***I am not an engineer*. I have no formal engineering or CAD training. I am an idiot with access to the internet, CAD, and a 3D printer.**

So when I wanted to start designing my own PC cases for 3d printing I couldn't find a single collected repository of the information so I started collecting my own, and I ended up printing it off for flipping through while I'm working in Fusion and quick reference. There are a lot of mixed measurements here (standard/metric) and there's not a lot of good advice I have for that other than to get used to it.

Some important beginning notes:

- There are 25.4 millimeters in 1 inch.
    - Quick mm to in. conversion can be done with: (mm dimension)/25.4=in.
    - and in. to mm is the reverse of that: (in. dimension)*25.4=mm
- The pdf document "*How to Design Enclosures for Motherboards" is where I actually got started with all of this. It was the most collected and cohesive information I found to even start designing things, it is an excellent resource and *my thanks to Protocase for making it*.
- I have little faith threading into plastic, especially PLA. PLA is subject to creep and will lose tension on any fasteners threaded into it. Threading into PLA is absolutely fine for prototyping and fitment but I do not depend on it for a timeline measured in months or more.
- ATX motherboards are sized to accept #6-32 screws for mounting, and as M3 screws are smaller in diameter, this means that they can be used as well.
    - The "Drill Fastener Sizes" sheet in this folder will have all the major hole dimensions you'll need if you're not using the CAD program to make them
    - It will not have the dimensions of anything else you would be using (i.e. threaded inserts) and you will need to source and record those on your own. I buy threaded inserts in the 100 from McMaster-Carr because it's a lot, and the measurements are readily available for it.
    - #6-32 is pretty much the standard for everything PC related, PSUs are tapped for it, PCI slot screws are sized for it.
- The standard case-to-bottom-of-motherboard height I've found is ⅜" (.375" or 9.525mm), and the included materials reference that height as well. This is not a requirement and I've started using 6mm in my designs for simplicity, but anything based of that .375" number must be adjusted to your new height
- PCIe slot pitch is 20.32mm (I've found this is really only important for the locking screws on the tang)
- Anything you make in CAD is subject dimensional tolerance of your printer, I suggest doing some testing and/or calibration before you're disappointed (as I was)
    - I use .1mm clearance between parts but that's just what I've found to work best
    - Corner bulging will be especially important here, making sure your Pressure Advance / Linear Advance is tuned is important if you're working with fitment.

- I use 6mm as a rough thickness standard for anything that will be supporting a component, that's fairly thick, but I know I don't have to worry about it. I use less for external faces (4mm usually).
- I design entirely for ITX (at the moment) as most of what I design is >300mm long on it's longest dimension (so fairly workable with my 350 V2.4). For ATX sized PCs, if you don't want to be actively joining absolutely every single thing, you're going to need a very big printer or design to use things like 2020 extrusions and acrylic cutting for panels.
- For an ITX case I average about 700-750g of filament for a completed case
- It is best practice to have spare components for test fitting (I use an old XFX RX480 and MSI B550 board), buying broken things on Ebay or facebook is a very good way to make sure that your ideas actually work in the real world without risking your working and valuable components to find out
- If you are using Prusa Slicer (or a derivative, I use Orca) you can cut your exported models up without having to do any extra work in CAD to verify fitment, I've found this very handy for things like GPU and PSU Mounting, power buttons, etc.

There is honestly a lot more to this than what's presented here, but getting something out into the world is better than sitting and thinking about it like I have been doing for months now.