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This section provides principles and tips to help you teach online.

Below you'll see general advice, a variety of course types, and additional tips on student engagement. To keep things simple, we're focusing on the most common and most effective online teaching practices. We've also

developed an overall guide: **Designing Your Course for the Fall: Principles and Tips**.

We've broken up the teaching tips according to the common teaching styles (lecture, case, small group discussion, and hands-on). Feel free to jump to the section most appropriate to your course.

Some General Advice

Getting Started: Recommended Process

1. Determine your **content, pedagogy, and assessment**.
2. Plan your **asynchronous-synchronous mix**, including video, non-video, and peer learning communities.
3. Explore opportunities specific to your **course type** (lecture, case-based, small group discussion, or hands-on).
4. Decide - for both asynchronous and synchronous instruction - when and how you will:
 - **Use or record video.**
 - **Engage directly with students and build community.**
 - **Assess and gauge students' understanding.**

Content, Pedagogy, and Assessment: Guiding Principles

Let's start with some fundamentals. See also [Designing Your Course for the Fall: Principles and Tips](#).

- The *basis* of teaching remains the same - content, pedagogy, and assessment. Careful planning on these three factors remains central to successful teaching - both residential and online.
- The *forms* of teaching interaction may change: even as the online medium precludes certain forms of in-person contact, it creates opportunities for new ways to interact. Well-planned, intentional uses of online technologies can encourage and facilitate even more "lean forward" behaviors and more interaction with and among students. For example, as described below, you can increase learner engagement by:
 - Identifying learners' questions about the material

- Using polls and other interactive technologies to get a sense of students' experience, comprehension, and reactions ("reading the room")
- Inviting specific students' answers (cold calling)
- Opening the floor to general discussion of particular questions
- Having students engage in small "buzz group" conversations via breakout rooms
- Creating opportunities for synchronous or asynchronous student collaboration via tools like Google Docs, Miro, etc.
- **Focus on your *pedagogy*, not the medium:** the principles of pedagogy that are effective for online teaching – video, simulation, text, etc. – are similar to those that are effective in the residential classroom. They allow students to engage with material dynamically and across multiple learning styles. These principles apply not only to synchronous teaching but also, importantly, to **asynchronous content creation**.

Asynchronous-Synchronous Mix

- Based on your own pedagogy and teaching style, you can be flexible in **choosing the right mix** of synchronous and asynchronous learning.
- Online teaching can **heighten interactivity**. Take advantage of the opportunities for students to "lean forward" and to engage with you, your TFs, your guest speakers, and each other. Long lectures, on the other hand, do not work well in online teaching, either in synchronous sessions or asynchronous materials. Your school's Teaching and Learning Center can help you develop course content, lesson plans, and asynchronous approaches.
- The way you allocate your course's content - your asynchronous-synchronous mix - will depend on your typical **teaching modality** for your residential course. For example, if you use **case studies** as the basis for a discussion in class, you may not need to create new asynchronous materials. However, if you rely primarily on **lectures** in class, consider converting much of this material to asynchronous content and breaking it into smaller segments, which creates new opportunities for your live sessions.

Norms and Expectations

- **Set classroom norms:** if using Zoom to convene your course, circulate clear expectations for student participation. For example, consider including language like this in your syllabus.

Our class will meet through the Zoom online conference system. Our success as an online class will depend on the same commitment we all bring to the physical classroom. We will adopt the same rules and norms (take notes; participate by asking and answering questions; wear classroom-ready clothing). For everyone's benefit, join the course in a quiet place whenever possible. Turn on your video whenever possible. Mute your microphone unless you are speaking. Close browser tabs not required for participating in class.

- **Audio quality matters:** use a good headset or a USB microphone. (See **Configure Your Teaching Space** for more information on optimizing your audio.)
- **So do time zones:** remember that many students will not be in the same time zone as you. Consider amping up your energy (especially in synchronous teaching) to engage students who are participating very early or late in their day. For students who don't or can't attend a live session live, create opportunities to engage in a peer discussion, write an individual response, or simply watch a recording of the class.
- **In technology, less is more:** it's often better to use a few tools well than many tools ineffectively. Familiarizing yourself with a handful of important features of Zoom and Canvas can take you a long way.

Accessibility

- **Students have a range of abilities, and not everyone will disclose their challenges:** your course likely has students with learning or sensory disabilities. They are not required to tell you, and they may not feel comfortable telling *anyone*. Rather than asking them to identify themselves to you, employ practices (like those below) that reach a wide variety of learners.

