Video-Lecture Viewing Schedule

(Version: 2023-09-10)

1 Preamble

The vast majority of the instructional content for the course is provided in the form of prerecorded video lectures. This document identifies all of the video lectures that a student must watch and provides a schedule indicating the minimum pace at which the material in these video lectures can be covered. It is important to understand that the provided schedule corresponds to the slowest pace at which a student could watch the video lectures and still have a reasonable expectation of a favorable outcome in the course. **It is absolutely critical that students not fall behind the minimum-pace schedule presented.** Furthermore, each student is encouraged, to whatever extent is possible, to cover the course material at a faster pace than that indicated in the provided schedule in order to give the student more breathing room for handling unanticipated events that could cause unexpected delays on the work in this course (such as illness or Internet/power outages). It is critically important that the student watch the video lectures far enough in advance that they have sufficient time to ask questions about the lecture material and gain a reasonable understanding of it before the time at which they need to use their knowledge of the material for an assignment or exam.

2 General Guidance

In order to maximize the chances of a positive outcome in the course, students are strongly recommended to heed the following advice with respect to video-lecture viewing:

1. **Work ahead.** The student is encouraged to work ahead to the greatest extent that is practical. By working ahead, the student will maximize their protection against the many (unexpected) factors that can cause a student to fall behind. Due to the nature of the material covered in the course, falling behind can often have disastrous consequences for a student (i.e., failing the course).

2. **Plan for the unexpected.** When a student is establishing their viewing schedule for the video lectures, it is **extremely important** to leave some margin for error to account for unanticipated events. That is, it is inevitable that, from time to time during the term, unexpected circumstances will arise that slow a student's progress (e.g., illness, computer problems, Internet-connectivity problems, and so on). Therefore, it is extremely important that some extra margin for error be included in the planned viewing schedule to account for these types of circumstances.

3. **Avoid binge watching.** The student should avoid binge watching video lectures at all costs. It is impossible to develop a good understanding of material covered in binge watched video lectures.

2.1 Coverage of Lecture Material By Assignments

The lecture material covered by each assignment is as given below. The section names referenced below are the ones used in the video-lecture catalog document (available from the Video Lectures section of the course web site).

- Assignment 1
  - covers up to and including the end of the section titled *Complex Analysis*
- Assignment 2A (first part of CT Signals and Systems unit)
  - covers up to and including end of slide titled *CT Signals and Systems — Elementary Functions — [ct-sigsys] Example 3.10*
- Assignment 2B (second part of CT Signals and Systems unit)

  - covers up to and including end of section titled *CT Signals and Systems — System Properties* (i.e., the end of the CT Signals and Systems unit)

- Assignment 3A (first part of CT LTI Systems unit)
  - covers up to and including end of slide titled *CT LTI Systems — Convolution — [ctltisys] Properties of Convolution*

- Assignment 3B (second part of CT LTI Systems unit)
  - covers up to and including end of section titled *CT LTI Systems — Properties of LTI Systems* (i.e., the end of the CT LTI Systems unit)

- Assignment 4 (CT Fourier Series unit)
  - covers up to and including end of section titled *CT Fourier Series — Fourier Series and LTI Systems* (i.e., the end of the CT Fourier Series unit)

- Assignment 5A (first part of CT Fourier Transform unit)
  - covers up to and including end of section titled *CT Fourier Transform — Fourier Transform and Frequency Spectra of Functions*

- Assignment 5B (second part of CT Fourier Transform unit)
  - covers up to and including end of section titled *CT Fourier Transform — Application: Sampling and Interpolation* (i.e., the end of the CT Fourier Transform unit)

- Assignment 6A (first part of Laplace Transform unit)
  - covers up to and including end of section titled *Laplace Transform — Determination of Inverse Laplace Transform*

- Assignment 6B (second part of Laplace Transform unit)
  - covers up to and including end of section titled *Laplace Transform — Unilateral Laplace Transform* (i.e., the end of the Laplace Transform unit)

3 Minimum-Pace Lecture Schedule

In the sections that follow a schedule for the viewing of the video lectures is presented, along with the critical assumptions upon which this schedule is based.

3.1 Critical Assumptions Made By This Schedule

This schedule is a **minimum-pace** schedule. That is, the schedule corresponds to the **slowest** pace with which a student can cover the lecture material and still have a reasonable expectation of a positive outcome in the course. This schedule tacitly assumes that a student completes each assignment exercise as soon as the corresponding material in the video lectures is covered. Therefore, **when the schedule indicates that a particular video lecture should be completed on a particular day, it is assumed that this means that the student will be almost done all assignment exercises that relate to that video on that same day or possibly the next day**. If this assumption is violated (e.g., if a student does not begin work on assignment exercises until after having first watched all of the relevant videos), the video lectures will need to be watched at a **faster pace** than what is indicated in the schedule provided.

3.2 Additional Remarks

Again, the schedule provided corresponds to the absolute **slowest** pace at which students might reasonably expect to consume lecture content in the course. Therefore, students are **strongly encouraged** to **work ahead** of this schedule. Also, although the various milestones in this schedule are specified with respect to the days on which the scheduled lecture time slots for the course fall, this is not meant to imply that students should only watch video lectures on these days. Spreading the video-lecture workload over all days of the week is likely to be highly beneficial.

