A. Course Description

Credits: 2

Prerequisites: MATH 230 Introduction to Mathematical Modeling AND MATH 315 Linear Algebra and Applications

Lab Hours/ Weeks: Corequisites: None

Lecture Hours/ Week :

MnTC Goals: None

Optimization covers a broad range of problems that share a common goal - determining the values for the decision variables in a problem that will maximize (or minimize) some objective function while satisfying various constraints. Using a mathematical modeling approach, this course introduces mathematical programming techniques and concepts such as linear programming, sensitivity analysis, network modeling, integer linear programming, goal programming, and multiple criteria optimization. Software is used to solve real-world problems with an emphasis on interpretability of results. Applications include determining product mix, routing and logistics, and financial planning.

B. Course Effective Dates: 05/07/2019 - Present

C. Outline of Major Content Areas:

See Course Description for major content areas.

D. Learning Outcomes (General)

1. Formulate optimization problems mathematically.
2. Solve mathematical programming problems graphically, algebraically, and using software.
3. Assess how sensitive models are to various changes that might occur in the model or its optimal solution.
4. Identify and apply the most appropriate mathematical programming technique for problem solution.
5. Interpret and understand the computer output for a mathematical programming application.
6. Document and articulate the results and conclusions for mathematical programming techniques applied to actual cases in a variety of disciplines.

E. Learning Outcomes (MN Transfer Curriculum)

This contains no goal areas.

F. Special Information

Note: Students whose prerequisites are not identified by the system would contact the Math and Statistics Department for an override at MATH@metrostate.edu. First day attendance required except by instructor permission.