- **Text is universal:** assistive technologies (such as screen readers, magnifiers, etc.) are nearly always designed to work with text. If you send images to your students, include textual descriptions so that students using these technologies can follow along. If you use video chat such as Zoom, assign someone (ideally a TF) to create a transcript or **closed captioning** throughout the session.
- **Some students need additional processing time:** don't expect everyone to understand everything after being told once. Share the transcripts, chat logs, videos, and images for students to download and examine afterward. This will especially help students with dyslexia and other reading impediments.
- **Select accessible resources:** some online resources have already had substantial work done to improve accessibility. Videos produced by HarvardX (available through **DART** via your HarvardKey) have captions, and images have alternative text descriptions included. YouTube allows viewers to suggest caption improvements on many videos. Virtual meetings can be **accessible in Zoom** due to the available **keyboard shortcuts** for navigating without a mouse and **closed captioning** created either by a third party service or a meeting member. Interactive simulations such as the **PhET** tools are usable by the blind. Check to see whether your resources indicate WCAG AA 2.0/2.1 compliance, or Section 508 compliance.
- **Be an advocate:** if a student does self-identify as needing assistance, help them find it. Start at Harvard's **Accessible Education Office** and **Disability Resources page**.
- **Take care of your own hands and posture:** you'll be typing a lot more during classtime. Pay attention to your tendons (and your shoulders). Take breaks, and encourage your students to stretch periodically. For more suggestion, visit Harvard's Environmental Health & Safety group, which has a **self-assessment** for computer ergonomics.

Course Types

Lecture-oriented Courses

As you prepare to move your lecture-based course online, reconsider your course's **asynchronous-synchronous mix**. Fundamentally, long lectures do not work as well in online teaching, either in synchronous sessions or asynchronous materials. (See **Designing Your Course for the Fall: Principles and Tips**.)

Creating and uploading your materials

- Put your slides in a consistent, distributable format (e.g., pdf): to save time, consider pre-made templates, such as **SlidesCarnival** for Google Sheets and PowerPoint, or **Behance** for Keynote templates.
- **Break up text-heavy presentation slides**: be aware that online, perhaps even more than in the classroom, students will read first and listen second. Consider PowerPoint's "Animation" feature (or equivalent) that allows you to show just a bullet or two at a time.
- **Organize your course materials** using **Canvas modules**.
- **Integrate library resources** and other digital materials.

Asynchronous: Prerecording

Although they take time to create, prerecorded lectures can be as engaging as the best live lectures: you can do multiple takes, edit the recordings, and integrate graphics or animations. They are also less vulnerable to unanticipated bandwidth issues that may arise with live sessions. You can even use them in future versions of your course, whether online or face-to-face. Here are a few simple tips to get you going.

- Provide an explicit roadmap at the beginning, outlining the content you're going to be covering.
- Break down the lecture into shorter segments (3-5 minutes). A long pre-recorded lecture can be deadly to watch.
- Intersperse the lecture clips with reflection questions, polls, action prompts, and other interactive elements. Try to make the learning experience "inductive" rather than entirely didactic.

- Insert yourself – a personal story, humor, or editorial commentary – into the lecture.

Prerecorded material and live content can complement each other powerfully. Consider prerecording certain segments of your lecture (some material you want the students to reflect on before class, or an explanation of key terms or concepts) and leave the rest for synchronous sessions. For detailed guidance, see **Prepare Your Content in Advance**.

Synchronous: Presenting your lecture

- **Create a detailed agenda**, including how much time you will ask students to spend on collaborative work, solo writing, or group discussions.
- **Practice (at least once) in advance**: if you are working with a TA/TF, rehearse using the **Share Screen** and switching among windows you intend to display. If you're teaching solo, practice clicking between Zoom's presentation mode, screen share mode, any slides or presentation materials, and any other technologies like whiteboarding tools, polls, or videos.
- **Make your transitions explicit**: be sure to provide clean, well-defined transitions between activities or discussion topics.
- **Watch your pace** and keep an eye on students' comprehension and engagement (see **Engaging Students Remotely**). Some instructors report that students absorb and process information at the same rate as in person; others have found they can only cover one-half to two-thirds as much material as they can in the physical classroom. Check in with your students more frequently than you might normally, to make sure that they follow the material and remain engaged.
- **Configure your Zoom settings and preferences** to support your teaching: you can turn off the entrance/exit chime, allow or prevent students sharing their screens, pre-mute everyone, etc.
- **Close all the computer windows** you won't be using (particularly personal email, messages, etc.) prior to the class.
- **Keep your students in front of you**: Zoom's gallery view lets you see 25-49 students at a time (depending on your screen and computer's capabilities). You can also move from screen to screen to see even more.