3.3 Minimum-Pace Lecture Schedule

The minimum-pace lecture schedule is as given below. The names of videos and slides referenced below correspond to the ones used in the video-lecture catalog document (available from the Video Lectures section of the course web site).

- **Wed Sep 6** (Day of Lecture 1)
  - short live course introduction (only intended to use part of lecture time slot)
  - start from the slide titled:
    Introduction — [intro] Unit: Introduction
  - finish up to and including the slide titled:
    Introduction — [intro] System Failure Example: Tacoma Narrows Bridge (Continued)
- **Fri Sep 8** (Day of Lecture 2)
  - start from the slide titled:
    Complex Analysis — [complex] Unit: Complex Analysis
  - finish up to and including the slide titled:
    Complex Analysis — [complex] Example A.12
  - completes coverage of material for Assignment 1
- **Tue Sep 12** (Day of Lecture 3)
  - start from the slide titled:
    Preliminaries — Introduction — [prelim] Unit: Preliminaries
  - finish up to and including the slide titled:
    CT Signals and Systems — Independent/Dependent-Variable Transformations — [ctsigsys] Time Compression/Expansion (Dilation): Example
- **Wed Sep 13** (Day of Lecture 4)
  - start from the slide titled:
    CT Signals and Systems — Independent/Dependent-Variable Transformations — [ctsigsys] Time Scaling (Dilation/Reflection)
  - finish up to and including the slide titled:
    CT Signals and Systems — Function Properties — [ctsigsys] Right-Sided Functions
- **Fri Sep 15** (Day of Lecture 5)
  - start from the slide titled:
    CT Signals and Systems — Function Properties — [ctsigsys] Left-Sided Functions
  - finish up to and including the slide titled:
    CT Signals and Systems — Elementary Functions — [ctsigsys] Example 3.11
  - completes coverage of material for Assignment 2A
- **Tue Sep 19** (Day of Lecture 6)
  - start from the slide titled:
    CT Signals and Systems — Elementary Functions — [ctsigsys] Representing Functions Using Unit-Step Functions

  - finish up to and including the slide titled:
    CT Signals and Systems — System Properties — [ctsigsys] Bounded-Input Bounded-Output (BIBO) Stability

- **Wed Sep 20** (Day of Lecture 7)
  - start from the slide titled:
    CT Signals and Systems — System Properties — [ctsigsys] Example 3.27
  - finish up to and including the slide titled:
    CT Signals and Systems — System Properties — [ctsigsys] Example 3.41
  - finished unit titled *CT Signals and Systems*
  - completes coverage of material for Assignment 2B

- **Fri Sep 22** (Day of Lecture 8)
  - start from the slide titled:
    CT LTI Systems — Introduction — [ctltisys] Unit: Continuous-Time Linear Time-Invariant (LTI) Systems
  - finish up to and including the slide titled:
    CT LTI Systems — Convolution — [ctltisys] Properties of Convolution
  - completes coverage of material for Assignment 3A

- **Tue Sep 26** (Day of Lecture 9)
  - no video lecture viewing required

- **Wed Sep 27** (Day of Lecture 10)
  - This is the **approximate** date for **Exam 1** ***(CT Signals and Systems)***. Consult the course web site and/or Brightspace site for the **actual date** of the exam.

- **Fri Sep 29** (Day of Lecture 11)
  - start from the slide titled:
    CT LTI Systems — Convolution — [ctltisys] Theorem 4.1
  - finish up to and including the slide titled:
    CT LTI Systems — Properties of LTI Systems — [ctltisys] Example 4.11

- **Tue Oct 3** (Day of Lecture 12)
  - start from the slide titled:
    CT LTI Systems — Properties of LTI Systems — [ctltisys] Invertibility
  - finish up to and including the slide titled:
    Interlude — Interlude
  - finished unit titled *CT LTI Systems*
  - completes coverage of material for Assignment 3B

- **Wed Oct 4** (Day of Lecture 13)
  - no video lecture viewing required

- **Fri Oct 6** (Day of Lecture 14)
  - no video lecture viewing required

- **Tue Oct 10** (Day of Lecture 15)
  - no video lecture viewing required

- **Wed Oct 11** (Day of Lecture 16)
  - This is the **approximate** date for **Exam 2** ***(CT LTI Systems)***. Consult the course web site and/or Brightspace site for the **actual date** of the exam.

