**EE 424 Introduction to Digital Signal processing Spring 2012**

* **Location, Time:** HOWE 1226, 8-9:20 Tues-Thurs
* **Instructor and TA**
  + [Prof Namrata Vaswani](http://www.ece.iastate.edu/%7Enamrata/)
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  + **TA:** TBD
* **Prerequisite:**
  + EE 224 (Signals and Systems I).
* **Textbook:** A. V. Oppenheim and A. S. Willsky with S. H. Nawab **(O & W)**, *Signals & Systems*, 2nd. ed., Prentice Hall, 1997.
* **Supplementary book:** A. V. Oppenheim and R. W. Schafer **(O & S)**, *Discrete-Time Signal Processing*, 3rd ed., Pearson, 2009.
* **Grading: (tentative)**
  + 20% Homeworks
  + 25% Labs
  + 20% Midterm exam
  + 15% Project
  + 20% Final exam.
* **Outline:**
  + Sampling and Reconstruction (**O & W** 7.1-7.3).
  + Time-Domain Representation of Discrete-time Signals (**O & W** 1.1-1.4).
  + Time-Domain Analysis of Discrete-Time Systems (**O & W** 1.5-1.6, 2.1, 2.3, 2.4).
  + Frequency-domain Representation of Discrete-time Signals (**O & W** 3.6-3.9, 3.11, 5, 7.4).
  + More about the Analysis of Discrete-time Systems (**O & W** 5.8, 6.3, 6.6, 6.7.2).
  + Discrete-time System Analysis using *z*-transforms (**O & W** 10).
  + Discrete-time Filter Design (**O & S** 7)
    - Infinite impulse response
    - Finite impulse response
    - Examples of discrete-time filter design.
  + Implementation of Discrete-time Linear Time-invariant Systems (**O & S** 6.0-6.5).
  + Discrete Fourier Transform and Applications (**O & S** 8.0-8.7, 10.1, 10.2, 9.0, 9.1, 9.3).
  + Introduction to Multirate Signal Processing (**O & S** 4.6-4.7).