**E-Invigilation Sample Instructions**

**Summary**

There are two concurrent aspects to the E-Invigilation:

1. Zoom – For the duration of the exam ([date and time of exam]), you are to appear on video on Zoom (per our usual Zoom e-classes, save that you must turn on your video this time). In other words, I will be able to see all XX of you during the entirety of the exam. 5 mins before the exam, you will be required to show to me on video you powering off your mobile phone. You will also be required to turn your webcam 360 degrees around your location to show that there is no one else near to you, and that you do not have a second computer screen nearby unless you have permission previously granted etc. This aspect of the E-Invigilation is meant to ensure none of you have face-to-face communication or mobile device communication, with anyone else, during the entirety of the exam. If you do not have a working webcam, you may enter Zoom through your phone and use your phone camera as substitute for a webcam.
2. Screen Recording – For the entirety of the exam, you are to use Apowersoft Online Screen Recorder (a free and simple to use browser-based screen recorder) or OBS Recorder (for those of you using certain Macintosh OS that is not compatible with Apowersoft), to record your on-screen activity (ie. whatever *you* see on *your screen* during the exam). You may then be required to upload your X-hour long video recording shortly after you submit your exam answers at the end of the exam (see below). This aspect of the E-Invigilation allows me, after the exam, to access the recording and check through your on-screen activity during the exam. This is meant to ensure none of you use your laptop/desktop to communicate with anyone else (for eg. through Whatsapp Web, Telegram Web, Facebook Messenger, email etc), during the exam.

**What you need for the exam:**

* A stable internet connection (as both Zoom and Apowersoft Recorder require internet connection).
* A relatively quiet and conducive place to do your exam, uninterrupted.

**Before the Exam**

At least a few weeks prior to the examination, you should try using Apowersoft Free Online Screen Recorder before the exam to familiarise yourself with how to use the app. It is a relatively user-friendly app to use. The step-by-step guide is in Appendix A below.

If your laptop or desktop has compatibility issues with using Apowersoft, you should then try using OBS Recorder as the alternative. The step-by-step guide for OBS Recorder is in Appendix B below.

Either way, you should ensure that you have trial run a X-hour long (as opposed to just a short) recording before the exam. This will help ensure your system has the specifications and capacity to support a X-hour long recording. This also ensures you are confident in using the app to make a recording during the exam and know where the video recording is stored in your laptop or desktop, should you be required to upload it. Please surface any issue(s) you find at least a week prior to the exam, so that there is sufficient time for troubleshooting, or for special arrangements to be made (eg. to do the examination safely on campus), if necessary.

**During the Exam**

Log onto Zoom (meeting link will be sent to your closer to the exam) by [time] on [date of exam].

Follow my instructions then, which will include:

* Taking of attendance.
* Turning off all virtual backgrounds.
* Setting your Zoom chat function so that any message you type will only be communicated to me (to avoid distracting your classmates unnecessarily during the exam).
* Ensuring you have Apowersoft or OBS Recorder ready to start recording.
* In groups of [XX], showing you powering down your mobile phone and putting it aside (except for those who are using their phones to join Zoom).
* In groups of [XX], turning your webcam around to show there are no unauthorised persons, devices or belongings near you.
* Positioning your webcam so I can see the upper half of your body clearly throughout the exam.
* Disruption protocol:
	+ for minor disruptions, which includes a need to use the washroom, short disruptions to internet connection and temporary software or hardware problems, you should just try to rectify the issue immediately and resume the *status quo ante*, and logging the reason for disruption in the chat on Zoom for record purposes.
	+ for major disruptions, which includes significant internet, software or hardware issues that could not be immediately remedied, I will provide you with an alternative means to contact me for further instructions in such an event.
* How to download the exam question paper.

At [time], I will instruct you to:

* Ensure your microphones are muted.
* Start your Apowersoft or OBS recording.
* Download the question paper from [LumiNUS/Zoom].

From [start time to end time of exam]:

* Type your answer in a .doc or .docx Word document.
* Save your Word document periodically.
* Check your Zoom chat periodically in case the invigilator has communicated with you.
* As it is an open book exam, you may access whatever documents/notes in your hard drive, or website, as is necessary for you to answer the exam.
* If you need to leave your position for instance to use the washroom, you will be required to log that down in the Zoom chat function (as if it were an on-campus proctored exam).
* You may also use the Zoom chat function to communicate to me any questions you may have (eg. you have problems downloading the question paper).