- **Fri Oct 13** (Day of Lecture 17)
  - start from the slide titled:
    CT Fourier Series — Introduction — [ctfs] Unit: Continuous-Time Fourier Series (CTFS)
  - finish up to and including the slide titled:
    CT Fourier Series — Properties of Fourier Series — [ctfs] Linearity
- **Tue Oct 17** (Day of Lecture 18)
  - start from the slide titled:
    CT Fourier Series — Properties of Fourier Series — [ctfs] Even and Odd Symmetry
  - finish up to and including the slide titled:
    CT Fourier Series — Fourier Series and LTI Systems — [ctfs] Example 5.10
  - finished unit titled *CT Fourier Series*
  - completes coverage of material for Assignment 4
- **Wed Oct 18** (Day of Lecture 19)
  - start from the slide titled:
    CT Fourier Transform — Introduction — [ctft] Unit: CT Fourier Transform
  - finish up to and including the slide titled:
    CT Fourier Transform — Properties of the Fourier Transform — [ctft] Example 6.11
- **Fri Oct 20** (Day of Lecture 20)
  - start from the slide titled:
    CT Fourier Transform — Properties of the Fourier Transform — [ctft] Conjugation
  - finish up to and including the slide titled:
    CT Fourier Transform — Properties of the Fourier Transform — [ctft] Exercise 6.5(g)
- **Tue Oct 24** (Day of Lecture 21)
  - no video lecture viewing required
- **Wed Oct 25** (Day of Lecture 22)
  - This is the **approximate** date for **Exam 3** ***(CT Fourier Series)***. Consult the course web site and/or Brightspace site for the **actual date** of the exam.
- **Fri Oct 27** (Day of Lecture 23)
  - start from the slide titled:
    CT Fourier Transform — Properties of the Fourier Transform — [ctft] Exercise 6.2(j)
  - finish up to and including the slide titled:
    CT Fourier Transform — Fourier Transform and LTI Systems — [ctft] LTI Systems and Differential Equations
  - completes coverage of material for Assignment 5A
- **Tue Oct 31** (Day of Lecture 24)
  - start from the slide titled:
    CT Fourier Transform — Fourier Transform and LTI Systems — [ctft] Example 6.34
  - finish up to and including the slide titled:
    CT Fourier Transform — Application: Amplitude Modulation — [ctft] Example: Analysis of DSB-SC AM — Receiver
- **Wed Nov 1** (Day of Lecture 25)
  - start from the slide titled:
    CT Fourier Transform — Application: Amplitude Modulation — [ctft] Example: Analysis of DSB-SC AM — Complete System

  - finish up to and including the slide titled:
    CT Fourier Transform — Application: Sampling and Interpolation — [ctft] Example 6.41
  - finished unit titled *CT Fourier Transform*
  - completes coverage of material for Assignment 5B

- **Fri Nov 3** (Day of Lecture 26)
  - start from the slide titled:
    Partial Fraction Expansions (PFEs) — [pfe] Unit: Partial Fraction Expansions (PFEs)
  - finish up to and including the slide titled:
    Partial Fraction Expansions (PFEs) — [pfe] Example B.2
  - finished unit titled *Partial Fraction Expansions*

- Assignment 5B: due approximately on day before next lecture

- **Tue Nov 7** (Day of Lecture 27)
  - start from the slide titled:
    Laplace Transform — Introduction — [lt] Unit: Laplace Transform (LT)
  - finish up to and including the slide titled:
    Laplace Transform — Properties of the Laplace Transform — [lt] Example 7.8

- **Wed Nov 8** (Day of Lecture 28)
  - no video lecture viewing required

- **Fri Nov 10** (Day of Lecture 29)
  - This is the **approximate** date for **Exam 4** ***(CT Fourier Transform)***. Consult the course web site and/or Brightspace site for the **actual date** of the exam.

- **Mon Nov 13 – Wed Nov 15** (Holiday and/or Reading Break)

- **Fri Nov 17** (Day of Lecture 30)
  - start from the slide titled:
    Laplace Transform — Properties of the Laplace Transform — [lt] Example 7.9
  - finish up to and including the slide titled:
    Laplace Transform — Properties of the Laplace Transform — [lt] Example 7.18

- **Tue Nov 21** (Day of Lecture 31)
  - start from the slide titled:
    Laplace Transform — Properties of the Laplace Transform — [lt] More Laplace Transform Examples
  - finish up to and including the slide titled:
    Laplace Transform — Laplace Transform and LTI Systems — [lt] Invertibility
  - completes coverage of material for Assignment 6A

- **Wed Nov 22** (Day of Lecture 32)
  - start from the slide titled:
    Laplace Transform — Laplace Transform and LTI Systems — [lt] Example 7.35
  - finish up to and including the slide titled:
    Laplace Transform — Application: Design and Analysis of Control Systems — [lt] Exercise 7.30

- **Fri Nov 24** (Day of Lecture 33)
  - start from the slide titled:
    Laplace Transform — Unilateral Laplace Transform — [lt] Section: Unilateral Laplace Transform
  - finish up to and including the slide titled:
    Laplace Transform — Unilateral Laplace Transform — [lt] Example 7.43

  - finished unit titled *Laplace Transform*
  - completes coverage of material for Assignment 6B

- **Tue Nov 28** (Day of Lecture 34)
  - no video lecture viewing required

- **Wed Nov 29** (Day of Lecture 35)
  - no video lecture viewing required

- **Fri Dec 1** (Day of Lecture 36)
  - This is the **approximate** date for **Exam 5** ***(Laplace Transform)***. Consult the course web site and/or Brightspace site for the **actual date** of the exam.