

# *ECE Software Requirements*

You are expected to have access to a Windows-based computer, preferably a laptop. You will be doing many calculations and simulation exercises that require software, much of which is available only for the Windows operating system. In particular:

- Microsoft Office (at least Word and Excel).

As an ISU student you qualify for a free installation of Office 365 Education (Word, Excel, PowerPoint, OneNote and Microsoft Teams). To get your own copy, go to the Office 365 Education website ([Click HERE](#)), enter your ISU email address, and follow the instructions.

You should already be somewhat familiar with Word and Excel. At a bare minimum, you should know how to create tables, paste photos and other items (e.g., graphs) into a Word document, and how to use the Equation Editor.

- LTspice – a freeware SPICE-based simulation program developed by Linear Technology (now a part of Analog Devices).

Download the LTspice installation file (LTspiceXVII.exe) from the Analog Devices website ([Click HERE](#)) and run the file to install it.

- LM741.MOD – a free SPICE model description of the LM741 operational amplifier produced by National Semiconductor (now a part of ON Semiconductor).

LM741.MOD is a text file. Download snom211.zip from the Texas Instruments website ([Click HERE](#)), unzip its content (the LM741.MOD file) and save it in your C:\Users\username\Documents\LTspice XVII\lib\sub\ folder.

- MATLAB (with at least the Symbolic Math and Control Systems Toolboxes).

Although MATLAB is commercial software, as an ISU student you can download and install it free. (ISU has a campus-wide license for MATLAB and many of its associated applications.) Go to the MathWorks website ([Click HERE](#)), create a MathWorks account, download the installation file, and while still connected to the internet run the installation file to select the features you want, download your product files, install them, and activate.

- scam.m (Symbolic Circuit Analysis with MATLAB) – an open-source MATLAB script for deriving and solving linear analog circuit equations symbolically, developed and supported by Erik Cheever at Swarthmore College.

scam.m is a text file. Download scam.m from GitHub ([Click HERE](#)) and save it. We'll discuss how to install it in class when we get ready to use it..

- Adobe Acrobat Reader DC – free software for viewing, printing, and commenting on PDF documents.

Download the installation file from the Adobe website ([Click HERE](#)), then run the file to install it.

- 7-Zip – a free open-source utility program to extract and create compressed files in several different formats.

Download the installer from the 7-Zip.org website ([Click HERE](#)). Then run it to install the software.

***This requirement applies to five of the six required lab courses in the BSEE program: EE 2240L, EE 2274L, EE 3340L, EE 4427L, and EE 4429L.***

***It is strongly recommended that you install this software early in the semester, before you become too busy with other work. This will help to prevent potential frustration associated with any unexpected installation problems while you're trying to complete laboratory/classroom assignments under deadline pressure later.***

## **Additional Useful Software**

- CamScanner – a cell-phone app for scanning and creation of PDF files, including OCR. During the coronavirus pandemic, the Premium version is free for educators and students.

You can download and install CamScanner from your cell phone's app store ([Click HERE](#)).