# Review sheet - CS135 online

## Exam form:

Six parts (Each of them has a few questions.):

- Short answer questions
- Calculation
- Simple code

## Review Summary:

1. Linear Regression
    a. Polynomial regression work
    b. Degree
    c. What is MSE (mean_squared_error)?
    d. Dummy coding: What? Why?
2. Perceptron Model:
    a. What is the Perceptron model? When to use? How?
    b. Math representation (Equations)
2. SVM model
    a. Used for Classification or Prediction?
    b. Math representation of SVM
    c. Hard margin SVM and soft margin SVM. Difference?
3. Model Evaluation
    a. TP/TN/FN/FP (How to calculate)
    b. How to detect overfit and underfit?
    c. How to define Sensitivity and Specificity,  Precision and Accuracy? How to evaluate it? PPV? TPR?
    d. Difference between confidence score and accuracy score
4. PCA
    a. What is PCA? Why do we use it?
    b. How to read the PCA results?
5. Regularization strength
    a. What is bias variance?
    b. Why is it important? How does it affect your model?
6. Cross validation
    a. What is cross validation? Why do we need that?
7. Classification Model
    a. Logistic Regression
    b. KNN model
    c. SVM model
8. Feature Engineering
    a. How to detect if the dataset is balanced or imbalanced?
    b. Rescale dataset: When?
    c. Ridge Regression and Lasso Regression
9. Assignments 1, 2 and 3