Department of Mechanical Engineering
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MENG 5399 - Independent Study
Course Syllabus

Semester / Year	Spring / 2023
Catalog Description	Independent study in specific areas of Mechanical Engineering not covered by organized graduate courses. A maximum of six credit hours may be used for graduate credit on the MSME degree. One to three hours of course meeting per week.
Prerequisites	CI.
Section Number	005
Instructor Name	Chung Hyun Goh
Contact Information	3900 University Blvd., RBN 3007, Tyler TX. 75799 Phone: 903-566-6256 Email: chgoh@uttyler.edu
Class Type / Instruction Mode / Location	Independent / In person / Tyler
Class Time	Weekly meeting with a faculty advisor (one to three hours on Thursday)
Office Hours	Tu/W/Th: 11:00 AM – 12:00 PM or by appointment
No. of Credits	3 credits
Required Textbook	MATLAB Machine Learning, Michael Paluszek and Stephanie Thomas, 2017, Apress
Optional References	MATLAB Deep Learning with Machine Learning, Neural Networks and Artificial Intelligence, Phil Kim, 2017, Apress
Additional Rules and Requirements	N/A
Evaluation Method	Assignments (literature review, MATLAB programming, etc.): 40% Written Reports (progress and final technical reports): 50% Independent study meeting participation: 10%
Grading Policy / Scale	Letter grades, scale: A: 90 – 100; B: 80 – 89; C: 70 – 79; D: 60 – 69; F: < 60
Important Events / Dates	Census date: January 23rd, 2023 Exam date: No exam Last date to withdraw from one or more 15-week courses: March 23rd, 2023 Final date: TBD
Attendance / Makeup policy / other rules	No makeup, regular attendance is required.
Course Learning Objectives / ABET & PEOs Relation	By the end of this course, students will be able to: 1. Demonstrate an understanding of basic knowledge for machine learning applications through independent research. 2. Utilize a hands-on skill using machine learning tools to perform optimal design in engineering problems. 3. Develop self-motivation and discipline to identify a problem, analyze data, and explore the solution space. 4. Communicate effectively with an engineering audience.

	For the topic assigned, by the end of this course the student should be able to: 1. Apply machine learning techniques to provide artificial ventilation device (AVD) with optimal drug delivery and breathe rate. 2. Utilize machine learning tools for simulating realistic human lungs and respiration system in the AVD design. 3. Enhance optimal redesign capabilities through machine learning techniques. 4. Improve writing skills to make a publishable draft paper.
Tentative Topics / Course Plans	1. Machine learning introduction-Categories, clustering, etc. 2. Supervised learning and unsupervised learning 3. Deep learning and reinforcement learning 4. Machine learning in engineering and healthcare applications, e.g., artificial ventilation device.
University Policies	https://www.uttyler.edu/academic-affairs/files/syllabus_information_2021.pdf