

*A Guide to Best Practices for
HyFlex and Online Teaching
at UH*

OFFICE OF THE
PROVOST

UNIVERSITY of **HOUSTON**

QUICK-START

This is a guide that offers help for faculty who are either beginners or more experienced with HyFlex or Online teaching at UH. If you consider yourself a beginner, we recommend you read the guide in a sequential order. If you are more experienced, then you can click the bulleted text here to go directly to that “how-to” portion of this Guide:

- [Setting up the online course component in our learning management system](#)
- [Developing and sharing course materials online](#)
- [Delivering lectures face to face or online, and broadcasting them online](#)
- [Engaging and assessing students online](#)

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I. What is this Guide all about?

This Guide supports flexibility by providing faculty and staff a single place for best practices, information, and resources—regardless of teaching mode. The Guide was written *by* faculty and staff *for* faculty and staff. Initially, this Guide was created in response to the need to adapt operations for COVID-19. In it, our colleagues from various departments share their expertise, experience, and insights in an easily understandable format—one that helped us transition smoothly from emergency remote teaching to effective and adaptive online or HyFlex teaching. This Guide is maintained because it continues to be a highly-valued resource for faculty regard best-practices for HyFlex and Online Teaching in general.

We organized this Guide in a user-friendly way to help that transition, with each section offering best practices or practical advice on a key component of effective online or HyFlex teaching, including:

- General advice on using technology to translate face-to-face methods and objectives into online learning—[Section II](#) (“What’s the bottom line about going online?”) and [Section III](#) (“How can technology help?”)
- Insights on maintaining an engaging online presence—[Section IV](#) (“How might our teaching change?”)
- Options for instructional delivery methods—[Section V](#) (“What instructional delivery methods are available for courses?”)
- An overview of the steps for designing and executing online and HyFlex courses, and best practices and practical advice for each step—[Section VI](#) (“What are best practices for HyFlex and online courses?”)

On a final introductory note, this Guide is not specific to a discipline, college, program, or department, or even a particular level of study. A college or program may have its own norms for online or HyFlex courses that may supplement or modify this Guide’s recommendations. So we also need to check for college-specific norms before designing our online or HyFlex course.

Additional Resources on Adapting:

- [O’Keefe, L., Rafferty, J., Gunder, A., Vignare, K., *Delivering high-quality instruction online in response to COVID-19: Faculty playbook \(2020\)*.](#)
- [The Difference Between Emergency Remote Teaching and Online Learning \(2020\)](#)

II. What's the bottom line about going online?

Like a face-to-face class, an online or HyFlex course can be collaborative and engaging, can facilitate active learning, and can be a place of community and connection. It is possible to adapt our existing teaching practices, content, and materials to achieve the same goals as we would in person and to address the equity and accessibility we have always striven for on campus. It just takes some strategic planning and adjustments to make the transition. Bottom line: we need to keep in mind that our objectives drive our online methodology, not the other way around.

This Guide offers best practices for translating our face-to-face teaching style, learning outcomes, communication, course materials, class discussion, course assignments, and assessments into an online or HyFlex format—while also suggesting ways to ensure equitable access for all students.

Finally, just as resources such as this can help us as faculty transition to online learning successfully, our students also are likely to need resources. We should not assume that they know everything about online learning or what their role in it is. Likewise, they may struggle with seeing the benefits of online learning and compare their online course experiences with face-to-face courses. So, we can be supportive and share relevant resources with students to help them succeed online—some of which appear below. And, if our students encounter difficulties with high-speed internet access, or lack a laptop, we can refer them to UH resources such as these: <https://uh.edu/infotech/about/planning/off-campus/improve-internet-connection/> and <https://uh.edu/covid-19/>.

General Going Online Resources:

- Instructional Designers by College: <https://uh.edu/fdis/resources/instructional-designer-teams/>
- UH Instruction Blog: <http://www.instruction.uh.edu/>
- Supported Technology Tutorials: <http://www.instruction.uh.edu/knowledgebase/>
- UH Canvas Support: <https://uh.edu/canvas/>
- Remote Learning Resources: <https://uh.edu/online/students/remote-learning/>
- [*O'Keefe, L., Rafferty, J., Gunder, A., Vignare, K., Delivering high-quality instruction online in response to COVID-19: Faculty playbook \(2020\).*](#)
- UH Online Student Success: <https://uh.edu/online/students/current-students/online-success.php>

III. How can technology help?

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Our teaching objectives ideally drive the technologies we use, not the other way around. There are some general principles to keep in mind when selecting online technologies. First, we should select a technology that not only meets our classroom needs but is also officially licensed and under UH contract. Thus, unlicensed technologies and personal or trial versions of tools are discouraged, as they are not part of the vetted, secure suite of tools that are more seamlessly and securely accessible for the UH community. The examples and recommendations in this Guide will mainly utilize the following technologies:

- Canvas
- Microsoft Office365
- Microsoft Teams
- CourseWare
- Respondus Monitor
- MediaSite
- Microsoft Skype for Business
- Zoom (when used under UH license)

Second, all faculty, staff, and students now have a UH CougarNet email account, with access to calendars. We should refrain from communicating via outside e-mail services, such as Gmail, Hotmail, and Yahoo. We strongly advise using University-licensed tools and products; otherwise, we could be exposed to personal liability.

Third, using too many technological tools can overwhelm students, so strategic selection of tools can minimize distraction and confusion. Because tools can be used in different ways, clearly explaining to students how tools and course materials will be used and organized within a particular course can help students navigate and find relevant course content. Explanations can be repeated in more than one place and more than one time, to reinforce them with students and to make them easily accessible.

Finally, we need not create our online classrooms alone. The University offers a range of technologies for teaching online, provides extensive trainings on these technologies, and has skilled and experienced personnel who can work with us to create and maintain our online courses. But even with these resources, creating an effective online or HyFlex course takes time—which means that it's time to start the process now.

Technology Resources:

- Instructional Designers by College: <https://uh.edu/fdis/resources/instructional-designer-teams/>
- UH Instruction Blog: <http://www.instruction.uh.edu/>
- Supported Technology Tutorials: <http://www.instruction.uh.edu/knowledgebase/>
- UH Canvas Support: <https://uh.edu/canvas/>

- UH educational technology training calendar:
<https://eitapps.uh.edu/calendar/listview>
- CLASS Office of Education Technology's [Online Teaching course \(classidt@uh.edu\)](mailto:classidt@uh.edu)
- [*O'Keefe, L., Rafferty, J., Gunder, A., Vignare, K., Delivering high-quality instruction online in response to COVID-19: Faculty playbook \(2020\).*](#)

IV. How might our teaching change?

Being present in an instructional sense means being evidently visible to our students. Students often look for who is leading and facilitating the learning environment, and this doesn't change when a course is transitioned to online or HyFlex. While in the early days of computer-based training, students may not have had much interaction with a live instructor or other learners, today's online learning offers more ways to interact, adapt, and customize instruction, just as we might in face-to-face teaching. Students seem to really appreciate being able to interact with experts and others as they are learning. We are a visible part of their course experience.

