

Innovation Fellowship

Data Science Syllabus

Class Summary:

The Knowledge House Data Science Innovation Fellowship aims to provide students with a multifaceted, foundational skill set essential for an entry-level data or software specialist role, which includes roles in software engineering, data analysis, research analysis, analytics engineering, and more.

Commencing with foundational programming skills, emphasis is laid on mastering Python as a versatile tool for data ingestion, manipulation, and storage. This also entails an exploration of foundational programming skills that students could apply to any language, as well as light forays into individual statistics modules. Subsequently, students then delve into pandas data manipulation in order to preempt the large-scale data analysis and prediction which will be performed in the next phase.

The curriculum progresses to machine learning, covering supervised and unsupervised learning, classification, regression, clustering, and ensemble methods. Practical aspects such as feature engineering, model selection, and evaluation metrics are explored, providing a nuanced understanding of the iterative nature of the data science process. In tandem, students are also equipped with skills in relational database modeling, management, and manipulation using the Structured Query Language (SQL).

The final phase then concludes with a comprehensive group project which will develop an analysis report or software tool that satisfies the work-related needs of the Data Science team. Students will work together with their pod members to ensure that tasks are completed in iterative sprint-based chunks along with respective stand-ups.

Ethical considerations in data science, encompassing issues of bias, fairness, privacy, and responsible data handling practices, are integrated into the curriculum. Real-world applications and case studies are incorporated to bridge theoretical knowledge with practical applications across various domains, fostering a holistic understanding. The program culminates with various capstone projects, quizzes, and exams allowing students to apply acquired skills to address substantive data science problems.

Class Schedule:

The Innovation Fellowship is broken down into three Phases:

- Orientation: March 3 - March 7 2025
- Phase 1: March 10 - May 23 2025
- Phase 2: June 9 - August 29 2025
- Phase 3: September 15 - December 5 2025

Additionally, after graduation there are continued learning opportunities through the Alumni Program

- Alumni Program: December 8 2025 - February 27 2026

Scheduled Session	Phase 1	Phase 2	Phase 3
Technical Class	Mondays, Tuesdays, & Wednesdays 5:30 - 9:30pm ET* Thursdays (3x a month) 5:30pm Review	Mondays, Tuesdays, & Wednesdays 5:30 - 9:30pm ET*	TBD

	Session (1-2 hours)		
Career and Life Skills Class	1 Thursday a month	Weekly on Thursdays	Weekly on Thursdays
*For LA-based Web Development Fellows registered for west coast evening courses, technical and career classes will be held 5:30 - 9:30pm PST.			

TKH offices are closed and no classes are held on these days:

- February 17, 2025: Presidents Day
- May 26, 2025 : Memorial Day
- June 19, 2025: Juneteenth
- July 4, 2025 : Independence Day
- September 1-5: TKH Break
- October 13, 2025: Indigenous Peoples Day
- November 27-28, 2025: Thanksgiving Break
- December 24 2025 - January 1 2026: TKH Holiday Break
- January 19, 2026: Martin Luther King Day
- February 16, 2026: Presidents Day

Weekly Breakdown of Topics & Assignments:

PHASE 1 March 10, 2025 - May 21, 2025

By the end of this Phase, fellows will be able to:

- **Implement fundamental descriptive statistics** in Python and pandas.
- **Apply computer science principles** such as data-structures, object oriented programming, control-flow structure, and efficiency analysis in Python projects.
- **Develop computational thinking** in base Python and pandas as it applies to projects where we analyze and aggregate structured datasets.
- **Analyze and apply technical documentation** from Python and pandas. Fellows will be able to discern the usage of any new module given relevant documentation.
- **Effectively operate in a programming environment** consisting of Git, GitHub, VSCode, Conda, and a terminal, with the ability to diagnose and point out technical issues.
- **Engineer data ingestion scripts** in Python via File I/O, database ORM's, Web API's, and web-scraping to process both structured and unstructured data formats
- **Implement database management techniques in SQL** and auxiliary tools in order to interact and analyze relational data.