- **Be visible:** it helps your students remain engaged if they can see your face as you present your material. Set up your devices so that even when you're using Screen Share students can see your face at the same time as the materials being displayed. If you want to be able to see your students while you share your screen, you may need to log into Zoom via two devices at the same time. This allows you to share your screen on one device (e.g., a tablet for whiteboarding) while having the gallery view of students on the other.
- **Adapt your board work:** if you usually use a blackboard or whiteboard as part of a class session, you have **a number of options**. Note that if you're accustomed to multiple simultaneous boards you may need to adapt to showing a single screen's worth at a time. See **Boardwork** from the Bok Center for suggestions.

Engaging students in lecture-oriented courses

It is difficult to listen to a lecture attentively on a small screen. Consider taking advantage of **pedagogical tools** in Zoom to keep them engaged, such as breakout rooms, questions and discussions via Chat, polling, annotations, or invited Q&A (using [Raise Hand](#)). See **Engaging Students Remotely** for more tips and opportunities.

Assessing participation in lecture-oriented courses

In classes where participation is a heavy component of the grade, be sure to let students know early and often what forms of participation you will be tracking and how often you expect them to participate.

- **Encourage students to use Chat** to participate. Chat can draw in students who have great ideas to contribute yet may be somewhat quiet during discussions or debates. Reminding students that the quantity and the quality of their chat comments contribute to their participation grade can help limit frivolous chat and improve the sophistication and quality of the chat threads.
- **One-on-one or small-group meetings** can be held using Zoom almost the same way as in-person. But it is important to maintain the same norms around minimizing distractions as in the classroom. Your level of engagement will determine the students' level.

Case-based Courses

Several features of small or large case-based courses transfer well to an online because Zoom and other technologies have various interactive features built in. Here are tips to consider when teaching a case-based course.

Calling Patterns and Practices

- **Keep your students in front of you:** Zoom's **gallery view** lets you see thumbnails of 25-49 students at a time (depending on your screen and computer's capabilities). You can also move from screen to screen to see even more.
- **Discussion transitions:** be sure to state clean, well-defined transitions between discussion topics.
- **Use Chat to decide on calling patterns:** tracking the **Chat** feature can be useful in deciding which students to call on next - for example, if a particular student notes through Chat that she/he disagrees with the student speaking, or has some additional data to provide. As one faculty member noted, the advantage of Chat is that it's like "reading students' thought bubbles" - an advantage over the physical classroom.
- **Role plays/debates between students:** you can request two students to "role play" a situation like you would in the physical classroom.
- **Warm and cold calls:** you can "cold call" a student just as you would in the traditional classroom, instead of waiting for them to raise their hand. For "warm calls," you can message them privately in **Chat** before you call on them.
- **Raising hands:** this feature works like the physical classroom. Have students use the **Raise Hand** feature in Zoom to answer questions. When you open up a conversation to students, you can pause a beat to let a number of people raise their hand and then pick according to whatever calling pattern you want. Call on students by their names.
- **Polls (private or public):** with Zoom's **polling** features (or other tools like **Mentimeter** or **PollEverywhere**) you can get group results in real time, then reveal them later.

- **Buzz groups:** consider giving students more time than you normally would to formulate ideas jointly in one-on-one conversations (perhaps over **Chat** or in Zoom's **Breakout Rooms**), and then have them share those ideas into the broader discussion.
- **Checking in/reading the room:** unmuted students can inadvertently start talking at the same time; you will not be able to read body language easily; and those less inclined to speak may disappear more easily. To address these issues, be more diligent about pausing and asking if anyone else has more thoughts before jumping to the next topic.

Board Plans

if you usually do “board work” as part of a class session, you have **a number of options**. Note that if you're accustomed to multiple simultaneous boards you may need to adapt to showing a single screen's worth at a time. See **Boardwork** from the Bok Center for suggestions.

Closing the Case

Summary slides work as they do in the physical classroom. In addition, consider inviting students' reflections on the case too through **Chat** or a shared space like a Google Doc. Such written summations can be powerful complements to the discussion portion of the class, so consider archiving these reflections for each class.

Assessing Participation

In case-based classes, participation is a heavy component of the grade. Student comments can be more easily recorded since Zoom retains a video archive of the entire class.

In an online setting, consider using students' **Chat** comments and reflections as additional inputs to a student's participation grade, and a supplement to the spoken word. This can help draw in students who may be somewhat quiet in “speaking,” and can also help limit frivolous chat. If you decide to use Chat in participation grading, you should be sure to let students know about this norm *before* you start teaching.