And, we love this about teaching! We enjoy being in front of a class and engaging with our students. We may sometimes like being the "sage on the stage." Yet, often this doesn't directly translate very well to an online environment. Why? Because now we are the "sage in the box," competing with a million other things that students may be doing. Let's face it—we can be only so engaging delivering a PowerPoint voice-over to a black box.

So, let's reimagine ourselves and our presence in the online and HyFlex formats. In this way, we may come to view ourselves as "learning community managers," who strategically plan and manage opportunities for students to engage and interact within our course. We recognize that we often will utilize a combination of interaction techniques. As community managers, we can proactively support student involvement, for example, by creating a schedule of student chat room monitors during HyFlex class sessions, providing students with opportunities to take the lead in online discussions, and more.

Being the learning community manager means planning and being involved in the flow of our course—that is, being a "guide on the side." There are many ways to do this, as described in these [great tips to building camaraderie and online communities](#). Section VI.f of this Guide provides further examples of how to engage students online.

Change Resources:

- <https://keep-teaching.tamu.edu>
- <http://www.instruction.uh.edu/2019/01/11/five-strategies-for-enhancing-instructor-presence-in-online-courses/>
- <http://www.instruction.uh.edu/2018/12/18/active-learning-with-kahoot/>
- <http://www.instruction.uh.edu/2017/02/28/whats-cooking-recipes-for-active-learning/>

- <http://www.instruction.uh.edu/2017/11/17/how-students-check-your-feedback/>
- <http://www.instruction.uh.edu/2018/04/24/itls-keynote-2018-surviving-and-thriving-in-the-age-of-technology-enhanced-learning/>

V. What instructional delivery methods are available for courses?

Besides face-to-face instruction, UH offers courses in three formats—*HyFlex*, *synchronous online*, and *asynchronous online*. There are different ways that these terms can be used, so we want to clarify what each of these instructional delivery methods means at UH.

HyFlex Learning

HyFlex is a term that combines *hybrid* and *flexible*, and it involves face-to-face teaching, while also at the same time providing options for remote learning. For example, this could mean that a certain number of students enrolled in a HyFlex course have a designated spot reserved for them in face-to-face class meetings, while an additional number of students attend class online. While a HyFlex format provides the most flexibility for students, we should recognize the additional planning and coordination that it requires from us.

Synchronous Online Learning

If we want our course to have a scheduled day/time to meet virtually, in real-time each week, the synchronous online option is the way to go! The term *synchronous* means that the instructor and students are meeting at the same time in a virtual class meeting, such as through Microsoft Teams or Zoom under a UH license. Note that, for example, if your course is scheduled to meet synchronously twice a week, you can choose to meet only once a week. In this way, instructors can plan a schedule of synchronous class sessions during the semester that would meet during the designated day/time in the Peoplesoft registration system. Not all of the course activities have to occur synchronously; in between synchronous class meetings, students could also engage in asynchronous activities (such as discussion forums and assignments). The important thing to remember is that the synchronous class meetings can occur only during a course's designated day/time, and final exams need to be conducted according to the final exam schedule. This prevents conflicts and overlaps in a student's schedule and facilitates clear communication about attendance expectations. As a best practice, we recommend recording synchronous sessions so that you can use them to create future course content more easily, as well as build an archive of videos that may be used to transition to asynchronous modalities in the event of a natural disaster or public emergency.

Asynchronous Online Learning

If all of our course activities are such that they can be completed on a variable schedule and do not require any real-time meetings with students, then the asynchronous online option is the one for us! *Asynchronous* is like saying “not synchronous,” meaning there will not be a designated day/time in the registration system for the course (although optional synchronous sessions might sometimes be worked into the schedule). Teaching an asynchronous course generally involves preparing course content, such as recorded video lectures, readings, discussion prompts, assignments, and assessments and communicating instructions and expected completion dates to students . . . all while never actually meeting face-to-face! Asynchronous interactions with students are primarily back-and-forth communications such as email, discussion forums, and chat conversations, which provide a great deal of flexibility for students with differing schedules and even time zones. While we can still offer optional synchronous sessions in an asynchronous course, students should not be required to attend these optional sessions since they signed up for an asynchronous course in this case. If optional synchronous sessions are offered in an asynchronous course, then alternatives that cover the same content as the synchronous activity need to be provided (such as recording a session or setting up a discussion opportunity using a forum).

Methods Resources:

- [Beatty, B. J. \(2019\). Values and principles of hybrid-flexible course design. In B. J. Beatty \(Ed.\), *Hybrid-Flexible Course Design*.](#)
- [Bower, M. \(2014\). *Blended synchronous learning: Handbook for educators*.](#)
- [Educause. \(2010\). *7 Things you should know about the HyFlex course model*.](#)
- [E-learners. \(2020\). *Synchronous vs asynchronous learning*.](#)
- [Lee, K. \(2020\). *14 Simple tips for better online teaching*.](#)

VI. What are best practices for HyFlex and online courses?

As we prepare to teach in HyFlex and online course formats, there are best practices that can make the experience more effective for learners and more enjoyable and fulfilling for us as faculty. We have organized these best practice recommendations and resources according to some major steps in course design and execution:

- a. Determining our learning objectives and teaching style
- b. Thinking about the big picture of course design and student assessment
- c. Setting up the online course component in our learning management system
- d. Developing and sharing course materials online
- e. Delivering lectures face to face or online, and broadcasting them online

f. Engaging and assessing students online

The Guide's remaining sections offer best practices and practical advice for each of these steps.

a. Determining our learning objectives and teaching style

Overall, remember that our fundamental course planning principles should remain the same, whether we are planning a traditional face-to-face course or a course with a significant online component. Our focus should be on our learning objectives. Online teaching tools and techniques should be chosen only as they clearly support our learning objectives. Beyond our learning objectives, we may want to consider integrating our teaching style into our online teaching choices. What are our strengths as a teacher? We may want to start with a self-assessment of our teaching style and then work with a [UH Instructional Designer](#) to identify online teaching tools and techniques that will optimize our teaching strengths.

