MHS Course Proposal Form

Part 1: General Information

Title of New Course: Artificial Intelligence and Machine Learning
Proposed by: Emmely Briley
Department: Science/Business
Class Length (trimesters): 2 ˅

What grade level(s) is the course intended to target? 11-12

Does it replace an existing course? Yes ˅
    If yes, what course? Accounting 1&2 no longer is a relevant or sustainable course. Jeremy is going to shutter that course, take Cybersecurity under the Business and Infor Tech POS for CTE, which will open the opportunity for this course.

Does it change department/graduation requirements? No ˅
    If yes, explain:

Are there any prerequisites? Yes ˅
    If yes, what? Exploring Computer Science (ECS) **OR** Principles of Mechanical Engineering

How will students be graded? Unweighted (standard) ˅ '

Will students receive dual-credit? This still needs to be explored through ACC or WP.

Part II - Budget: Estimated Costs

Please estimate any projected costs related to this course. In addition, please indicate if this is a one-time start-up expense or an annual expense (textbook adoption is considered a startup expense) by placing an "X" in the appropriate column.

Area/Item	Brief Description	Startup Expense	Annual Expense	Total Cost
FTE addition	0	0	0	0
Curriculum Development	Progression map, syllabus	20 hours @ curriculum rate		$799.40
Staff Development	N/A	N/A	N/A	N/A
Textbooks	Online PLTW POE Curriculum for Machine Learning and and ECS AI Curriculum (we already own)	N/A	N/A	N/A
Other Instructional Materials / Supplies	N/A	N/A	N/A	N/A
Technology Needs	N/A	N/A	N/A	N/A
Additional Expenses	N/A	N/A	N/A	N/A
Proposed Student Fees	N/A	N/A	N/A	N/A

Part III - Course Details

Course Description (to be used in the Curriculum Guide, please limit to 100 words):

Embark on an exciting journey into the world of **Artificial Intelligence (AI)** and **Machine Learning (ML)**! This high school course is based on PLTW curriculum and introduces students to the fundamental concepts, ethics, and applications of AI. You'll learn how to build, train, and deploy ML models, exploring topics like data analysis, predictive modeling, and neural networks. Through hands-on projects, you'll gain practical skills for careers in the rapidly growing field of AI.

Rationale for proposing the course (What data/information do you have to support the request?):

Students face a rapidly changing job market that is being heavily influenced by newly developing artificial intelligence tools, robotics, and machine learning. In this course students will have the opportunity to work collaboratively to develop solutions to real-world-problems and deepen their skills in Python programming, smart sensors, and large language models (LLMs). Students will continue their exploration of automated machines that began in the Principles of Mechanical Engineering (EET 215) class as they incorporate artificial intelligence and machine learning into their designs. They design and build machines using a supervised machine learning algorithm, a distance sensor, and a bumper switch to train their device to give a physical greeting. Students will also investigate ethical concerns involved in the implementation of artificial intelligence and conduct research to determine the best course of action in a given scenario.

Student Learning Outcomes:
- Gain awareness of artificial intelligence and machine learning.
- Understand the three main types of machine learning.
- Use a supervised machine learning algorithm to train a machine to accomplish a specific task.
- Investigate trade-offs in artificial intelligence.
- Conduct research to determine potential solutions to future artificial intelligence problems.
- Apply knowledge of artificial intelligence and machine learning to solve authentic design problems.

Any additional information and/or comments:
This course replaces the cybersecurity class that will be moved under the umbrella of the CTE business program. It builds on foundational engineering and computer skills developed in Principles of Mechanical Engineering and Exploring Computer Science courses. The course is meant to be a third-year capstone course for students following engineering, engineering tech, machining, fabrication, robotics or computer science pathways.