

## Course Syllabus (Statistical Learning)

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COURSE INFORMATION      Statistical Learning  
Time: T234 (Tuesday 9am-noon)  
Place: General Building III, 8F, Room 837

INSTRUCTOR              Nan-Jung Hsu  
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CONTACT INFORMATION    Institute of Statistics  
National Tsing-Hua University  
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COURSE PRE-REQUISITES    Calculus, Linear Algebra, Statistics I and II (or equivalent courses)

COURSE DESCRIPTION      This course introduces the fundamental concepts of statistical learning. The materials include both the statistical methodologies with theoretical foundations and computations. Topics include

- Linear Regression
- Classification
- Basis Expansions and Nonlinear Regression
- Variable Selection and Regularization
- Tree-Based Methods, Bagging, and Random Forest
- Boosting and Ensemble
- SVM
- Unsupervised Learning and Representation

CLASS MATERIALS    NTHU eeclass at <https://eeclass.nthu.edu.tw/>

TEXTBOOKS              *An Introduction to Statistical Learning with Applications in R*, 2nd ed., Springer, 2021,  
by James, Witten, Hastie, and Tibshirani.  
(free download at <https://www.statlearning.com/>)  
  
*The Elements of Statistical Learning: Data Mining, Inference, and Prediction*, 2nd  
edition, Springer, 2009, by Hastie, Tibshirani, and Friedman.  
(free download at <https://web.stanford.edu/~hastie/ElemStatLearn/>)

GRADING POLICY      Midterm (20%) + Homework (60%) + final project (20%).  
Late homework: within a week score\*70%.