Learning Objectives and Style Resources:

- [Basics of Online Course Design](#) (from CLASS OET's Emerging Trends in Educational Technology series)
- [Boston U. How to Write Clear Learning Objectives](#) (pdf)
- [U. of S. Carolina Center for Teaching Excellence. Teaching Styles](#)
- [Determining Your Teaching Style and Staffordshire Evaluation of Teaching Styles \(SETS\) Tool](#)
- [Teaching Perspectives Inventory](#)

b. Thinking about the big picture of course design and student assessment

Overview of Online or HyFlex Course Design

Design of an online or HyFlex course generally follows this order:

- I. **Plan Course.** When setting up our course, we should consider what we want to accomplish. A practical planning approach is [Backwards Curriculum Design \(short version, long version\)](#). Under this approach, we begin with learning outcomes as we plan our course. Questions to consider:
 - What should students be able to know or do by the end of this course?
 - What learning experiences and instruction will students require to become proficient?
 - How can students provide evidence of their knowledge and abilities?

- 2. Develop Course Outline.** The course outline identifies the learning goals, activities, evaluation methods, and resources for the course. It serves as a guide for both instructors and students. In it, we divide the course into smaller modules and establish learning goals and outcomes for each module.
- 3. Build out the Course.** Develop and align course content, activities, and assessments. The content should be equivalent regardless of HyFlex, asynchronous online, or synchronous online methods. Nonetheless, we don't recommend that you transfer all face-to-face course materials to an online format. Develop course content that is ADA-compliant.
- 4. Review Course Design.** We should ensure that modes of delivery, course content, activities, and learning outcomes align. We should also confirm that our design ensures accessibility and flexibility for students attending face-to-face or online.

Overview of Assessments in an Online or HyFlex Class

We recommend reconsidering how each activity, test, or other assessment connects to our teaching objectives.

We have many assessment options online. Small-group work of any sort—practice activities, shared research, study groups, and more—may be moved online, as can reflective journaling, break-out group discussions, and other portfolio-based work. We may also have gradable online discussions and debates. If we find a bit of friendly competition among students valuable, we can "gamify" many basic learning activities with [Kahoot!](#) and other tools.

As we design assessments, we should consider ADA compliance and not hesitate to reach out for compliance advice from our seasoned [UH Instructional Designers](#) and [Electronic Information Resources \(EIR\) Accessibility Coordinator](#).

For the HyFlex format, we recommend that major assessments (graded or not) be conducted online (even for face-to-face students) for consistency and easier management across face-to-face and online students. This also makes grading easier by providing a single place for online and face-to-face student data.

We recommend building assessments with consideration for:

- Language (mother tongue, reading skills, content area reading skills): We need to be mindful of our diverse audience and avoid metaphors or figures of speech. [Questions should be as clear as possible and free of misleading answer choices.](#)
- Pedagogies (course activities, [modalities](#), feedback): This is where we assess what we have taught. We can utilize publisher question sets or create our own question pools.

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- Knowledge ([content, procedural, epistemic, prior knowledge](#)): We try to identify student understanding of content-area-specific learning objectives.
- Competencies ([comprehension, application, analysis, evaluation, synthesis](#)): We recommend referring to Bloom's Taxonomy of Learning Objectives and [creating a test matrix or blueprint](#) that prompts students to perform tasks at varied levels.
- Health (emotional, physical): Providing a practice exam or sample assessment can help students feel less fearful of the process and be able to focus on the exam contents.
- Test delivery (environment, format, technology): Students find it helpful if we communicate expectations and information about assessment formats. This eliminates much of the guesswork for students and may even remove some of the rationale for cheating.

Course Design Resources:

- [Basics of Online Course Design](#) (from CLASS OET's Emerging Trends in Educational Technology series)
- Presentation on [Basics of Online Course Design](#)
- [Minnesota State Univ. Online Course Framework Checklist](#)
- [Association of College and University Educators, Online Toolkit with Videos](#)

c. Setting up the online course component in our learning management system

We recommend using a learning management system (LMS) to make our online and HyFlex courses effective. Why? Because it provides students with a secure site to access course materials and communication resources. The LMS should be officially licensed and under UH contract. Thus, unlicensed technologies and personal or trial versions of tools are discouraged, as they are not part of the vetted, secure suite of tools that are more seamlessly and securely accessible for the UH community.

Canvas and CCS are systems supported by the University of Houston. Regardless of the course we are teaching, we will be able to use Canvas or CCS to deliver our materials electronically to our students. Aside from special STEM courses, most of us will use Canvas, and we should request our Canvas shell through AccessUH as soon as possible before the semester's start. CCS course shells can be requested from the CCS login (<https://ccs.casa.uh.edu/canvas2.html>) or sending an email to jjmorgan@uh.edu.

LMS Resources:

- Canvas Getting Started: <https://www.instruction.uh.edu/knowledgebase/>

d. Developing and sharing course materials online

Syllabus

The syllabus is the foundational communication tool for every course. It supports student learning in online environments, and [it has been required by Texas law since 2009](#). As usual, the syllabus outlines the course expectations, sets the tone for class interactions, creates a guide for expected learning, and provides organization to the course. In addition to the usual components of a face-to-face course syllabus, we recommend including additional details in an online course syllabus about norms for communication, participation expectations, how course materials are organized, and policies regarding attendance. Note that in our previous experience in teaching typical face-to-face courses, we may have required physical class attendance; but in transitioning a course to HyFlex or synchronous online format, attendance could be viewed in differing ways, such as participating in a discussion board activity, attending a synchronous live stream, journaling about course readings, or viewing a pre-recorded lecture, and completing a quiz. In whatever ways we view attendance and participation, we will facilitate greater student success by making our expectations clear in our syllabus.

For recommended syllabus content, visit [here](#).

[UH Instructional Designers](#) can review our syllabus before posting. We are required to share the final copy to the Faculty Center, and it should also be shared on Canvas, CCS, and any other preferred communication platform (Microsoft Teams, email, etc.). The more time we can give our students to review the syllabus and create a plan of action, the better their participation (especially during uncertain and trying times in our communities).

Syllabus Resources:

- [The Syllabus as Student Survival Guide](#)
- [How do I add my syllabus to the Faculty Center?](#)

Organizing Course Materials

Many of us are already used to using an LMS such as Canvas or CCS to provide learning resources to our students. As is common practice, we recommend providing our students with multiple kinds of learning materials.

In an online or HyFlex course, offering shorter presentations interspersed with assessments or other activities helps keep students engaged. These techniques may generate more materials or require more folders in the LMS web course for an online or HyFlex class than in one for a traditional face-to-face class, making organization critical. If we've been previously using an LMS, we can generally follow the same organization we've used before, with some adjustments. But, if we haven't used an LMS before, then we recommend spending some time considering how we want to organize our online content so that we can facilitate student

learning and ease of navigation. We recommend figuring this out as soon as possible before the semester starts.

To help students navigate our online web course, we recommend being consistent in how materials are organized, when they are uploaded, how they are named, and how they are used. We further recommend naming or describing our online course materials in ways that will clearly identify their content. Naming a document “Assignment 1” isn’t helpful when students are faced with multiple assignments in a single folder. Finally, we recommend including key information in multiple places throughout the online web course, as long as we use consistent language.

