

## Scanning Written Work to Uploadable PDF Files

Physics is a discipline where much of the problem solving involves drawing quick sketches, manipulating mathematical equations, articulating what different variables mean, adding in units to equations, circling important final and intermediate results, etc. Although all of these things are possible to do in a word processing environments (for example, this document is written with a fancy tool called L<sup>A</sup>T<sub>E</sub>X), typesetting in these environments has a rather steep learning curve and/or can be time consuming. (The thought of writing answer keys for a physics course in Microsoft Word or Google Docs makes me shudder).

For me to grade your work instead of just the final answer, this means we need to come up with some methods to take work you have completed and put them in a legible electronic format for me to grade. If you already know how to take multiple pages of handwritten work and convert it into a single pdf document suitable for uploading into Oaks, then you don't need to read through this – just use your technique to turn your handwritten solutions into (legible!) pdfs and upload them to the appropriate folders within Oaks prior to homework due dates. This document is for people who don't know how to do that yet.

Note – it is important that you upload merged pdfs and not just your raw pictures of the work! Pictures are way too big in size, and you'll be turning in a lot of work over the semester. I know turning these into pdfs is a bit of extra work for you (and I have the extra work on my end, too) – but it is the only way we can keep the files legible but small enough for Oaks to handle them. I HAVE BEEN TOLD NOT TO ACCEPT FORMATS OTHER THAN PDF.

I'm not an IT professional, and I don't have an iphone – so some of the information I'm passing on I have been unable to test myself. Hopefully, however, you'll find a solution that works for you. I've broken the rest of this document down into sections depending on what technology hardware you have available.

Since visual quality of scanned pdfs is often questionable, let me leave a few pieces of advice here before I get into specifics:

1. I recommend only writing on one side of each piece of paper. Bleed-through can sometimes be an issue. Another thing to consider is if you are using a flatbed scanner, not all multifunction printers/scanners can duplex correctly.

2. You probably want to stick with blue or black pen, with as bold/dark a line color as possible. I recommend doing Physics homework in pen anyway – if you make a mistake just cross it out. There are really good reasons that Physicists always keep lab notebooks in pen. Here, we have the extra motivation that pens tend to make darker marks than pencils, and that is picked up easier by scanning applications.
3. If you are taking a photograph of your work and turning it into a pdf, try to find a dark table to set your work on to get a good contrast to your paper.
4. Some utilities can only make 1 page pdfs; if that is the case, you may want to look into some software to merge multiple pdfs into one document. Several pieces of software can do this for you; personally, I tend to use web utilities for this. A site that I have used in the past is <https://www.pdf2go.com/merge-pdf>; I think you might need to sign up for an account if you want to merge more than 10 documents, but you can get around that by merging your first bunch of documents together, then using the merged file as your first file in another merge. If you have a full licensed pdf editor like acrobat or sumatra pdf, you can also use that software to merge PDFs.
5. For your own sanity, you probably want to get in the habit of naming your files with a name easy to find later. If you just leave them with default names like scan000 or doc1 or whatever, it will be a mess to keep track of your files by the time the end of the semester comes.

Let's get into how to make your pdfs out of your handwritten work.

## 1 If you have a flatbed scanner available.

If you are fortunate enough to have a flatbed scanner (which is often a part of multifunction printers), then you just have to make sure whatever computer you are set up to print with has suitable scanning software installed. Almost all scanning software I am aware of has a scan to pdf option. You DON'T want to use OCR (optical character recognition) since you'll be using a lot of figures, greek symbols, and other things that OCR software typically doesn't handle well – if it is a choice, you probably want to scan to pdf with "image" or "file" settings (just make sure you don't end up with a jpg!). Once you have the pdf files in your computer, you can merge them (if necessary; some scanners have an auto-merge feature

– especially if they have a document feeder). After you have a merged pdf, just upload into the appropriate assignment folder in Oaks.