In summary: **collect, organize, and pipeline data.**

Week #	Dates	Topics <i>Overview of the content to be covered.</i>	Assignments by Week <i>Assignments, quizzes, pre-class content and other relevant resources.</i>
1:1	M 3/10/25 T 3/11/25 W 3/12/25	(Re)-Introduction to Data Science Re-introduction of data science;	Due 3/28 at 11:59 PM ET : TLAB Advanced Health Monitor Analysis: <ul style="list-style-type: none"> • Analyze a dataset of heart rate data by

	Th 3/13/25	<p>Docstring; Control Flow; Truthiness;</p> <p>Advanced Control Flow: Logical Patterns; For Loops; Advanced Loop Patterns I</p> <p>Introduction to Data Processing: Advanced Loop Patterns II; Ingesting text files in Python; File I/O</p> <p>Review Session In-class Work on TLAB - Advanced Health Monitor Analysis</p>	<p>ingesting text files and calculating descriptive statistics using functions and other abstraction techniques.</p> <ul style="list-style-type: none"> Project must be pushed to GitHub and submitted to Canvas. <p>Pre-Class Content:</p> <ul style="list-style-type: none"> Pep 8 - Style Guide for Python Code Numpy Style Guide Think Python Ch5 (5.1 - 5.7) Think Python Ch3 (3.1 - 3.5) Python File I/O RealPython - Documenting Python Code RealPython - Conditional Statements Kaggle - Booleans & Conditionals <p>Class Content</p> <ul style="list-style-type: none"> (3/10) VSCode Course Unit 3 : Lesson 1 - Lesson 4; VSCode Course Unit 2 : Lesson 6 - Lesson 8 (3/11) Think Python Ch7.9; Ch9.15; Ch10.11; Ch11.11 (3/12) TLAB - Advanced Health Monitor Analysis
1:2	M 3/17/25 T 3/18/25 W 3/19/25 Th 3/20/25	<p>Introduction to Abstraction: VSCode Installation; More Advanced Loop Patterns; Lists; Dictionaries; Tuples</p> <p>Advanced Abstraction: Introduction to Classes; Introduction to Dataclasses</p> <p>Measures of Dispersion & Central Limit Theorem: Measures of Dispersion; Normal Distribution; Central Limit Theorem</p> <p>Review Session In-class Work on TLAB - Advanced Health Monitor Analysis</p>	<p>Due 3/22 at 11:59 PM ET:</p> <p>TQZ OOP Quiz:</p> <ul style="list-style-type: none"> Solve 10 questions on Python object oriented syntax and debugging questions. Quiz must be submitted to Canvas. <p>Pre-Class Content:</p> <ul style="list-style-type: none"> Think Python Ch14 (14.1 - 14.5) Think Python Ch15 (15.1 - 15.4;15.6) Think Python Ch16 (16.1 - 16.3) Learning Statistics with R Ch 5 (5.2 - 5.3) <p>Class Content</p> <ul style="list-style-type: none"> (3/17) Think Python Ch14.12; Ch 15.10; (3/18) Think Python Ch16.10 (3/19) TLAB - Advanced Health Monitor Analysis
1:3	M 3/24/25 T 3/25/25 W 3/26/25 Th 3/27/25	<p>Introduction to Conda Environments & File I/O Review: Conda Installation Lab; VSCode; GitHub Set-Up; Review of ingesting text files in Python; File I/O</p>	<p>Due 3/28 at 11:59 PM ET:</p> <p>TQZ Statistics Quiz:</p> <ul style="list-style-type: none"> Solve 10 questions on descriptive statistics and probability. Quiz must be submitted to Canvas. <p>Pre-Class Content:</p>