Course Materials

Form of materials. In online and HyFlex classes, we should provide all course materials in digital format—meaning that we will not distribute paper handouts for those attending a face-to-face component of a HyFlex class.

ADA compliance and accessibility of materials. We should ensure all of our on-line materials are ADA compliant and accessible. For guidance on making our materials ADA compliant and accessible, we may contact the [EIR Accessibility Coordinator](#). There are also tools to assist us. For those using Canvas, the work burden has been somewhat automated for us through [Canvas Ally](#). Canvas Ally provides instructors with detailed feedback and support on course materials, such as providing alternative text descriptions for images. Canvas Ally will identify common accessibility issues with course materials. Adobe PDF and Microsoft Office365 Suite tools also have built-in accessibility checkers. Additionally, the [University has resources](#) to help us make our materials accessible.

Tools to create course materials.

Applications to Support Online Teaching

Strategy	Tools	Examples
Create videos	<ul style="list-style-type: none"> • Adobe Spark • WeVideo • PowToon • Canvas Studio 	<ul style="list-style-type: none"> • Introductions • Announcements • Course orientation • Student feedback • Demonstrations • Vlogs • Digital storytelling
Brainstorm and share	<ul style="list-style-type: none"> • Padlet • Lino • Stormboard • Flipgrid 	<ul style="list-style-type: none"> • Discussion board • Group project collaboration • Peer review of assignment • Formative assessment/Conclusion • Exit tickets • “Fliphunt”

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Enable productivity	<ul style="list-style-type: none"> • Microsoft Teams • Office 365 • SignUpGenius 	<ul style="list-style-type: none"> • Sign-ups • Course reminders • Class managers to connect with absent classmates • Team collaboration • Share images of ideas/drafts
Study and review	<ul style="list-style-type: none"> • Quizlet • Kahoot • Quizizz 	<ul style="list-style-type: none"> • Key vocabulary • Warm-up • Review games • Pre-scripted feedback • Student-created questions
Meet synchronously	<ul style="list-style-type: none"> • Microsoft Teams • Zoom 	<ul style="list-style-type: none"> • Guest speakers • Student presentations • Real-time challenges • Polling • Breakout small group discussion • Team meetings
Create visualizations	<ul style="list-style-type: none"> • Canva • Pixlr • Imgflip (Meme generator) • Thinglink • Piktochart • Glogster 	<ul style="list-style-type: none"> • Interactive syllabus • Photo-based quizzes • Interactive resumes/portfolios • Visual resumes • Charts/graphs • Memes

Course Materials Resources:

- [Online Instructional Activities Index](#)
- [Stanford Univ. Engaging online Discussions](#)
- [Minnesota State Univ. Online Course Framework Checklist](#)
- [How to Add and Organize Course Content using Modules \(UH Canvas\)](#)

e. Delivering lectures face-to-face or online, and broadcasting them online

The Big Picture

Recording lectures, regardless of your teaching modality, is highly recommended. You may choose when and how to use these recordings, and having them gives you many options for improving future course content, building asynchronous and emergency on-line back ups for

your course, and supplementing student learning as desired (e.g. by allowing them to review portions of lectures prior to exams). Ideally, our syllabus should clearly reveal that live-streamed presentations and discussions will be recorded. This lets students know if and how this resource is available to them. Also, to meet ADA requirements and ensure accessibility for all students, we should caption our videos. Technologies supporting captioning are discussed [below](#).

Engaging Students Attending Live-Stream Lectures Remotely

In the HyFlex model, although discussions will be like those in our face-to-face classrooms, we should ensure our synchronous online (remote) learners are also fully included. Otherwise, the remote students may feel like second-class citizens. Our remote students may interact in various ways. For example, both Microsoft Teams and Zoom allow for audio and video interaction with participants and have a raise-hand feature, which will need to be monitored. Microsoft Teams and Zoom also have a chat function, which needs to be monitored during discussions, as well. Knowing that there will be discussions in the chat feature, we should designate a person to monitor them, either a teaching assistant or a student volunteer. We should [secure our Zoom meetings](#) or Microsoft Teams meetings in accordance with UH Infotech guidelines to avoid disruptions in our classroom. Finally, we recommend confirming beforehand whether the room's AV system will pick up student questions so that those attending remotely will hear them.

Alternatives to Classroom Whiteboard Use

Though many of us may be used to using a physical whiteboard in our face-to-face classrooms, we should avoid doing this in our HyFlex and online classes. Using markers on a whiteboard tends not to transmit well via video, and our remote students may not be able to see what we write due to limitations on bandwidth or camera. Fortunately, there are several alternatives available. For example, document cameras and paper are one alternative. Although this option can be convenient for us, it's not necessarily the best one for our students.

Another option is to connect a tablet to Microsoft Teams or Zoom and use the tablet as a digital whiteboard. This is a good solution because we can access the files, media, and other apps on the tablet. Annotation tools are part of most popular applications (e.g., Microsoft Office Suite, Adobe Acrobat). Digital whiteboard technologies, such as Doceri, Evernote, and Notability, also allow writing directly onto presentations, spreadsheets, documents, and other files being shared on screen. Despite the differences among various platforms, most whiteboard technologies offer similar tools, which typically include various pens for writing, markers for highlighting, text tools, shape tools, erasers, insert-object tools, pointers/cursors, and saving tools.

We recommend practicing using these whiteboard technologies prior to class and deciding whether students will be able to annotate the documents that we share, which can be a useful

capability of these tools. Whiteboard annotations can be saved as image files for printing, posting online, converting to other formats, or incorporating into other course materials. Annotated documents can ensure access for asynchronous remote students, provide review material to solidify discussion concepts, and support accessibility.

Technologies for Broadcasting, Recording, Editing, Etc.

Recording for HyFlex classes. To support HyFlex instruction, a classroom requires basic videoconferencing technology (PC, camera, microphone, speakers). Microsoft Teams can be operated on any classroom PC, faculty office computers, and personal devices. Zoom or other software applications may need to be loaded on the computer in advance of the start of classes. If we are teaching in a room that is not a traditional classroom or need specialized technology, we should contact our departmental IT support to discuss our needs.

For HyFlex classes, streaming and recording can be accomplished from the instructor's podium computer by launching Microsoft Teams, joining the class meeting, and using the Record Meeting feature. This will allow remote students to videoconference into the class and will automatically record the class and post the video to your Microsoft Teams/ One Drive site for you to choose how to share it.

