1. **Course number and name**
   EE 341: Signals and Systems

2. **Credits and contact hours**
   3.0 (three lecture hours per week)

3. **Instructor's or course coordinator's name**
   Krishnamoorthy Sivakumar

4. **Text book, title, author, and year**
   Charles L Phillips, John Parr, and Eve Riskin. 2014. *Signals, Systems, and Transforms* (5th ed.). Prentice-Hall.
   Other supplemental materials
   Instructor notes will be provided for some topics.

5. **Specific course information**
   a. *Catalog description:* Discrete and continuous-time signals, LTI systems, convolution, sampling, Fourier transform, filtering, DFT, amplitude modulation, probability applications.
   b. *Prerequisites or co-requisites:* EE 321 with a C or better; STAT 360 with a C or better or concurrent enrollment, or STAT 443 with a C or better or concurrent enrollment; certified major in Electrical Engineering, Computer Science, or Computer Engineering.

6. **Specific goals for the course**
   At the end of this course, students must be able to:
   - Analyze linear time-invariant systems in time-domain (continuous- and discrete-time) (1c, 1d)
   - Analyze linear time-invariant systems in frequency-domain (continuous-time) (1c)
   - Compute the spectrum of a sampled signal and its reconstruction from the samples, based on the spectrum of a continuous-time signal (1c)
   - Design frequency-selective analog filters (2a, 2g)
   - Apply frequency-domain techniques to analyze different modulation schemes in communication systems. (1c, 2a)
   - Apply probability theory to simple problems in communication systems. (1c, 2a)

7. **Brief list of topics to be covered**
   - Elementary signals and examples of systems, system properties,
   - Linear time-invariant (LTI) systems: impulse response, convolution, properties of convolution and its application to LTI systems,
   - Fourier series (FS) and Fourier transform (FT),
   - Application of FS and FT to LTI systems, Filtering, Bandwidth,
   - Sampling analog signals and their reconstruction from samples,

- Filter design,
- Application to communication systems — Amplitude modulation schemes, demodulation,
- Discrete time Fourier transform (DTFT),
- Probability Applications — Binary pulse amplitude modulation, Information Theory and Huffman Coding.