		<p>Advanced Data Processing: Data formats in data Science; Using packages to read JSON data</p> <p>Data Visualizations Review: Data Visualizations Review; Probability Review</p> <p>Career Readiness & Success Class</p>	<ul style="list-style-type: none"> • Why You Need Python Environments... • VSCode Download • Git Download • Miniconda Download • Conda for Data Scientists • How to Read JSON Files in Python <p>Class Content</p> <ul style="list-style-type: none"> • (3/24) Lab - Setting up Conda Environments • (3/25) Lab - Processing JSON Data • (3/26) TLAB - Advanced Health Monitor Analysis
1:4	M 3/31/25 T 4/1/25 W 4/2/25 Th 4/3/25	<p>Applied REST APIs I: Using REST web API's; Transforming JSON data</p> <p>Applied REST APIs II: Ingesting Web API Data; OpenAI API Usage.</p> <p>Probability: Probability Review; Probability Distributions; Confidence; In-class Work on TLAB - OpenAI API Review Ingestion</p> <p>Review Session In-class Work on TLAB - OpenAI API Review Ingestion</p>	<p>Due 4/21 at 11:59 PM ET:</p> <p>TLAB OpenAI API Auto-Evaluation:</p> <ul style="list-style-type: none"> • Build a pipeline to pass review data to an LLM and collect its output into a dataset. • Project must be pushed to GitHub and submitted to Canvas. <p>Pre-Class Content:</p> <ul style="list-style-type: none"> • What is a REST API? Examples, Uses, and Challenges • Getting Data from an API • API Ingestion in Python <p>Class Content</p> <ul style="list-style-type: none"> • (3/31) Lab - Intro to JSON & APIs Lab • (4/1) Lab - Open AI API Lab • (4/2) TLAB - OpenAI API Review Ingestion
1:5	M 4/7/25 T 4/8/25 W 4/9/25 Th 4/10/25	<p>Applied Web Scraping I: Introduction to HTML; Interpreting an HTML page</p> <p>Applied Web Scraping II: Review of Web-Scraping Concepts and Exercises</p> <p>Hypothesis Testing: Hypothesis Testing Introduction</p> <p>Review Session In-class Work on TLAB - OpenAI API Review Ingestion</p>	<p>Pre-Class Content:</p> <ul style="list-style-type: none"> • Intro to HTML • Python Web-Scraping Introduction • A Gentle Introduction to Hypothesis Testing • Regex One <p>Class Content</p> <ul style="list-style-type: none"> • (4/7) Lab - Applied Web Scraping Lab I • (4/8) Lab - Applied Web Scraping Lab II • (4/9) TLAB - OpenAI API Review Ingestion
1:6	M 4/14/25 T 4/15/25 W 4/16/25 Th 4/17/25	<p>Introduction to Data Analysis I: Conceptual Data Analysis</p> <p>Introduction to Data Analysis II: Basic Pandas operations;</p>	<p>Pre-Class Content:</p> <ul style="list-style-type: none"> • Indexing and Selecting Data • How to Create Pivot Tables with pandas <p>Class Content</p>