Although we can use Zoom for videoconferencing, Zoom lacks the automatic recording and posting features available in Microsoft Teams, and it has security gaps that make it more vulnerable to external security breaches (see below on how to secure Zoom conferencing). To use Zoom for HyFlex instruction, we must either record the session to the desktop and upload the content for video streaming on Microsoft Stream or capture the content through another application, such as Mediasite, Camtasia, or Snagit for uploading later. Zoom has limited cloud-recording capability that does not scale to the needs of the campus, and so cloud-recording is generally not recommended in Zoom.

For broadcasting video recordings, we highly recommend Microsoft Stream since it is the primary authorized streaming or sharing service for video content for UH and automatically provides a searchable audio transcription. YouTube, Dropbox, Google, and other services do not meet the strict requirements of FERPA and copyright laws.

Recording for synchronous online classes. Synchronous online courses have the same recording technologies and capabilities as HyFlex courses, but since they are taught from a home or office computer, there is more flexibility in recording and uploading of class meetings.

We can stream live presentations/lectures by using the built-in streaming and recording features in Microsoft Teams or Zoom. Both applications give the option to save the recording. If broadcasting that recording, again, we recommend uploading it to Microsoft Stream and

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sharing via this approved UH streaming service. Be aware that if using Zoom for recording, there are special UH IT Security [guidelines](#) to follow when setting up classes and enrolling students in meetings.

Recording for asynchronous online classes. Asynchronous presentations can also be recorded using Microsoft Teams or Zoom by starting and recording a meeting, or by using other readily available recording software, such as Canvas Studio, Windows Camera app, Microsoft PowerPoint, Camtasia or Snagit, and a wealth of others. These and most other screen-recording applications will support voice-over narration, touchscreen, or stylus input and provide a flexible way to create content for asynchronous online classes or support live classes. Recording a presentation can be as simple as creating an outline using your favorite software, and then doing a voice-over while annotating with stylus and compatible device.

Links to demonstrations of each of these methods can be found below.

Captioning of recordings. We recommend captioning our recordings to meet ADA requirements and ensure accessibility for all students. All software used to create your recording will result in a video file. This file should be converted to an MP4, uploaded to Microsoft Stream, and set to automatically caption. Then, you can obtain a URL to the video from Microsoft Stream and use it to create a link in Canvas, CCS, Microsoft Teams, or any other platform where you want students to access your course materials.

HyFlex and Synchronous Video Streaming of Classes			
CAPABILITIES	Microsoft Class Teams	Zoom	Mediasite
Available in Classrooms	YES	YES	LIMITED
Automatically Populates Class Roster	YES	NO	YES
Uses CougarNet Authentication	YES	YES	YES
Ability to set participant permissions	YES	YES	N/A
Group Collaboration on Shared Content	SharePoint Integration	NO	N/A
Allows Guest Access via permissions	YES	YES	N/A
Desktop/App Sharing	YES	YES	N/A
Chat During Lecture	YES	YES	N/A
Offline Messaging to Students	YES	NO	N/A
Email Notifications of New Content	YES	NO	N/A
Schedule Live Lecture	Calendar Integration	Calendar Invites	N/A

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Broadcast Lecture	YES	YES	YES
Breakout Rooms/ Small-Group Discussion	YES – by use of “channels” function	YES – “break-out room” function	N/A
Record Lecture	YES TO THE CLOUD	TO DESKTOP (cloud recording not recommended)	YES
Automatically Publish Lecture	YES, TO MS Class TEAM	NO	YES
Automatically Share with Students	YES, through MS Class TEAM	NO	YES
Lecture Transcription	YES, via MS Stream	NO	NO

Technology Resources:

- **Microsoft Teams:** http://instruction.uh.edu/knowledgebase_category/microsoft-teams/ (there are a multitude of additional Microsoft Teams instructional material at <http://instruction.uh.edu>)
- **Zoom:** <https://uh.edu/infotech/about/planning/off-campus/zoom-tips/>
- **Canvas Studio** for Asynchronous Lecture Recording: <https://www.instruction.uh.edu/knowledgebase/canvas-how-to-add-media-to-your-course-using-canvas-studio/>

Link to video instructions for recording with Teams.

<https://web.microsoftstream.com/video/ea4bf3c4-1e34-4223-aca3-fd715bd2ea40>

Link to video instructions for recording with Zoom.

<https://web.microsoftstream.com/video/38ec0c41-0d86-45e1-9db4-9cc64ad3c292>

Link to video instructions for recording on a Mac.

<https://web.microsoftstream.com/video/1696f631-ec89-46e9-b3d3-e4ee3fc39894>

Link to instructions for recording with a PC and Camtasia.

<https://www.techsmith.com/tutorial-camtasia-record-edit-share.html>

Link to instructions for recording with a PC and Snagit.

<https://www.techsmith.com/tutorial-snagit.html>

Link to video instructions for recording with iPad.

<https://web.microsoftstream.com/video/290554de-777a-4bed-b18e-b2933aa7d811?App=msteamsBot&refId=f:5804219139814196287>

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Link to video instructions for recording with MS PowerPoint.

<https://web.microsoftstream.com/video/de520ced-f7df-431c-bc92-e1f12c1ca13b>

Link to instructions for adding videos in Canvas: https://www.instruction.uh.edu/knowledgebase_category/canvas-videos/

Link to video instructions for setting a video to automatically caption in MS Stream, along with simple instructions for editing the caption file.

<https://web.microsoftstream.com/video/80d61006-0b07-481a-a2d8-39cfbbb8cd3c>

Using the Windows Photo App to do basic video edits:

<https://web.microsoftstream.com/video/7c2280ce-b688-4435-aa81-f4949c8f374b>

f. Engaging and assessing students online

Engaging Students through a Welcome Message

A welcome message serves the dual purpose of conveying key course information and creating a sense of community. We can write or record it and share it by Canvas, CCS, Microsoft Teams, or email. We recommend including at least a greeting (and short autobiography), information on accessing the course, and technical-support resources. It's also a good place to reinforce the communication expectations explained in the [syllabus](#).

Engaging Students Resource:

- [Five Strategies for Enhancing Instructor Presence in Online Courses](#)

Formative Assessment—Providing Feedback During Instruction

The primary ways that we will engage with our students are through formative assessments. Formative assessments are low-stakes activities assigned throughout the semester. They may be graded or ungraded. Popular examples of formative assessments that can be set up and accomplished online include, e.g., discussion-board activities, quizzes, journaling, and practice activities. Ideas for each of these will be shared next.

Discussion-based Assessment

Online discussions can provide students space to introduce themselves to classmates, express themselves and their understanding of topics, debate their points, raise questions, and work

together as a group, among other things. Because student postings may vary greatly in length and quality, we recommend publishing a grading rubric specifying not just quantity expectations for discussion participation, but also quality indicators for posts.