Small Group Discussions

- **One-on-one or small-group meetings:** virtual one-on-one or small-group meetings can be held using Zoom almost the same way as in-person. But it is important to maintain the same norms around minimizing distractions as in the classroom; your level of engagement will determine students'. If you're using open office hours, the **Waiting Room** allows you to provide a single Zoom session ID and the ability to invite only selected individuals into the discussion.
- **Code review:** you can use **Screen Sharing** to meet with an individual or group of students to review code. Authorizing **Remote Screen Control** enables one to take control of the other's shared application and allows for navigation, text entry, etc. on the remote computer. When you cannot meet synchronously with a student to provide feedback, consider resources such as **Pastebin** and **JSFiddle**, where students can upload their code and you can create revisions with comments.
- **Collaborative problem solving and brainstorming:** digitally annotate using the **Whiteboards** feature. Allow others in the session to annotate on the same board to share ideas and problem-solving methods. A tablet (used as a second screen) is useful for handwriting.
- **Ask questions:** have students use the **Raise Hand** feature in Zoom to answer questions. Call on a student by name and "Allow to talk" (unmute).
- **Cold call:** you can "cold call" a student just as you would in the traditional classroom, instead of waiting for them to raise their hand.
- **Keep your students in front of you:** Zoom's **gallery view** lets you see thumbnails of 25-49 students at a time (depending on your screen).

Hands-on Courses

Lab courses: one of the biggest challenges of teaching online from anywhere is sustaining the lab components of classes. Since many labs require specific equipment, they are hard to reproduce outside of that physical space. Consider the following as you plan to address lab activities:

- **Define what the lab should achieve:** different lab activities serve different purposes. See **Remote Labs** from the Bok Center for scenarios.

- **Take part of the lab online:** many lab activities require students to become familiar with certain procedures, and only physical practice of those processes will do. In such cases, consider whether there are other parts of the lab experience you could take online (for example, video demonstrations of techniques, online simulations, analysis of data, other pre- or post-lab work). Save the physical practice parts of the labs until access to campus is restored.
- **Investigate virtual labs:** online resources and virtual tools might help replicate the experience of some labs (e.g., virtual dissection, night sky apps, video demonstrations of labs, simulations, YouTube videos). Those vary widely by discipline, but check with your textbook publisher, or sites such as **Merlot** for materials that might help replace parts of your lab during the closure.
- **Provide raw data for analysis:** in cases where the lab includes both collection of data and its analysis, consider showing how the data can be collected, and then provide some raw sets of data for students to analyze. This approach is not as comprehensive as having students collect and analyze their own data, but it can keep them engaged with parts of the lab experience during the closure.
- **Increase interaction in other ways:** sometimes labs are about providing time for direct student interaction. Consider other ways to replicate that type of interaction or create new online interaction opportunities, including using available collaboration tools like **Breakout Rooms**, **Annotation Tools**, and **Whiteboards** in Zoom, Slack, etc.

Using Video

Effective video can be asynchronous, synchronous, and a complement to other forms of engaging with students. For overall guidance, see **Designing Your Course for the Fall: Principles and Tips**. For specific recommendations, see **The Fundamentals of Video and Audio Production for Online Teaching**.

Engaging Students Remotely

During Class: Engaging and Energizing

- **Reading the room:** unmuted students can inadvertently start talking at the same time, you will not be able to read body language easily, and those less inclined to speak may disappear more easily. To address these issues, be more diligent about pausing and asking if anyone else has more thoughts before jumping to the next topic.
- **Amplify your course with guest speakers:** online, experts are one click away. Inviting guests to join your course session can promote engagement, diversity, inclusion, and enthusiasm.
- **Encourage community:** the sense of presence will be enhanced when everyone shows their face via their webcam. Consider asking students to turn on video as a key part of participation, since it is easier to engage with the class if you can see them, and students are more likely to pay attention if they know they're on camera. The **gallery view** can be helpful here. However, recognize that some students may feel uncomfortable sharing their living/studying circumstances. Remind your students that virtual backgrounds can help protect cybersecurity, improve equity, and reduce visual distractions.
- **Stretch times:** consider encouraging students to "stretch" every 20-30 minutes for 30 seconds. It can be harder to focus attention on a screen than in a classroom, and you and they will benefit from a brief moment of physical activity.
- **Breakout groups:** if you want students to participate in smaller "buzz groups", you can consider using Slack or twitch as a chat platform that complements Zoom, and/or provide a prompt for group work via collaborative tools like Google Docs, Slides, or Sheets. Alternatively you can use Zoom's **Breakout Rooms** functionality for discussions or video-enabled group work.
- **Writing on the board:** if you usually do "board work" as part of a class session, Zoom gives you **a number of options**. Note that if you're accustomed to multiple simultaneous boards you may need to adapt to showing a single screen's worth at a time. See **Boardwork** from the Bok Center for suggestions.

