1. **Course number and name**
   EE 464: Digital Signal Processing I

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

3. **Instructor's or course coordinator's name**
   Thomas R. Fischer

4. **Textbook, title, author, and year**
   Robert J. Schilling and Sandra L. Harris, *Digital Signal Processing Using MATLAB* (3rd ed.). Cengage Learning.
   Other supplemental materials
   Instructor notes will be provided for some topics.

5. **Specific course information**
   a. *Catalog description:* Discrete and fast Fourier transforms; Z-transform; sampling; discrete convolution; digital filter design; effects of quantization.
   b. *Prerequisites or corequisites:* EE 341 with a C or better; certified major in Electrical Engineering, Computer Science, or Computer Engineering.

6. **Specific goals for the course**
   At the end of the course, students will be able to
   - Analyze discrete-time linear time-invariant systems in time- and frequency-domains (1).
   - Compute the spectrum of a sampled signal and its reconstruction from the samples, based on the spectrum of a continuous-time signal (1).
   - Obtaining the spectrum of a continuous time signal based on its samples (1).
   - Design frequency selective digital filters with finite impulse response (FIR) (1,2,6).
   - Design frequency selective digital filters with infinite impulse response (IIR) (1,2,6).

7. **Brief list of topics to be covered**
   - Review of Sampling; Quantization.
   - Discrete-Time Signals and Systems.
   - Z-Transform.
   - Inverse Z-Transform; Analysis in Z-Domain.
   - Frequency Analysis of Discrete-Time Signals.
   - Frequency-Domain Analysis of LTI Systems.
   - Discrete Fourier Transform.
   - Fast Fourier Transform.
   - Digital Filter Design.
   - Digital Filter Implementation.