Manually reviewing and grading student postings is time-intensive, particularly with large classes. To help counter this, discussions can be graded at random intervals in a semester, rather than grading every post of every discussion. This is a particularly relevant approach when using discussions as check-ins, prompting learners to reflect and apply content to their own experiences. Another time-saving idea is to assign student “leaders” or “moderators” to each discussion group to encourage participation and keep discussions on-topic.

Here are some best practices for managing online discussions:

- **Set clear expectations.** We should tell students it’s okay to have a different point of view and disagree, as long as they remain respectful. We can provide a grading rubric with clear deadlines for initial posts and responses and quality and quantity expectations for posts. Most of this information should be provided in the syllabus, and weekly reminders are helpful, at least for the first few weeks.
- **Consider the discussion’s purpose when designing prompts.** We need to think how the question or discussion topic relates to the teaching objectives for the assignment. Additionally, we should consider whether we want to instruct students to post before seeing others’ posts.
- **Use time-bound discussion.** For example, we can leave the discussion thread open for a certain period and require each student to post at least one question and respond to at least two other students.
- **Allow students to subscribe to posts.** This allows students to receive email alerts when new posts are made to the forum.
- **Establish appropriate writing styles (formal or informal).**
- **Facilitate discussions selectively.** We should intervene selectively, for example, when students go off topic or misrepresent information. Selective intervention allows students to discuss freely, while still being guided appropriately.

Discussion Resources:

- [Canvas: How to Create Discussions](#)
- [Canvas: How to Create Groups](#)
- [Inside Higher Ed. Critical Examination of Online Discussion Boards](#)

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- [How to Create Breakout Rooms in Zoom meeting](#)
- [How to Create Breakout Rooms in Microsoft Teams](#)
- [Improve Online Discussions and Peer Replies \(2017\) Pedagogy Practice, Online Pedagogical Repository.](#)
- [Stanford Univ. Engaging online Discussions](#)
- Bean, J & Weimer, M. (2011). Engaging Ideas: The Professor's Guide to Integrating Writing, Critical Thinking, and Active Learning in the Classroom. San Francisco, Wiley.
- Mazzolini, M., & Maddison, S. (2007). When to jump in: The role of the instructor in online discussion forums. Computers & Education, 49, 193-213.

Quizzes

Quizzes can be used to take the comprehension pulse of the class, as self-assessment, or to promote engagement in general. Here are some things to try:

- LMS and Microsoft Teams quizzes
- https://www.instruction.uh.edu/knowledgebase_category/canvas-quizzes/
- Quiz games
 - [Kahoot!](https://www.instruction.uh.edu/knowledgebase_category/kahoot/) (https://www.instruction.uh.edu/knowledgebase_category/kahoot/)
 - [Kahoot in TEAMS;](#)
<https://techcommunity.microsoft.com/t5/education-blog/make-distance-learning-fun-with-kahoot-and-microsoft-teams/ba-p/1412939>
[College of Nursing: Active-Learning Tools](#)
 - [Quizizz](https://quizizz.com/) (<https://quizizz.com/>)
 - [Quizlet](https://quizlet.com/) (<https://quizlet.com/>)
- Polls
 - [Zoom polls](https://support.zoom.us/hc/en-us/articles/213756303-Polling-for-meetings) (<https://support.zoom.us/hc/en-us/articles/213756303-Polling-for-meetings>)
 - [Polly in Teams](https://www.polly.ai/microsoft-teams) (<https://www.polly.ai/microsoft-teams>)
 - [Forms in Office365](https://support.office.com/en-us/article/create-a-form-with-microsoft-forms-4ffb64cc-7d5d-402f-b82e-b1d49418fd9d) (<https://support.office.com/en-us/article/create-a-form-with-microsoft-forms-4ffb64cc-7d5d-402f-b82e-b1d49418fd9d>)
 - [Poll Everywhere](http://newtech.coe.uh.edu/tool-name.cfm?toolid=158&toolname=Poll%20Everywhere) (<http://newtech.coe.uh.edu/tool-name.cfm?toolid=158&toolname=Poll%20Everywhere>)

Journaling

Student journaling activities can be designed for sharing with others in the course, or just with the instructor. Journaling provides opportunities for students to editorialize and reflect on what they think about particular issues, discuss their present understanding of a topic, plan out their

strategy for a project, and summarize key ideas from a reading or class discussion. Canvas does not have a journal or wiki tool. The Canvas Community has offered some suggestions: <https://community.canvaslms.com/t5/Canvas-Question-Forum/Journaling/m-p/95360>

Journaling Resources

- [Articles about journaling](https://onlinelibrary.wiley.com/doi/abs/10.1002/ace.23) (<https://onlinelibrary.wiley.com/doi/abs/10.1002/ace.23>)

Practice

Practice activities can provide students with opportunities to work with their developing understandings of concepts and skills, even making mistakes and identifying that they need to continue studying before taking an exam or another kind of major assessment. Practice in online learning can take many different forms and can be done individually or in collaborative groups. Here are a few activities to try and tools to pair them with:

- Chapter questions and reading responses—Textbook publishers often provide test banks and writing prompts, as well as other integration tools. We can use the LMS quiz function or the Microsoft Forms tool. We can use closed/multiple choice question type or open-ended/short answer type.
 - [Canvas Quizzes tutorials](https://www.instruction.uh.edu/knowledgebase_category/canvas-quizzes/) (https://www.instruction.uh.edu/knowledgebase_category/canvas-quizzes/)
 - [Writing multiple-choice questions](http://www.instruction.uh.edu/2018/10/15/creating-good-multiple-choice-questions/) (<http://www.instruction.uh.edu/2018/10/15/creating-good-multiple-choice-questions/>)
 - [Microsoft Forms](https://support.office.com/en-us/article/create-a-form-with-microsoft-forms-4ffb64cc-7d5d-402f-b82e-b1d49418fd9d) (<https://support.office.com/en-us/article/create-a-form-with-microsoft-forms-4ffb64cc-7d5d-402f-b82e-b1d49418fd9d>)
- Problem sets—Students can type or hand-write their solutions and submit.
 - [Scan a document with CamScanner app](https://www.camscanner.com/) (<https://www.camscanner.com/>)
 - [Upload a pdf to a Canvas assignment](https://www.instruction.uh.edu/knowledgebase_category/canvas-assignments/) (https://www.instruction.uh.edu/knowledgebase_category/canvas-assignments/)
 - [Students can upload large files to Microsoft OneDrive and then share](http://www.instruction.uh.edu/knowledgebase/how-to-copy-a-file-link-in-onedrive-share-with-instructor-student-guide/) (<http://www.instruction.uh.edu/knowledgebase/how-to-copy-a-file-link-in-onedrive-share-with-instructor-student-guide/>)
- First drafts of papers, research projects, etc.—Students can submit drafts for comments and feedback.
 - [Turnitin revision assignment](https://www.instruction.uh.edu/knowledgebase/how-to-use-turnitin-in-canvas/) (<https://www.instruction.uh.edu/knowledgebase/how-to-use-turnitin-in-canvas/>)

