**Course Justification for Biol 355, Introduction to Data Science for Biology Lecture**

*Reasons behind this proposal:* As biology becomes an increasingly data intensive science across all subdisciplines, our department lacks a course offering that introduces students to how to use data to generate scientific inference. Modern data science combines tools from statistics, the cognitive science of visualization, statistics, and more. Further, good data science requires students to learn a how to ask and answer a meaningful question given a solid appreciation of the scientific method as it applies to the data at hand. The fundamentals of all of these topics are difficult for students to grasp without a solid disciplinary focus and a core set of examples that echo what they will encounter both in their careers as students at UMB as well as beyond if they seek positions in industry or graduate studies. This the need for a course that introduces students to the core concepts of data science from a biological perspective, rich in context in order to demystify its application.

*How this course will serve students:* This course will serve students in multiple contexts. First, students who are now or who are planning to conduct projects in labs on campus will increase their skillset in data creation, curation, and analysis for these projects. Too often, undergraduates get to the end of their senior projects after having been independent on executing a fine experiment and then have to depend on a graduate student or mentor for the actual analysis and visualization. Second, students will learn how one creates scientific inference from data. While other disciplinary courses within science teach the end results of the process of science and allow them to conduct short guided explorations of topics, this course will enable them to learn how biologists make sense of the world from raw data to final clean inference. Last, this course will serve students by training them in a wide variety of practical skills that they can take with them into industry or future graduate careers in biology or other disciplines. Two students from the first incarnation of this course have already said it enabled them to get a job or advance them to a different position upon graduation.