		<p>DataFrame Creation; DataFrame Summaries; DataFrame Manipulation; Boolean Indexing; DataFrame Statistics;</p> <p>Reporting on Data: Reporting on data; In-class Work on TLAB - OpenAI API Review Ingestion</p> <p>Financial Literacy Workshop</p>	<ul style="list-style-type: none"> (4/14) Kaggle - Learn Pandas - Creating, Reading, & Writing <ul style="list-style-type: none"> Kaggle - Learn Pandas - Indexing, Selecting, & Assigning Kaggle - Learn Pandas - Summary Functions (4/15) Kaggle Learn Pandas - Grouping & Sorting <ul style="list-style-type: none"> Kaggle - Learn Pandas - Data Types & Missing Values Kaggle - Learn Pandas - Renaming & Combining (4/16) TLAB - OpenAI API Review Ingestion
1:7	<p>M 4/21/25 T 4/22/25 W 4/23/25 Th 4/17/25</p>	<p>Advanced Data Analysis I: Exploratory Data Analysis with pandas, seaborn, & matplotlib; Grouping</p> <p>Advanced Data Analysis II: Pivot Tables, Binning</p> <p>Pandas Review Day: Leetcode Questions; In-class Work on TLAB - Weather Data Analysis</p> <p>Career Class</p>	<p>Due 5/12 at 11:59 PM ET: TLAB Weather Data Analysis:</p> <ul style="list-style-type: none"> Build a project which will collect data data from a public API and save information into a csv file. Project must be pushed to GitHub and submitted to Canvas. <p>Pre-Class Content:</p> <ul style="list-style-type: none"> What is Exploratory Data Analysis? Data Transformation using Pandas Group by: split-apply-combine <p>Class Content</p> <ul style="list-style-type: none"> (4/21) Kaggle - Learn Pandas - Hello, Seaborn <ul style="list-style-type: none"> Kaggle - Learn Pandas - Line Charts Kaggle - Learn Pandas - Bar Charts & Heatmaps Kaggle - Learn Pandas - Scatter Plots Kaggle - Learn Pandas - Distributions (4/22) Kaggle - Learn Pandas - Handling Missing Values <ul style="list-style-type: none"> Kaggle - Learn Pandas - Scaling & Normalization Kaggle - Learn Pandas - Parsing Dates Kaggle - Learn Pandas - Character Encodings (4/23) TLAB - Weather API Data Analysis
1:8	<p>M 4/28/25 T 4/29/25 W 4/30/25</p>	<p>Pandas Case Study I: Complete a pandas case on a dataset to reaffirm concepts in data analysis.</p> <p>Pandas Case Study II: Complete a pandas case on a shopping dataset study to reaffirm concepts in data analysis..</p>	<p>Pre-Class Content:</p> <ul style="list-style-type: none"> Defining Business Problems for Analytical Thinking Working with Dates and Time Series Data DataCamp - Pandas Resample With resample() and asfreq() Alex the Analyst: Regular Expressions Use Cases in Python <p>Class Content</p>

		<p>AB Testing: t-testing; ; In-class Work on TLAB - Weather Data Analysis</p> <p>Review Session In-class Work on TLAB - Weather Data Analysis</p>	<ul style="list-style-type: none"> • (4/28) Pandas Case Study I • (4/29) Pandas Case Study II • (4/30) TLAB - Weather API Data Analysis
1:9	<p>M 5/5/25 T 5/6/25 W 5/7/25</p>	<p>Intro to Structured Databases I: Introduction to SQL; SELECT Queries; Filters Joins</p> <p>Intro to Structured Databases II: Aggregates; Sub-queries; Execution Order; Using SQL for Ad-Hoc Queries</p> <p>SQL Review Day: SQL Leetcode Questions; In-class Work on TLAB - Weather API Data Analysis</p> <p>Review Session In-class Work on TLAB - Weather Data Analysis</p>	<p>Class Content</p> <ul style="list-style-type: none"> • (5/5) SQL Bolt - Lessons 1-7 • (5/6) SQL Murder Mystery • (5/7) TLAB - Weather API Data Analysis
1:10	<p>M 5/12/25 T 5/13/25 W 5/14/25</p>	<p>Advanced SQL I: Window Functions; Common Table Expressions</p> <p>Advanced SQL II: Database Management using SQLite</p> <p>Linear Regression I: Linear Regression Light Introduction; In-class Work on EOP Project</p> <p>Review Session TEP Introduction; Collaborating on One Project</p>	<p>Due 5/21 at 11:59 PM ET:</p> <p>TEP Phase 1 Project:</p> <ul style="list-style-type: none"> • Utilize all technical and statistical tools to create a comprehensive data collection tool. Incorporate light exploratory analysis of the data you've collected. • Project must be pushed to GitHub and submitted to Canvas. <p>Pre-Class Content</p> <ul style="list-style-type: none"> • StatQuest - Fitting a Line to Data <p>Class Content</p> <ul style="list-style-type: none"> • (5/12) Lab - Advanced SQL Queries I • (5/13) Lab - Advanced SQL Queries II • (5/14) Lab - End of Phase Group Work
1:11	<p>M 5/19/25 T 5/20/25 W 5/21/25</p>	<p>End-of-Phase Project Work Day: Work in groups to complete the end of phase project.</p> <p>End-of-Phase Project Work Day: Work in groups to complete the end of phase project.</p>	<p>Pre-Class Content:</p> <ul style="list-style-type: none"> • None <p>Class Content</p> <ul style="list-style-type: none"> • (5/19) End of Phase Group Work & Standup • (5/20) End of Phase Group Work & Standup • (5/21) End of Phase Group Work & Submission