During Class: Questions and Discussions

- **Invite and respond to questions:** if your class normally is a large-class lecture format with Q&A, consider inviting students to ask their questions in **Chat**. (See **Additional Tips on Engaging Students**.) If you have a TA/TF, they can pick a few questions for you to answer at the appropriate moments or, say, every 10-15 minutes. You can also consider asking students to use the **Raise Hand** feature in case they have an urgent question. (Zoom makes this easier than a standard lecture hall.)
- **Use polling to get many responses quickly:** poll tools like **Poll Everywhere**, **Mentimeter**, and Zoom's **polling** features let you ask students questions and use ScreenShare to show the distribution of responses. When used well, this can be a powerful complement to the lecture or discussion.
- **Encourage students to reflect:** for example, say "I'd like you to think about ...", take a short pause, and then if appropriate, provide an answer, or solicit answers from the students. Again, the Chat feature can be helpful in having students record their reflections.
- **Post answers later:** consider posting responses after class to particular **Chat** questions that you didn't have time to address during the session.
- **Chat:** Zoom's **Chat** feature can be either very useful for the instructor, or a distraction if it's used continuously, so thinking about how and when to engage students is helpful. **Additional tips can be found here.**
- **Code review:** you can use **Screen Sharing** to meet with an individual or group of students to review code. Authorizing **Remote Screen Control** enables one to take control of the other's shared application and allows for navigation, text entry, etc. on the remote computer. When you cannot meet synchronously with a student to provide feedback, consider resources such as **Pastebin** and **JSFiddle**, where students can upload their code and you can create revisions with comments.
- **Collaborative problem solving and brainstorming:** digitally annotate using the **Whiteboards** feature. Allow others in the session to annotate on the

same board to share ideas and problem-solving methods. A tablet (used as a second screen) is useful for handwriting.

- Ask questions: have students use the **Raise Hand** feature in Zoom to answer questions. Call on a student by name and “Allow to talk” (unmute).
- **Cold call**: you can “cold call” a student just as you would in the traditional classroom, instead of waiting for them to raise their hand.
- **Office hours**: if you’re using open office hours, the **Waiting Room** allows you to provide a single Zoom session ID and the ability to invite only selected individuals into the discussion.

Outside of Class: Discussion Boards and Student Collaboration

Not all classroom discussions need to be synchronous. In these cases, you can use the Canvas **discussion forum** feature. Decide what kind of discussions will be most beneficial to your course: topic-driven or social-driven. Your discussion prompts and how you evaluate your students’ responses should reflect that decision.

- **Topic-driven**: this type of discussion board works especially well for highlighting readings or helping your students focus on key parts of your course content. Provide specific conversation points and prompts that may relate to a reading or a lecture. Make sure to build in space for reflection or debate in your discussion prompts. Students should want to know what their classmates are thinking about!
- **Social-driven**: this type of discussion board works especially well if you want your students to connect the course with current events or their own projects or work. Your discussion board serves as a digital “water cooler” for your class. Your discussion prompts can be more general, such as asking them to post about the specific topic of the week.

You can also enable and encourage student-to-student collaboration through tools like **Slack**.

Assessment

Consider the following approaches. See also **Designing Your Course for the Fall: Principles and Tips**.

- Provide instant feedback using **quizzes** in Canvas.
- Experiment with **assignment types** and **rubrics** in Canvas.
- Use the Canvas **Gradebook** and to keep track of student progress.

Additional Resources

Below are additional tools and materials that you may find useful depending on the kind of course and pedagogy you use.

- **Overall guidance:** Harvard's Office of Undergraduate Education (OUE) provides **recommendations** to help you teach your course, plan your class, and create a meaningful online experience.
- **Case-based courses:** Harvard Business Publishing offers a **portfolio of resources** to help you move your class online.
- **Reading-intensive courses:** **Perusall** allows instructors to upload documents for learners to read and annotate. These annotations become discussions on the document as students comment on each other's ideas.
- **Lab courses:** **Remote Labs** from the Bok Center
- **Digital resources:** **Using digital resources to augment course materials**
- **Math and physics simulations:** **PhET**, **QuVis**, **Falstad**
- **Flipping your course:** the term "flipped classroom" describes the case when instead of using an in-class lecture format, instructors make their pre-recorded lectures available for students to view online, then use in-classroom time for discussions. The Harvard Kennedy School SLATE program has developed resources that may be useful as you consider this shift.
 - **DIY Flip Kit**
 - **Step-by-Step Guide**
 - **First Flip Kit Worksheet**