

“Digital Signal Processing”

Instructor: Byung-Jun Yoon  
Email : bjyoon@ece.tamu.edu  
Tel : 845-6942  
Office : Zachry 216G  
Office Hours: Mon/Wed 1:30–2:30PM

Location: Zachry 223A

Time: Mon/Wed/Fri 12:40–1:30PM

Credit: 3

Course Description:

This is an introductory course on digital signal processing. The course will cover fundamental concepts in digital signal processing, including discrete-time signals and systems, frequency domain representation of signals, frequency response of discrete-time systems, digital filters, sampling and reconstruction of continuous-time signals. MATLAB will be extensively used throughout the course for implementing and analyzing discrete-time systems.

Prerequisites: ECEN 314 or equivalent course on signals and systems.


Academic Integrity:

Aggie Code of Honor (http://www.tamu.edu/aggiehonor)  
“Aggies do not lie, cheat, or steal nor do they tolerate those who do.”

Students are expected to attend all classes, complete assignments on time, and participate fully in class discussions and projects. Violations will be handled in accordance with the Texas A&M University Regulations governing academic integrity.

American with Disabilities Act:

The Americans with Disabilities Act (ADA) is a federal antidiscrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Disability Services, in Cain Hall, Room B118, or call 845–1637. For additional information visit http://disability.tamu.edu
Classroom Behavior:

Please be courteous to your fellow classmates and the instructor. Please turn off your cell phones or set them to silent mode in the classroom.

Grading:

- Homework assignments & projects: 30%
- Midterm exam: 30%
- Final exam: 40%

Course Policies:

1. **Homework Submission:**
   Homework solutions should be submitted **before the class** on the due date.

2. **Late homework policy:**
   On time (100%), same day (90%), next day (80%), 2 days (70%), 3 days (50%), 4 days or later (0%)

3. **Collaboration:**
   You are encouraged to discuss the assigned problems/projects with your classmates. But you are **not allowed to talk about the final solutions.** Every student has to prepare his/her solution independently.

4. **Preparing the final solution:**
   Please write your solution in a clear, readable, and concise form. Every **answer should be fully justified.**

Course Topics:

<table>
<thead>
<tr>
<th></th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Overview of DSP</td>
</tr>
<tr>
<td>2</td>
<td>Signals and systems review</td>
</tr>
<tr>
<td>3</td>
<td>Fourier transform and frequency–domain analysis</td>
</tr>
<tr>
<td>4</td>
<td>Discrete–time systems: difference equations and system properties</td>
</tr>
<tr>
<td>5</td>
<td>The z–transform and inverse z–transform</td>
</tr>
<tr>
<td>6</td>
<td>Frequency response of discrete–time systems</td>
</tr>
<tr>
<td>7</td>
<td>Sampling and reconstruction of continuous–time signals</td>
</tr>
<tr>
<td>8</td>
<td>Discrete Fourier transform (DFT)</td>
</tr>
<tr>
<td>9</td>
<td>Fast Fourier transform (FFT)</td>
</tr>
<tr>
<td>10</td>
<td>Introduction to digital filters: theory, structure, and implementation</td>
</tr>
<tr>
<td>11</td>
<td>Filter design: FIR and IIR filters</td>
</tr>
<tr>
<td>12</td>
<td>Short–time Fourier transform (STFT)</td>
</tr>
<tr>
<td>13</td>
<td>Multirate signal processing</td>
</tr>
</tbody>
</table>

Course Website:

Please visit the following course website frequently for important announcements and course materials: [http://www.ece.tamu.edu/~bjyoon/ecen444–spring11](http://www.ece.tamu.edu/~bjyoon/ecen444–spring11)