- [OneDrive shared files \(Word, Excel, Powerpoint, etc.\)](https://support.office.com/en-us/article/assign-work-to-individual-students-37809738-57e6-4176-86c5-751adfe0e03a) (<https://support.office.com/en-us/article/assign-work-to-individual-students-37809738-57e6-4176-86c5-751adfe0e03a>)
- [Microsoft Teams assignment](https://support.office.com/en-us/article/assign-work-to-individual-students-37809738-57e6-4176-86c5-751adfe0e03a) (<https://support.office.com/en-us/article/assign-work-to-individual-students-37809738-57e6-4176-86c5-751adfe0e03a>)

Summative Assessment—High-stakes Tests and Major Projects

Summative assessments are high-stakes course activities that generally take place after multiple weeks or months in a course. They provide faculty and students with useful information about student performance and may be different from formative assessments in their scope, frequency, length, format, and opportunities for feedback. Summative assessments cover more of the course materials at once, generally take longer to complete, may take a more structured format, and allow for limited or synthesizing feedback to students.

Utilizing Canvas for Midterm/End of Semester Exams

Creating Canvas exams in [Respondus 4.0 exam builder software](#) provides options to formatting exams, although it's not available to Mac users. [Question Banks](#) are sets of questions of similar difficulty but that have some variations; they can be obtained from publisher sets or repurposed content from prior formative assessments. [Question ordering can be randomized](#) so that students do not see the exact same exam but have a similar assessment experience. [Exams can be made available](#) for a limited time, such as during a scheduled class time, which can assist students in managing their time. [Exceptions can be set](#) for those with accommodations or conflicting schedules. Best practices for these capabilities appear in [Appendix 1](#).

CCS has equivalent capabilities. We do not recommend Microsoft Teams for exams because we can't prevent chatting or cheating and because randomization isn't possible.

We should check with our college to see if it uses a particular testing software.

Using Exam Proctoring

[Respondus Lockdown Browser and Monitor](#) are the recommended applications that align with the [minimum technology requirements communicated to students](#) when they signed up for classes. Lockdown Browser on its own will not prevent cheating. Combined with Monitor, it will make using online resources or collaborating with other students hard. We recommend turning on both tools at the same time. While no proctoring solution will be a 100% foolproof, monitoring is a deterrent. For additional ideas for administering remote exams, see [Appendix 1](#).

Assigning Major Projects, Portfolios, and Final Papers

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Many assignment types can be easily moved online, such as creating ways for students to capture and submit their work digitally (via video, still images and text, etc.). Major projects, take-home exams, portfolios, and final papers can be assigned for individuals or student groups. Rubrics can be created to provide consistent feedback and more efficient evaluation across submitted student work. Some options:

- [Canvas assignments](#): Projects can be created as individual or group assignments. In addition to submitting for grading, students can share their work on the discussion board. A collection of formative assessments can be synthesized to become a summative kind of assessment.
- CCS: Documents can be uploaded as part of CCS assignments.
- Microsoft Teams projects: On [Teams, channels can be created for students to discuss topics and collaborate on developing their products](#). Please note Microsoft Teams is currently limited to 50 MB per submission, and the tool as a whole will allow only 200 submissions. So, this may not be a good option for larger classes, unless they are set as group assignments.
- [TurnItIn assignments](#) and term papers: TurnItIn can compare submitted papers to a database of previously submitted and published works in order to detect plagiarism. Similar to other assignments submitted through Canvas, instructors can post feedback to students, grade anonymously or by item, use rubrics, and download submissions for grading purposes.
- Alternative assessments: Assessment can be done in many ways. Alternative assessments provide options of [multiple means of action and expression](#) for students. Students can even give live presentations of their assignments using Microsoft Teams or Zoom.

More Engaging and Assessing Resources:

- Canvas Exam tutorials
https://www.instruction.uh.edu/knowledgebase_category/canvas-quizzes/
Canvas Exam set up for students who need extra time/ADA compliance: <https://www.instruction.uh.edu/knowledgebase/how-to-moderate-a-quiz-giving-extra-time-accommodation/>
- Canvas Assignment tutorials:
https://www.instruction.uh.edu/knowledgebase_category/canvas-assignments/
- Canvas Gradebook tutorials:
https://www.instruction.uh.edu/knowledgebase_category/canvas-grades/
- Canvas Discussion Board:
<https://www.instruction.uh.edu/knowledgebase/how-to-create-discussions/>

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- Canvas Tools at a Glance: https://www.instruction.uh.edu/knowledgebase_category/canvas-tools/
- Respondus (test creator):
https://www.instruction.uh.edu/knowledgebase_category/respondus-with-canvas/
- Setting up the Lockdown Browser and Respondus Monitor:
https://www.instruction.uh.edu/knowledgebase_category/respondus-lockdown-browser-monitor-with-canvas/
- Canvas rubrics:
<https://www.instruction.uh.edu/knowledgebase/how-to-grade-using-a-rubric/>
- Create a TEAMS form for polling:
<https://support.microsoft.com/en-gb/office/create-a-poll-in-microsoft-teams-a3f9112c-01e1-4ee4-bd88-25e4e243b80b?ui=en-us&rs=en-gb&ad=gb>
- Turnitin tutorials:
https://www.instruction.uh.edu/knowledgebase_category/turnitin-lti/

TEAMS tutorials:

https://www.instruction.uh.edu/knowledgebase_category/microsoft-teams/

- Feedback:
<http://www.instruction.uh.edu/2018/10/15/creating-good-multiple-choice-questions/>
- Active Learning:
 - <http://www.instruction.uh.edu/2017/02/28/whats-cooking-recipes-for-active-learning/>
 - <http://www.instruction.uh.edu/2016/08/30/alignment-in-hybrid-courses/>
 - <https://www.insidehighered.com/digital-learning/article/2019/06/26/bringing-small-teaching-online-classroom>

Final Thoughts

The hallmarks of a good course remain consistent regardless of teaching mode. We offer these summary tips:

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- Syllabus—We should outline our course with due dates and learning outcomes stated clearly and address communication norms, participation expectations, organization of materials, and attendance policies.
- Course organization—We should design and place course materials in a structured format that is systematic and purposeful. The content should be clear, posted in the same place(s) every week, and linked to other relevant materials.
- Interaction—We should set clear rules for interaction and communication in the platforms that we're using.
- Accessibility—We should ensure our course materials are accessible and learn how to take advantage of Canvas Ally:
<https://web.microsoftstream.com/video/cbe36a9b-5ca5-45ec-8d6c-abbbaeaada8e> http://www.instruction.uh.edu/knowledgebase_category/ally/
- Copyright—We can use UH Libraries' course reserves to ensure that our materials are safe to use and not prohibited or have copyright restrictions:
<https://libraries.uh.edu/services/course-reserves/copyright/>
- Set Expectations—We should make clear in the syllabus and throughout our communications with students the standards that their performance should meet as well as what they should expect from us.
- Feedback—We should commit to a system on ways to respond to our students. Setting boundaries for our time availability will make it clear to students when they can expect to hear back from us or see our responses to their comments within the LMS.

