Machine Learning Course Outline

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Welcome to the course on **Machine Learning**. This course will introduce you to the tools and techniques developed to build regression & classification models and their evaluation measures.

**Objective:**The primary goal of this course is to understand the classical linear and nonlinear regression for prediction and inferential purposes along with their assumptions. We will also focus on the machine learning algorithms required for solving classification problems.

**Topics covered:**

* **Introduction to Supervised Learning: Regression**
  + Elementary Statistics
  + Maximum likelihood and Bayesian Estimators
  + Linear Regression
  + Performance Assessment - Estimating parameter means and confidence intervals for prediction
  + Practical application
* **Model Evaluation, Cross-Validation and Bootstrapping**
  + Prediction vs Modelling
  + Assumptions behind Regression
  + Overfitting and Regularization
  + Bias-variance tradeoff
  + Cross-validation
  + Bootstrapping
  + Practical application
* **Introduction to Supervised Learning: Classification**
  + Intro: Classification
  + Gaussian Models
  + Bayesian formulation
  + Logistic Regression
  + Performance Assessments
  + Other classification algorithms - K-NN
  + Practical application

Happy Learning!