**After the Exam**

At [time of end of exam], I will instruct you to:

* Cease all typing of answers.
* Make a final save of your Word document.
* Upload your answer by [method of uploading students’ scripts].
* Stop your Apowersoft or OBS recording and save the recording.

I will then ask [XX] of you, by random selection, to upload your recording to [method of uploading screen recordings]. The rest of you should keep the recording with you for seven (7) days, in case I need to call for it during the week.

Once you have successfully uploaded your answer document and the selected students have uploaded their screen recordings, that is the end of the exam.

**Warnings:**

* If you do not appear on Zoom during the exam, and/or fail to duly upload your screen recording after the exam when selected, you will be deemed to have sat for and failed the exam.
* Anyone suspected to have cheated or collaborated during the exam will be referred for investigations, and if found guilty, to the relevant disciplinary body.
* Do not attempt to get around the Apowersoft or OBS recording, for instance, by having another browser window open for web-based communication but adjusting Apowersoft or OBS to not capture that part of the screen, or editing the video recording or otherwise. The recordings will also be checked to ensure the file size corresponds to a non-manipulated and non-edited recording.

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**Appendix A – Guide on how to use Apowersoft Free Online Screen Recorder to record your screen**

**Step 1:** Go to <https://www.apowersoft.com/free-online-screen-recorder> and click on “Start Recording” [do not click on “Download App” as that will lead you to download the paid version of the screen recorder]. Follow the on-screen instructions to download the web app.

**Step 2:** Launch the app. When the app is launched, you should see the app toolbar.



**Step 3:** Click on “Full Screen” to make sure the app will record your entire screen. The red-dotted border shows where the app will record. It should border your entire screen. [If you wish to use dual monitors for the exam, you must manually extend the red-dotted border so that the entirety of both your screens are fully captured in the recording].

**Step 4:** Click on “System&Mic” and check the option “System sound and microphone”.

**Step 5:** Click on “More” then “Settings” to access the settings menus. Click on “Recording” at the top of the settings menu. Ensure the recorded Video Format is “MP4”, and the Mode is set to “Performance Priority”. You can leave the other settings as default.

**Step 6:** Still in the settings menu, click on “General” at the top of the settings menu. Note down the keyboard shortcuts to Start and Stop recording (the default should be Ctrl+Alt+F1 and Ctrl+Alt+F2 respectively).

**Step 7:** Do a trial recording. To start the recording, click on the big red “REC” button. To stop recording, click on “STOP” on the toolbar. Do not panic if after you start recording the app toolbar disappears and you cannot find it. To stop the recording, simply press Ctrl+Alt+F2 to stop the recording (or whatever your shortcut is to stop recording). A new window will pop up allowing you to view the recording. Click on the “Save Video” button at the bottom right of the screen, and click on “Save as Video File”. Thereafter, click on “Open Folder” to see where your video recording has been saved. That is the file that you need to upload for me to access (see instructions below). You should know where to locate this file in your system, so that you can find it easily after you stop the recording.

**Appendix B – Guide on how to use OBS Screen Recorder to record your screen**

**Step 1:** Download OBS Screen Recorder from <https://obsproject.com/>.

**Step 2:** Follow the steps for Method 1 as explained at <https://www.wikihow.com/Use-OBS-to-Record-on-PC-or-Mac>.

**Step 3:** Do the following to lower your recording file size to a more reasonable one:

1. lower the Bitrate by going to “Settings” -> “Output” -> “Recording” -> Scroll down to “Bitrate” and lower it to 1000Kbps (the default is 2500Kbps),
2. lower the Common FPS values by going to “Settings” -> “Video” -> “Common FPS Values” and set it as 10, and
3. adjust the Downscale Filter by going to “Settings” -> “Video” -> “Downscale Filter” and set it to Bilinear.

**Step 4:** Ensure the recording is saved in MP4 format by going to “Settings” -> “Output” -> “Recording” -> “Recording Format” and select MP4 from the drop-down list.

**Step 5:** Do a trial recording. You should know where to locate the recording in your system, so that you can find it easily after you stop the recording.

If you are using dual monitors for the exams, you will need to follow some extra steps to ensure OBS Recorder fully records both your screens. These steps are detailed at: <https://www.youtube.com/watch?v=KhX7lj6CDvo>.