.g., assign a research paper, require group presentations, include a short-answer question on an exam, etc.)?**

***Student Learning Outcome:*** *Draw valid conclusions based on data analysis and critically evaluate conclusions made by others.*

**How will you TEACH (e.g., assign readings, discuss in class, use a handout, provide models, etc.) students about the student learning outcome? As appropriate, please describe the role of both the students and the instructor.**

**How will you ASSESS or measure how well individual students have learned this objective (e.g., assign a research paper, require group presentations, include a short-answer question on an exam, etc.)?**

**Choose one of the following - either 4a or 4b:**

 ***4a. Collaboration is the process of working together and sharing the workload equitably to progress toward shared objectives.*** *People with a general education work collaboratively with others on both small and large projects. Effective collaborators are interdependent, interactive, accountable, and reflective. That is, they work interdependently within a group, interact productively with group members, demonstrate accountability for their own contributions to the work of the group, and reflect on the success of the group, including their own contributions and the contributions of others.*

***Student Learning Outcome****: Contribute to the development of shared goals within the group.*

**How will you TEACH (e.g., assign readings, discuss in class, use a handout, provide models, etc.) students about the student learning outcome? As appropriate, please describe the role of both the students and the instructor.**

**How will you ASSESS or measure how well individual students have learned this objective (e.g., assign a research paper, require group presentations, include a short-answer question on an exam, etc.)?**

***Student Learning Outcome:*** *Contribute their own knowledge and expertise to the group.*

**How will you TEACH (e.g., assign readings, discuss in class, use a handout, provide models, etc.) students about the student learning outcome? As appropriate, please describe the role of both the students and the instructor.**

**How will you ASSESS or measure how well individual students have learned this objective (e.g., assign a research paper, require group presentations, include a short-answer question on an exam, etc.)?**

***Student Learning Outcome:*** *Participate actively and responsibly in all group activities****.***

**How will you TEACH (e.g., assign readings, discuss in class, use a handout, provide models, etc.) students about the student learning outcome? As appropriate, please describe the role of both the students and the instructor.**

**How will you ASSESS or measure how well individual students have learned this objective (e.g., assign a research paper, require group presentations, include a short-answer question on an exam, etc.)?**

***Student Learning Outcome:*** *Honestly assess their own contributions and the contributions of others.*

**How will you TEACH (e.g., assign readings, discuss in class, use a handout, provide models, etc.) students about the student learning outcome? As appropriate, please describe the role of both the students and the instructor.**

**How will you ASSESS or measure how well individual students have learned this objective (e.g., assign a research paper, require group presentations, include a short-answer question on an exam, etc.)?**

***Or, select Student learning outcome 4b***

***4b. Problem Solving is the process of designing and evaluating strategies to answer open-ended questions or achieve desired goals.*** *People with a general education define and solve problems by seeking and identifying relevant contextual information, formulating strategies, and proposing and evaluating potential solutions.*

***Student Learning Outcome:*** *Construct clear and insightful problem statements that prioritize relevant contextual factors.*

**How will you TEACH (e.g., assign readings, discuss in class, use a handout, provide models, etc.) students about the student learning outcome? As appropriate, please describe the role of both the students and the instructor.**

**How will you ASSESS or measure how well individual students have learned this objective (e.g., assign a research paper, require group presentations, include a short-answer question on an exam, etc.)?**

***Student Learning Outcome:*** *Identify multiple approaches for solving the problem within the given context.*

**How will you TEACH (e.g., assign readings, discuss in class, use a handout, provide models, etc.) students about the student learning outcome? As appropriate, please describe the role of both the students and the instructor.**

**How will you ASSESS or measure how well individual students have learned this objective (e.g., assign a research paper, require group presentations, include a short-answer question on an exam, etc.)?**

***Student Learning Outcome:*** *Design and fully explain proposed solutions that demonstrate deep comprehension of the problem.*

**How will you TEACH (e.g., assign readings, discuss in class, use a handout, provide models, etc.) students about the student learning outcome? As appropriate, please describe the role of both the students and the instructor.**

**How will you ASSESS or measure how well individual students have learned this objective (e.g., assign a research paper, require group presentations, include a short-answer question on an exam, etc.)?**

***Student Learning Outcome:*** *Evaluate the feasibility of solutions considering aspects such as the historical context and ethical, legal, or practical impact of potential solutions.*

**How will you TEACH (e.g., assign readings, discuss in class, use a handout, provide models, etc.) students about the student learning outcome? As appropriate, please describe the role of both the students and the instructor.**

**How will you ASSESS or measure how well individual students have learned this objective (e.g., assign a research paper, require group presentations, include a short-answer question on an exam, etc.)?**

Form Updated 11/15/2013