

Machine Learning Immersive Course Syllabus

Monday 10.00am – 5.00pm	<ul style="list-style-type: none"> • Course Overview • Intro to Python • Variables / Datatypes • Core Iterables (strings, lists, tuples) • Conditionals and If/Elif/Else • Definite Loops • Practice Exercises
Tuesday 10.00am – 5.00pm	<ul style="list-style-type: none"> • Intro to Pandas, Numpy, and Matplotlib • Importing Libraries • Custom Functions • Indefinite Loops • Dictionaries • Reading TXT and CSV Files • Practice Exercises
Wednesday 10.00am – 5.00pm	<ul style="list-style-type: none"> • What is Machine Learning? • SciKit- Learn • Practice Dataset • Basic Data Cleaning • Practice Dataset • What is Machine Learning? • The Many Avenues in Data • Classification Models • Underfit vs Overfit • Train/Test Split / Cross-validation • Training a Model / Model Evaluation • Saving a Model • Practice Exercises
Thursday 10.00am – 5.00pm	<ul style="list-style-type: none"> • Regression Models / Evaluation • Practice Dataset • More ML Models • Dealing with Missing Values • Feature Selection • Feature Engineering • Tuning Hyper parameters • Begin Final Dataset
Friday 10.00am – 5.00pm	<ul style="list-style-type: none"> • Intro to Deep Neural Networks • Intro to Statistics, SQL, and Tableau • Final Dataset / Q&A along the way

Machine Learning Immersive Curriculum

Key objective: Students will develop technical software skills to extract, transform, scrape, join as well as clean large data sets. Students will develop code in Python to develop a detailed understanding of supervised and unsupervised machine learning environments. Upon mastery of the aforementioned concepts, students take apply their knowledge to data sets incorporating clustering methods and dimensionality reduction and Kernel methods in Python. By the end of this course, students develop a detailed understanding of Neural networks and advanced topics like advanced neural networks and convolution neural networks and their industry application.

Topic	Learning objectives	CDOS standards
Supervised learning	<p>Students apply supervised learning input-output pairing techniques to a data set.</p> <p>Students analyze the term concept learning and apply concept learning through conclusive evidence to their data set</p> <p>Students assess and apply various algorithmic approaches to establish a supervised machine learning environments</p>	<p>Standard 3a - Foundational skills</p> <p>Standard 3b / Standard 2- Career majors / Integrated learning</p> <p>Standard 2 - Integrated learning</p>
Kernel support vector machine	<p>Students apply statistical models including classification and regression analysis to interpret data sets</p> <p>Student analyze the algorithm of support vector clustering to map categorized unlabeled data within a dataset</p>	<p>Standard 2 - Integrated learning</p> <p>Standard 2 - Integrated learning</p>
Unsupervised learning	<p>Students utilize an unlabelled data set as well as algorithmic patterns to organize a data set into clusters</p> <p>Students assess the various clustering techniques on data sets</p>	<p>Standard 3a - Foundation skills</p> <p>Standard 3a - Career majors</p>
Dimensionality reduction	<p>Students calculate various methods on optimizing their learning environments</p> <p>Students develop techniques on reducing random variables that clutter data</p>	<p>Standard 2- Integrated learning</p> <p>Standard 2 - Integrated learning</p>
Artificial intelligence	<p>Students assess deep learning concepts as well as how deep learning concepts are applied to the current workplace</p>	<p>Standard 3b / Standard 2- Career majors / Integrated learning</p>