		Machine Learning Preview: Upcoming Machine Learning Algorithms; End of Phase Project	
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PHASE 2
June 9 - August 29 2025

By the end of this Phase, fellows will be able to:

- **Conceptualize unsupervised and supervised learning methods** as well as their underpinning mathematics, which include clustering and dimensionality reduction.
- **Construct supervised regression models** on both random experiment and time series data, and distinguish mathematical differences between these two types of inferences.
- **Implement common data-driven practices** such as A/B testing, database planning, automation, and documentation generation.
- **Effectively operate Git and GitHub in a technical team environment.**
- **Employ cutting-edge Generative AI technology** to assist in the development and analysis process, as well as build AI tools in order to glean insights from generative models..

Week # (phase: week)	Dates	Topics Overview of the content to be covered.	Assignments by Week
2:1	M 6/9/25 T 6/10/25 W 6/11/25 Th 6/12/25	Introduction to Phase 2: Re-introduction to Data Science; Python Refresher & Practical Problems Advanced Python Review: API Requests; Web-Scraping Python & SQL Review Session: SQL Refresher; Using SQL in Python; Lab - SQL Ad-Hoc Analysis Lab Regression Algorithms I: Introduction to Linear Regression	Due 6/27 at 11:59 PM ET : TLAB SQL Ad-Hoc Analysis Lab: <ul style="list-style-type: none"> • Use SQLite in Python to form 8 ad-hoc queries. Generate visualizations for these queries to inform your analytical answers. • 6/19 Checkpoint 1: GitHub repo created & functional code. • Project must be pushed to GitHub and submitted to Canvas.
2:2	M 6/16/25 T 6/17/25 W 6/18/25 Th 6/19/25	Ideathon - No Technical Class Regression Algorithms II: Evaluating the accuracy of Linear Regression Regression; Regularization Machine Learning Lab:	Due 6/18 at 11:59 PM ET : TQZ P2W2 Pre-Class Quiz: <ul style="list-style-type: none"> • Answer 5 questions on the upcoming week's material. • Quiz must be submitted to Canvas. Pre-Class Content: <ul style="list-style-type: none"> • ISLP - Chapter 6 - 6.2