This Guide was crafted from the resources that we found helped us realize the seven key hallmarks of an effective online course [as explained by Dr. George Veletsianos](#):

1. We consider issues of equity and justice, such as students' socioeconomic and social backgrounds, relevant societal issues, and the like.
2. We allow students to interact with us and each other.
3. We challenge students and keeps them engaged.
4. We provide students with multiple opportunities to practice what they are learning.
5. We set learning objectives, tailor activities to those objectives, and assesses whether the students successfully met those objectives.
6. We are active, visible, and empathetic instructors.
7. We give students choices in crafting their own educational experience, as possible.

We remind the reader that this Guide is not associated with any discipline, college, program, or department, or even a particular level of study. A college or program may have its own norms and additional recommendations to consider in the design or implementation of online learning.

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Beyond this guide, there are many tutorials on the tools discussed in this Guide that we can view immediately via Instruction@UH. We can also expand our pedagogical understanding through the offerings of the Office of Faculty Engagement and Development (FED) ([see Events page](#)).

Finally, we hope that you will join the ongoing discussion forum in our MS Teams “Hyflex and Online Pedagogy at UH” ([Join with MS Teams Code: 1c806be](#)).

Appendix 1: Administering Remote Exams – Basic Advice from the desk of Jeffrey Morgan

Important notes: Software alone is not sufficient to administer remote proctored exams.

- Cheating will occur! The goal is to limit the cheating. Cheating occurs in face to face courses, and it will happen when exams are administered online.
- Honor Code Statement: Regardless of whether exams are proctored, or not proctored, ask students to sign an honor code statement at the start of the semester, and prior to each exam. Keep it simple. UH has an academic honesty policy statement at <https://uh.edu/provost/policies-resources/honesty/documents-honesty/academic-honesty-policy.pdf>
- Make sure your students know the penalties for cheating: Penalties can include receiving an F in the course. Even under the current interim grading policy, these types of “F” grades cannot be changed to NCR. Repeat violations can result in probation or expulsion from UH.
- Exam ideas when no proctoring is used:
 - Give frequent timed exams. Don’t make the timing too short because students can face technical issues.
 - Use multiple question types. There are several question types that can be used in Canvas.
 - Give multiple versions of exams, use question sets, use random selection of questions from question sets, and use random ordering of answers on multiple choice questions.
 - Give exams where more hand grading is used.
 - Give timed written exams, on their own, or in addition to electronic exams. Have students write their solutions, and then use free phone apps like CamScanner, <https://www.camscanner.com/> to scan their pages to a single PDF. Afterwards, they can upload the scanned PDF file to Canvas, email it to the instructor, etc. Allow up to 10 additional minutes for the conversion to PDF and upload. Have the students practice this with a short written assignment prior to the exam.
- Random follow-up in large classes with frequent exams: Give each exam without proctoring, with the understanding that following the exam, a portion of the class will be asked to set up short one on one online meetings with the instructor where they are asked questions (orally). Every student will face this once during the semester. These could each be 5-7 minute sessions, or longer. An online scheduler is being created for instructors to create blocks of time, and indicate the length of each slot. Students will be able to log in with Cougarnet and select from the available time slots, and a one on one meeting will be scheduled in Teams. This is a simple modification of the exam scheduler used by CASA at present. It could also be used for one on one office hours.
- Scheduled following up: Give an exam, with one or two live supplemental oral questions that students are scheduled to respond to in a private Zoom or Teams meeting. The questions can be given in the meeting or chosen from a posted set of questions that students can view ahead of time. These one-on-one sessions could be 5-7 minute sessions each. An online scheduler is being created for instructors to create blocks of

time, and indicate the length of each slot. Students will be able to log in with CougarNet and select from the available time slots, and a one-on-one meeting will be scheduled in Teams. This is a simple modification of the exam scheduler used by CASA at present. It could also be used for one-on-one office hours.

- Zoom proctoring in small classes: Ask students to use their cell phones with Zoom, with the cell phone view showing the profile of the student and their computer screen during testing. Instructors should hold a practice session with their students prior to the actual exam, and students should be asked to arrive at the Zoom proctored exam 30 minutes prior (if possible). Disable one to one chat so that students cannot chat with each other in Zoom. Use authentication so that only authorized students can enter the Zoom session. It's important to see student screens so that they are dissuaded from chatting elsewhere or pulling up help materials.
- Teams proctoring in small classes: Set up 9 students per channel in different channels, with students using their cell phones to record as above. The instructor can move back and forth between channels to monitor the students. Instructors should hold a practice session with their students prior to the actual exam, and students should be asked to arrive at the Teams proctored exam 30 minutes prior (if possible). It's important to see student screens so that they are dissuaded from chatting elsewhere or pulling up help materials.
- Respondus Monitor Proctoring: This is an AI solution that requires the students to have a Mac or PC, with a webcam, with the exam given on Canvas. The students are recorded, and AI watches their body and eye movement, and flags videos that look suspicious. Their screens are also "locked" so that they cannot email or open other applications. Like any solution of this type, it can be defeated, but the defeat requires technical knowledge, even if students follow instructions that are posted online. Because of this, Respondus Monitor can be over 90% effective. If it is coupled with multiple question types, and short live follow-up, then it can be very effective. 138 classes used RM in the spring to administer exams to 7,302 students.
- CASA Monitor Proctoring: This is an in-house solution that can be used regardless of the exam platform. When the test "begins" the student's computer screen has snap shots taken every few seconds, and webcam snap shots taken every few seconds. The software will ask the students at some random time during the exam to hold their ID up to the webcam. This solution is currently under development. We stress tested it with 4,000 simulated students 2 weeks ago. We plan to be ready for the fall.

Appendix 2: Acknowledgements

This Guide was the work of a representative sample of experienced UH Faculty and Instructional Design and Technology Staff. All working group members and advisors freely and voluntarily contributed their time and expertise (despite difficult and uncertain circumstances) in hopes of supporting their colleagues, our students, and the University of Houston's core mission.

- [Professor Je'Anna Abbott](#), College of Hotel & Restaurant Management and Faculty Advisory Board President-Elect, *Working Group Co-chair
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