COURSE SYLLABUS

Course Title:	Capstone Research Project
Department:	STEAM
Curriculum:	Math/Computer Science

Date submitted: Spring 2021 (AAC: 21-16)

Course Descriptors:
Make certain that the course descriptors are consistent with college and Board of Trustees policies, and the current course numbering system.

Course Code: (eg. ACC 101) **DTS*299**

Course Type: **P**

A: Clinical   B: Lab   D: Distance Learning
I: Individual/Independent   L: Lecture   N: Internship
M: Seminar   P: Practicum   U: Studio
X: Combined Lecture/Lab   Y: Combined Lecture/Clinical/Lab   Z: Combined Lecture/Studio

Elective Type: **M**

AH: Art History   E: English   FA: Fine Arts   FL: Foreign Language   G: General   HI: History   HU: Humanities   LAS: Liberal Arts & Sciences   M: Math   S: Science   SS: Social Science

Credit Hours:	3
Developmental: (yes/no)	No
Lecture:	3
Clinical:	0
Contact Hours: Lab:	0
Studio:	0
Other:	0
TOTAL:	3
Class Maximum:	30
Semesters Offered:	F/S/Su

Prerequisites:

Permission of Instructor

Corequisites:

None

Other Requirements:

None

Catalog Course Description:

PIC Math (Preparation for Industrial Careers in Mathematics) is a program sponsored by the Mathematical Association of America (MAA), the Society for Industrial and Applied Mathematics (SIAM), and the National Science Foundation (NSF). The goal of this capstone project is to provide students with experience in researching and solving industrial problems. Students work in groups and research problems given by local businesses, industry, and government (BIG). This course mimics an internship – students learn to interact in a business setting, manage deadlines, produce technical documents, and think critically to find solutions. By the end of the course, each group produces a solution to their problem and completes a written, oral (video), and poster/PowerPoint summary of their work.

Topical Outline:
List course content in outline format.

1. Introduction – Requirements and Expectations
2. LinkedIn Profiles & Networking
3. Client on-boarding process

4. Individual/Group Project Work assignments

Upon successful completion of this course, each student will be able to:

1. Formulate questions needed to solve a problem.
2. Apply research techniques to gain crucial knowledge about the industry problem and possible solutions.
3. Investigate data using statistical techniques.
4. Develop written and oral communication skills at a professional level.
5. Contribute in a team setting in a productive manner.
6. Engage in the client onboarding process
7. Gain working knowledge of project management design, development, and deployment
8. Use project management tools and techniques to develop a proposal and reporting schedule, and maintain a work plan
9. Make effective presentations to clients

Outcomes:

Describe measurable skills or knowledge that students should be able to demonstrate as evidence that they have mastered the course content.

PROGRAM: *(Numbering reflects Program Outcomes as they appear in the college catalog)*

Upon successful completion of all program requirements, graduates should be able to:

1. Transition seamlessly into a Bachelor of Science Degree Program in Data Science or Technology Management
2. Apply appropriate mathematical and scientific principles to Data Science applications.
3. Demonstrate proficiency in technical fundamentals to analyze and resolve technology problems.
4. Apply knowledge and skills to develop, interpret, and select appropriate technological processes.
5. Demonstrate the ability to assist in research, development, design, production, testing and various other functions associated with Data Science.
6. Demonstrate a good understanding of Data Science principles/concepts.
7. Demonstrate a good understanding of mathematical concepts.
8. Demonstrate the ability to think through a problem in a logical manner.
9. Organize and carry through to conclusion the solution to a problem.
10. Demonstrate good communication skills.
11. Demonstrate teamwork skills.

GENERAL EDUCATION: *(Numbering reflects General Education Outcomes as they appear in the college catalog)*
None

Evaluation:

List how the above outcomes will be assessed.

Assessment will be based on the following criteria:

1. In-class and weekly activities
2. Progress Reports
3. Final Group Report
4. Individual Paper
5. Final Group Presentation
6. Final Poster Presentation

Instructional Resources: List library (e.g. books, journals, on-line resources), technological (e.g. Smartboard, software), and other resources (e.g. equipment, supplies, facilities) required and desired to teach this course.	**Required:** computer classrooms **Desired:**
Textbook(s)	Instructors have the academic freedom to choose the materials and resources for the course. The use of OERS is strongly encourage.