# Modification to Natural Science General Education Group -include Computer Science Courses in Natural Science courses without a Lab

## Rationale

The purpose of this proposal is to enable inclusion of introductory Computer Science courses in the UM General Education curriculum. Computing has become central to modern life, and UM graduates will benefit substantially from developing basic skills in data analysis and processing. In Fall 2017, students from ASUM Senate requested that we add Computer Science courses to the Gen Ed core, and President Bodnar has recently expressed his desire to see this happen.

In modern society, computing plays a role in the day-to-day work of the natural sciences, social sciences, media arts, business analytics, and beyond. Recognizing this widespread and decentralized role of computing, a natural path seems to be the creation of a new Gen Ed Group, “Computer Science”. In our current system, however, the Gen Ed Committee views the addition of a new Group as nonviable – the Gen Ed credit load cannot be expanded without negatively impacting student experience. We recognize the likelihood that the UM Gen Ed core will be restructured in the coming years, perhaps allowing for creation of such a Group. In the meantime, we propose inclusion of introductory science-oriented Computer Science courses in the Natural Science (N) Group. We recognize that this is a stopgap approach, and that UM students will benefit from a more expansive set of computing courses in a future Gen Ed core, but believe that first step this will improve student opportunity in the current environment.

The Computer Science department will offer two courses in Fall 2018 that meet the spirit of the proposed Gen Ed change – these are essentially turn-key options for adding computing courses to student Gen Ed opportunities (“Computing in the Sciences, CSCI 125” and “Computing in the Sciences with Calculus, CSCI 126”).

## Catalog Language

Group XI: Natural Science (N)

~~These courses present scientific conclusions about the structure and function of the natural world, and demonstrate or exemplify scientific questioning and validation of findings.~~

These courses demonstrate or exemplify scientific questioning and validation of findings. They present scientific conclusions about the structure and function of the natural world, and/or introduce computational methods that underlie modern scientific analysis.

Upon completion of a Natural Science course, a student will be able to:

1. understand the general principles associated with the discipline(s) studied;
2. understand the methodology and activities scientists use to gather, validate and interpret data related to natural processes;
3. detect patterns, draw conclusions, develop conjectures and hypotheses, and test them by appropriate means and experiments;
4. understand how scientific laws and theories are verified by quantitative measurement, scientific observation, computation, and logical/critical reasoning;
5. and understand the means by which analytic uncertainty is quantified and expressed in the natural sciences

*Natural Science courses without a laboratory experience*

*… CS courses would go here*