



Course title and number	Applied Information Science Practicum, ECEN 689
Term (e.g., Fall 20XX)	Fall 2018
Meeting times and location	TR 5:30 PM – 6:45 PM, ETB 1037
Course Credit (lecture/lab)	3 (3/0)

Course Description and Prerequisites

This multidisciplinary project-based laboratory course provides instruction on extracting information from data through hands-on activities that complement traditional classroom experience. Topics include predictive modeling, regression and classification; data cleaning and preprocessing; feature engineering and selection; entropy, information theory, and learning. This course focuses on applications and involves working with real data. It leverages an array of tools including Git, SQL, Python, Numpy, Pandas, Scikits, and Tensorflow. The focus is on modular projects, algorithms and implementation, data management, and visualization. In addition, emphasis is put on team work, presentation skills, time management, creativity, and innovation.

Prerequisites: None.

Learning Outcomes or Course Objectives

Enhance engineering education by facilitating learning through applied projects in information science. Review basics of project development, programming concepts, and fundamentals of data analysis. Foster leadership and team work, with division of labor, complementary tasks, discussion and integration. Develop the ability to bridge theoretical concepts and practical tasks while dealing with information extraction. Master elements of experiential learning: abstract conceptualization, active experimentation, concrete experience, reflective observation. Improve transferable engineering skills and the ability to integrate different concepts. Promote creativity and critical thinking. Refine presentation skills and the ability to conduct and manage projects.

Instructor Information

Name	Jean-Francois Chamberland
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Office hours	TBD
Office location	WEB 301RA

Textbook and/or Resource Material

- Understanding Machine Learning from Theory to Algorithms by Shai Shalev-Shwartz and Shai Ben-David
- An Introduction to Statistical Learning: with Applications in R by Gareth James and Daniela Witten
- The Elements of Statistical Learning: Data Mining, Inference, and Prediction, Second Edition by Trevor Hastie and Robert Tibshirani
- Machine Learning: A Probabilistic Perspective by Kevin P. Murphy

Grading Policies

During the semester, we try to be available to students and to help them understand all of the material covered in class. We also provide early feedback to people who may be in trouble or may not get the final grade they desire. This gives them an opportunity to learn more and to prepare better for exams. We realize that classes can be demanding and that students come with different backgrounds. We try to minimize the impact of previous experience by focusing on basic material at the beginning of each semester. We offer office hours and optional review sessions to students. These strategies are intended to give all students an equal chance at doing well. Still, final grades are determined numerically based solely on individual standing. This seems to be the only fair procedure to assign grades. Alternate letter assignments with special considerations lead to favoritism. Thus, final grades only reflect how well students did on their assignments, quizzes, and exams. Unfortunately, they do not always reflect the amount of work and time invested in the class. This is the nature of learning. Ultimately grades are assigned fairly, if not pleasantly. They are therefore very unlikely to change, unless we made a mistake in grading exams or adding numbers.

Grading Components:

Projects 70%

Quizzes & Challenges 20%

Participation 10%

Grading Scale

The Academic Rules website at Texas A&M University, and its section on Grading in particular, discusses possible grades and their respective meaning: <http://student-rules.tamu.edu/rule10>.

Standard Letter Grading Scale:

A = 90-100

B = 75-89

C = 60-74

F = <60

Course Topics, Calendar of Activities, Major Assignment Dates

Week	Topic
1	Computational Resources & Collaboration Tools
2	Predictive Modeling
3	Regression and Parameter Estimation
4	Classification
5	Data Cleaning and Preprocessing
6	Feature Engineering and Selection
7	Presentations and Review
8	Project Management Tools
9	Time-Series and Spectral Methods
10	Presentations and Review
11	Entropy, Information Theory
12	Algorithms and Implementation
13	Visualization Tools
14	Presentations and Review

Additional Pertinent Course Information

Classroom Communication Concerns: A student desiring to report a classroom communication concern should initiate the process within the first 12 class days of the semester, whenever possible, in order to identify an alternative course, if necessary. The last date a student may initiate the classroom communication concerns procedure is the same as the Q-drop deadline. For more information, consult the Office of the Registrar and related form.

Miscellaneous: Student dress, behavior, and speech are expected to be courteous and professional. Any deviation from this deemed inappropriate by the professor or any disruptive behavior will result in immediate ejection from the class period with swift and appropriate disciplinary measures.

Americans with Disabilities Act (ADA)

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit <http://disability.tamu.edu>.

Academic Integrity

*For additional information please visit: <http://aggiehonor.tamu.edu>
"Aggies do not lie, cheat, or steal or tolerate those who do."*

Attendance and Make-up Policies

Attendance and make-up policies will follow the general student rule of the university:
<http://studentrules.tamu.edu/rule07> .

If an absence is excused, the instructor will either provide the student an opportunity to make up any quiz, exam or other work that contributes to the final grade or provide a satisfactory alternative by a date agreed upon by the student and instructor. If the instructor has a regularly scheduled make up exam, students are expected to attend unless they have a university approved excuse. The make-up work must be completed in a timeframe not to exceed 30 calendar days from the last day of the initial absence. The student is responsible for providing satisfactory evidence to the instructor to substantiate the reason for the absence. Failure to notify and/or document properly may result in an unexcused absence. Falsification of documentation is a violation of the Honor Code. In cases where prior notification is not feasible (e.g., accident or emergency) the student must provide notification by the end of the second working day after the absence, including an explanation of why notice could not be sent prior to the class.