		<p>Hyperparameter tuning; Lab - SQL Lab</p> <p>Career Class</p>	<ul style="list-style-type: none"> • What is Machine Learning - Andrew Ng • IBM - Hyperparameter Tuning • StatQuest - Gradient Descent, Step-by-Step • StatQuest - Regularization Ridge (L2) Regression • StatQuest - Regularization Lasso (L1) Regression • StatQuest - Cross Validation • Reddit - Linear Regression Gradient Descent Visualized • DataCamp - Lasso and Ridge Regression in Python Tutorial <p>Class Content</p> <ul style="list-style-type: none"> • (6/16) Linear Regression Lab I • (6/17) Linear Regression Lab II • (6/18) TLAB SQL Lab
2:3	<p>M 6/23/25 T 6/24/25 W 6/25/25 Th 6/26/25</p>	<p>Classification Algorithms I: Introduction to Logistic Regression</p> <p>Classification Algorithms II: Evaluating the accuracy of Logistic Regression; Modeling Pipelines</p> <p>Machine Learning Lab: Linear & Logistic Regression Review Day; Lab - SQL Lab</p> <p>Career Class</p>	<p>Due 6/25 at 11:59 PM ET:</p> <p>TQZ P2W3 Pre-Class Quiz:</p> <ul style="list-style-type: none"> • Answer 5 questions on the upcoming week's material. • Quiz must be submitted to Canvas. <p>Pre-Class Content:</p> <ul style="list-style-type: none"> • ISLP - Chapter 4 - 4.1 - 4.3 • StatQuest - Logistic Regression Part 1 • StatQuest - Logistic Regression Part 2 • StatQuest - Cross Validation • StatQuest - Bias & Variance <p>Class Content</p> <ul style="list-style-type: none"> • (6/23) Logistic Regression Lab I • (6/24) Logistic Regression Lab II • (6/25) TLAB SQL Lab
2:4	<p>M 6/30/25 T 7/1/25 W 7/2/25 Th 7/3/25</p>	<p>Hackathon Demo Day - No Technical Class</p> <p>Break - No Technical Class</p> <p>Bayes Theorem Review: Introduction to Bayes Theorem</p> <p>Career Class</p>	<p>Due 7/23 at 11:59 PM ET:</p> <p>TLAB Financial Fraud Detection:</p> <ul style="list-style-type: none"> • Identify financial fraud using ensemble methods. Workflow should include EDA, pre-processing, hyperparameter tuning, and model evaluation. • Must contain answers to 5 self-reflective questions • Project must be pushed to GitHub and submitted to Canvas. <p>Pre-Class Content:</p> <ul style="list-style-type: none"> • Veritasium - The Bayesian Trap • StatQuest - Bayes' Theorem <p>Class Content</p> <ul style="list-style-type: none"> • (6/30) No Class

			<ul style="list-style-type: none"> • (7/1) No Class • (7/2) Bayes Theorem Code-Along
2:5	M 7/7/25 T 7/8/25 W 7/9/25 Th 7/10/25	<p>Naive Bayes Classification: Naive Bayes Classifier</p> <p>K-Nearest-Neighbors: K-Nearest Neighbors; Considerations of Dimensionality</p> <p>Feature Engineering: Feature Engineering Lab</p> <p>Career Class</p>	<p>Due 7/7 at 11:59 PM ET: TQZ P2W5 Pre-Class Quiz:</p> <ul style="list-style-type: none"> • Answer 5 questions on the upcoming week's material. • Quiz must be submitted to Canvas. <p>Pre-Class Content:</p> <ul style="list-style-type: none"> • ISLP - Chapter 4 - 4.4.4 • ISLP - Chapter 2 - 2.2.3 - 2.3 • ISLP - Chapter 6 - 6.4.1 - 6.4.2 • StatQuest - Naive Bayes • StatQuest - kNN <p>Class Content</p> <ul style="list-style-type: none"> • (7/7) Naive Bayes Code-Along • (7/8) kNN Code-Along • (7/9) Feature Engineering Lab
2:6	M 7/14/25 T 7/15/25 W 7/16/25 Th 7/17/25	<p>Support Vector Machines: Support Vector Machines & Kernel Trick</p> <p>Decision Trees: Decision Trees & Entropy</p> <p>Ensemble Learning: Random Forests; Ensemble Methods Lab</p> <p>Career Class</p>	<p>Due 7/14 at 11:59 PM ET: TQZ P2W6 Pre-Class Quiz:</p> <ul style="list-style-type: none"> • Answer 5 questions on the upcoming week's material. • Quiz must be submitted to Canvas. <p>Pre-Class Content:</p> <ul style="list-style-type: none"> • ISLP - Chapter 9 - 9.1 - 9.4 • ISLP - Chapter 8 - 8.1.1 - 8.1.4 • StatQuest - SVM Part 1 • StatQuest - SVM Part 2 • Kernel Trick (Visually Explained) • StatQuest - Decision Tree & Gini Impurity • ISLP - Chapter 8 - 8.2.1 - 8.2.3 • StatQuest - Random Forests • StatQuest - Bootstrapping • IBM - Bagging <p>Class Content</p> <ul style="list-style-type: none"> • (7/14) SVM Code-Along • (7/15) Decision Trees Code-Along • (7/16) Random Forests Lab
2:7	M 7/21/25 T 7/22/25 W 7/23/25 Th 7/24/25	<p>Machine Learning Case Study: ML Case Study</p> <p>Dimensionality Reduction: Linear Algebra Review; Principal Component Analysis (PCA)</p> <p>Unsupervised Learning</p>	<p>Due 7/21 at 11:59 PM ET: TQZ P2W7 Pre-Class Quiz:</p> <ul style="list-style-type: none"> • Answer 5 questions on the upcoming week's material. • Quiz must be submitted to Canvas. <p>Due 8/10 at 11:59 PM ET: TLAB Music Recommendation:</p>