## **2 If you don't have a flatbed scanner, but you have an android smartphone.**

### **2.1 Option A for Android: camscanner**

An app that you can download from the Play Store called “camscanner” seems to be a popular choice among my friends. I downloaded it and ran the program. There were a lot of nuisance menus and options for password protecting and funky linking that were not necessary or useful, as well as a bunch of attempts to get you to pay money. You all grew up in the internet age, so I assume you can navigate through that process without accidentally signing away your life. Eventually, once you get to the base menu, you will hopefully see a little icon saying something like “bonus for students”. If you register through that link with a .edu email address (like your CofC email account), you can get a free license for one year. (According to what they mention in their materials, you can even update that free license each year with another verification of your email account).

Early indications are that this program works pretty well, and offers enough options in terms of filters that you should be able to get a pretty legible image. Merging seemed simple enough (just scan multiple images before saving). I then used the “email” to my gmail account to get a merged pdf, and it seemed to work pretty well.

### **2.2 Option B for Android: Genius Scan**

There is a different app that you can download from the Play Store called “Genius Scan”.

Page 2 of [this guide](#) then gives you step-by-step instructions for how to use this tool to make pdfs. Note that we are NOT using gradescope (you will be uploading your pdfs to Oaks), so ignore page 3 of the guide.

When I tried following these instructions with my phone, some of the menu options appear to have changed and I had to muddle around with it a little bit before I was able to successfully make a pdf. You might have better luck than I did.

## **2.3 Option C for Android: Google Photos**

If you don't want to install any extra apps, you can still do it with things pre-installed on your smart phone via Google Photos.

1. Take pictures of each page of your homework.
2. Open Google Photos.
3. Select an image of a page of your homework.
4. Click the vertical three-dots on the upper right, and navigate over to "print".
5. Choose "Save as PDF" on the drop-down menu.
6. Click the yellow button, and find a convenient, easy-to locate place to put your pdf. For me, this has to be internal storage of my phone (which makes it kind of hard to find after the fact).
7. Repeat for each image.
8. Either use the merge options described on page 1 after emailing it to yourself or try to navigate that from your phone. I'm old, so I prefer to do that from a laptop or desktop, but maybe you'll have more luck doing that from our phone than I did.
9. Upload the merged pdf to Oaks.

## **2.4 Option D for Android: Try a different software**

I have limited time and resources to try these out for myself, but here are a list of other software programs I've run into that may be able to do this task for you that I have been told work in Android: Adobe Scan, Note Bloc, Office Lens, Scanbot, Scanner Pro, and Text Fairy. Feel free to experiment until you find something that works for you.

### **3 If you don't have a flatbed scanner, but you have an iphone.**

Neither I nor my wife have any iphones in our home, so I can't give any of these a trial run for you – but my colleagues have told me about the following possible solutions.

#### **3.1 Option A for iphone: Use built-in Photos application**

Step-by-step instructions [here](#).

#### **3.2 Option B for iphone: Use Scannable**

This program is highly recommended by one of the other 101 instructors who has an iphone. Instructions can be found by looking at page 1 of [this](#) document. (Ignore pages 2-3 which correspond to information for Android users and people using Gradescope, respectively – neither of which apply to you if you're reading this subsection).

#### **3.3 Option C for iphone: Use another 3rd part app**

There are additional third party apps you can use on your iphone, too, if the above two options don't work out well for you. These include Adobe Scan, FineScanner, Note Bloc, Office Lens, Scanbot, Scanner Pro, and Text Fairy. There are many more out there – but these are a few I've seen referred to by others.

## **4 If you don't have a flatbed scanner or smartphone, but do have a tablet or Chromebook**

I suspect that the vast majority of students won't need to go further, but if you don't have any of the above technologies then a tablet *can* work, albeit a bit awkwardly.

If it is an iOS tablet, you can probably use the instructions for iphone option A or Notability.

If it is a tablet running Android or you have a Chromebook, you can probably use Android option C, or the programs Squid, or Xodo.

If you have a windows tablet, Drawboard PDF is popular.

Finally, it appears OneNote is a solution that works on most platforms.

## **5 Nothing works!?!**

We will need you to turn in hand-written work on a regular basis for this class, so if none of the above options work for you, then contact me via email (LarsenML@cofc.edu) as soon as possible and we'll work together to come up with a solution that works with whatever technologies you have.

I understand this is a bit of extra work, but it will make working through this class in the virtual environment possible.