3. A written statement by the department(s) presenting the proposal that will include:

a. Explanation and outline of the proposal

The Lincoln University team has worked with collaborators from UD and DSU to create the Delaware and Mid-Atlantic Data Science Corps through NSF award of $1.5 million in the fall 2021. The project aims at building a data science network for training undergraduate students in the Delaware Valley. The awarded grant will allow us to offer students a wide variety of interlocking learning opportunities including introductory data science courses. Designing the MAT 115 (Foundations of Data Science) is one of the outcomes in the project implementation process. The course serves as a general elective course for mathematics majors, minors, and other STEM, business and social science majors. It will also be an entry point for the planned future data science concentration in the department.

b. Rationale (i.e., program review, assessment, changes in discipline, etc.)

Data is everywhere. Every organization has data and most want to find ways to use it to help them grow their business. In today's world, be it in education, marketing, technology, management, health, engineering, research or any application area, data is abundantly available. That's where data scientists come in. Data scientists know how to use their skills in math, statistics, programming, and other related subjects to organize large data sets and transform it to solutions and productivity. At Lincoln University, as an institution serving mostly underserved community, we need to create awareness about data science among our student community and introduce data science courses to help close the gap.

c. Updated program assessment mapping

Here is the program assessment mapping for MAT 115

Course SLO	PSLOs (indicate #only)	ILOs (indicate #only)	Direct & Indirect Assessment Methods
CSLO#1	PSLO#2	ILO#7	Embedded questions in tests and final exam, assignments, and student projects.
CSLO#2	PSLO#3	ILO#7	
CSLO#3	PSLO#3	ILO#7	
CSLO#4	PSLO#2	ILO#7	

d. Evidence to support rationale

Data science is among the best jobs in the coming years. According to the recent publication by CNBS (https://www.cnbc.com/2022/02/02/the-10-best-us-jobs-of-2022), the top 10 best jobs paying a six-digit salary in USA are: Data scientist, Enterprise architect, Full stack engineer, DevOps engineer, Strategy manager, Machine learning engineer, Data engineer, Software engineer, Java developer, Product manager. Such data supports why most universities are currently embedding Data Science Programs in their curricula. Lincoln University is no exception and that is why we have to begin.

e. A statement about resource impact

MAT-115 (Foundations of Data Science) is proposed as part of the NSF project. During the project implementation period (NSF 21-523), the class will be taught simultaneously at the 3 participating institutions: Lincoln University, Delaware State University and University of Delaware and shall count for a joint certificate/minor/concentration in Data Science. After the project period, the course will be offered like other regular courses of the department.

f. A statement about impact to other departments

MAT-115 (Foundations of Data Science) is designed to serve as a general elective course for mathematics majors, minors, and other STEM, business and social science majors. All university students in any major can take the course as long as they satisfy the prerequisite requirements. As part of this project, the Lincoln team will also work with UD faculty experts in data science research and curricula towards developing a new Data Science concentration in the Department of Mathematical Sciences at Lincoln University for math majors and dual majors. This new concentration, along with the project's data science certification course, will provide Lincoln students with the skills needed to secure competitive professional employment and advanced study opportunities in the rapidly growing field of data science.

g. If similar course exists, explanation showing clearly why this course is necessary

The department has multiple courses related to the newly proposed course, MAT 115 (Foundations of Data Science). It includes courses like MAT 114 (Elementary Statistics), MAT 341 (Mathematical Statistics I) and MAT 342 (Mathematical Statistics II). MAT 115 is unique in its content and approach. It follows the state-of-the-art techniques, tools and science in the mathematics of today's data driven world. It introduces new dimensions in the data processing labs that include GitHub repositories, Jupyter notebooks and Python's readymade data functionalities. Other tools like SQL and Machine Learning techniques are also included as part of the course which we don't cover in other related courses in the department.

h. The complete list of program student learner outcomes (PSLOs) for the program (s) that the course is aligned with

MAT 115 is aligned with PSLO#2 and PSLO#3 of the Department of Mathematical Sciences

- PSLO#2: Computational Mathematics - Apply computational techniques and technology to support mathematical reasoning and problem solving.
- PSLO#3: Statistics & Applied Mathematics - Apply mathematical concepts of probability, statistics, linear algebra and related applications.

Details of mapping to CSLOs and ILOs is presented in the course syllabus.