		<p>Algorithms: Introduction to Unsupervised Learning; K-Means Clustering</p> <p>Career Class</p>	<ul style="list-style-type: none"> • Create an unsupervised learning algorithm on a dataset of unlabeled music data. Your goal will be to generate clusters which will then be used to recommend music for a hypothetical user. • Must contain answers to 10 self-reflective questions • Project must be pushed to GitHub and submitted to Canvas. <p>Pre-Class Content:</p> <ul style="list-style-type: none"> • 3blue1brown - Eigenvectors & Eigenvalues • StatQuest - Principal Component Analysis • Victor Lavrenko - PCA Part 1 • ISLP - Chapter 6 - 6.3.1 - 6.3.2 • ISLP - Chapter 12 - 12.4.1 - 12.4.2 • StatQuest - K-Means Clustering <p>Class Content</p> <ul style="list-style-type: none"> • (7/21) PCA Code-Along • (7/22) K-Means Clustering Code-Along • (7/23) Dimensionality Reduction Lab
2:8	<p>M 7/28/25 T 7/29/25 W 7/30/25 Th 7/31/25</p>	<p>Neural Networks I: Perceptron Introduction</p> <p>Neural Networks II: Multi-Layer Perceptrons & Pytorch</p> <p>Machine Learning Lab: Neural Networks Review Session</p> <p>Career Class</p>	<p>Due 7/28 at 11:59 PM ET: TQZ P2W8 Pre-Class Quiz:</p> <ul style="list-style-type: none"> • Answer 5 questions on the upcoming week's material. • Quiz must be submitted to Canvas. <p>Pre-Class Content:</p> <ul style="list-style-type: none"> • ISLP - Chapter 10 - 10.1 • ISLP - Chapter 10 - 10.2 • ISLP - Chapter 10 - 10.5 • StatQuest - Neural Nets <p>Class Content</p> <ul style="list-style-type: none"> • (7/28) Neural Networks Code-Along I • (7/29) Neural Networks Code-Along II • (7/30) Neural Networks Lab
2:9	<p>M 8/4/25 T 8/5/25 W 8/6/25 Th 8/7/25</p>	<p>Natural Language Processing & Language Models I: Vector Embeddings; Word2Vec; TF-IDF; Similarity Metrics</p> <p>Natural Language Processing & Language Models II: Transformer Architecture</p> <p>Natural Language Processing & Language Models III:</p>	<p>Due 8/6 at 11:59 PM ET: TQZ P2W9 Pre-Class Quiz:</p> <ul style="list-style-type: none"> • Answer 5 questions on the upcoming week's material. • Quiz must be submitted to Canvas. <p>Pre-Class Content:</p> <ul style="list-style-type: none"> • <p>Class Content</p> <ul style="list-style-type: none"> •

		HuggingFace Pipeline Career Class	
2:10	M 8/11/25 T 8/12/25 W 8/13/25 Th 8/14/25	Applied LLMs I: Vector DB's & RAGS Applied LLMs II: Fine-Tuning Models Machine Learning Lab: Generative AI Tools case study Career Class	Due 8/29 at 11:59 PM ET : TEP Phase 2 Project: <ul style="list-style-type: none"> Utilize all technical and statistical tools to create a comprehensive RAG tool. Project must be pushed to GitHub and submitted to Canvas. TQZ P2W10 Pre-Class Quiz: <ul style="list-style-type: none"> Answer 5 questions on the upcoming week's material. Quiz must be submitted to Canvas. Pre-Class Content: <ul style="list-style-type: none"> Class Content <ul style="list-style-type: none">
2:11	M 8/18/25 T 8/19/25 W 8/20/25 Th 8/21/25	Fine-Tuning & Applied LLMs I: ... Fine-Tuning & Applied LLMs II: ... Machine Learning Lab: ... Career Class	Pre-Class Content: <ul style="list-style-type: none"> Class Content <ul style="list-style-type: none">
2:12	M 8/25/25 T 8/26/25 W 8/27/25 Th 8/28/25	Review Day I Review of all Phase 2 concepts. Review Day II Review of all Phase 2 concepts. Assessment Day Career Class	Pre-Class Content: <ul style="list-style-type: none"> Class Content <ul style="list-style-type: none">

PHASE 3 September 15 - December 5 2025			
Week # (phase: week)	Dates	Topics Overview of the content to be covered.	Assignments by Week
3:1	M 9/15/25 T 9/16/25		

	W 9/17/25		
3:2	M 9/22/25 T 9/23/25 W 9/24/25		
3:3	M 9/29/25 T 9/30/25 W 10/1/25		
3:4	M 10/6/25 T 10/7/25 W 10/8/25		
3:5	M 10/13/25 T 10/14/25 W 10/15/25		
3:6	M 10/20/25 T 10/21/25 W 10/22/25		
3:7	M 10/27/25 T 10/28/25 W 10/29/25		
3:8	M 11/03/25 T 11/04/25 W 11/05/25		
3:9	M 11/10/25 T 11/11/25 W 11/12/25		
3:10	M 11/17/25 T 11/18/25 W 11/19/25		
3:11	M 11/24/25 T 11/25/25 W 11/26/25	Capstone Projects due by 11/26	
3:12	M 12/01/25 T 12/02/25 W 12/03/25	Capstone Presentations Week	

Academic Integrity and Responsible AI Use Policy:

1. Plagiarism:

- Plagiarism, the use of someone else's work or ideas without proper acknowledgment, is a serious violation of academic integrity. This includes, but is not limited to, submitting someone else's work as your own, copying and pasting from online sources without citation, and collaborating on assignments without authorization.
- Coding patterns will be acknowledged and noted that while there may be minimal variance in process, the wholesale copying of code from another source without proper attribution still constitutes plagiarism.

2. Responsible Use of AI Tools:

- The use of AI tools, such as ChatGPT and other Language Models (LLMs), is prohibited for completing assignments or exams unless explicitly authorized by the instructor. Utilizing AI to generate responses, essays, or other academic content without proper citation is considered a violation of academic integrity.
- If the use of AI tools is permitted for a specific assignment, clear guidelines will be provided by the instructor. Failure to adhere to these guidelines may result in academic penalties.

3. Collaboration and Individual Work:

- Collaboration is encouraged when explicitly permitted by the instructor. However, individual assignments should be completed independently unless instructed otherwise. If uncertain about the level of collaboration allowed, seek clarification from the instructor.

4. Consultation and Clarification:

- If you have any questions regarding the appropriate use of AI tools, collaboration, or citation, please seek clarification from the instructor before completing assignments or exams.