Hemphill's Rules
for Design, Engineering, CADD, &/or Life

Fall 2024 Edition; Originally Transcribed in ENTC 2170 CADD by Mr. Matthew Hagy

1. Never make a bad situation worse.
2. In the absence of data to the contrary, if geometry appears to be symmetrical then you may assume symmetry.
3. It's always less expensive to fix mistakes on paper (or CADD) than in wood, metal, or concrete.
   If it looks or seems "wrong," it probably is; fix it. Don't argue… fix it.
4. When answering a question, any question, if you are confused, follow the money.
5. The best engineers work very hard at being lazy. Two words: "cruise control."
6. More thinking at the front end means less working—and thinking—at the back end.
7. You can make things as hard &/or as difficult as you choose; easier is easier.
   Alt: "If a man hands you a crutch, you don't have to break your leg."
   (a Useless Proverb from M.A. Madden's 1971 classic, *Thank you for the Giant Sea Tortoise*)
8. Adrian Legg's Rule #8: "In the event you don't get screwed in sections 1-7, you will be screwed."
9. Stupidity is terminal; ignorance can be cured. Fight the stupid.
   Admitting ignorance is typically OK... but never twice on the same subject.
10. There are many paths up the mountain; quite a few are dead ends, others... oblivion.
11. Save and save often. If it's good enough for Jesus, it is good enough for your computer data.
12. Geometric changes with sharp interior angles are bad; stresses there are nominally three (3) times expected. Sharp interior junctions: where parts go to die.
13. It is best to remember the "Right Hand Rule" ***before*** you start manipulating threaded fasteners as it can prevent breakage, busted knuckles, ***and*** swearing.
14. When in a nuclear power facility—or around any unknown or complex technology—keep your hands in your pockets. NO INAPPROPRIATE TOUCHING!
15. In a material specification, the three most important—and kindest—words you can add to prevent data obsolescence ***and*** save money are "or approved equivalent."
16. Design from edges.
17. Self-organizing, named layers are your friends… especially six or so months from now.
18. Use layers to set properties; it will save you headaches, time, and sanity when changes become necessary. Change an object's proprieties only when it's not appropriate to create a new layer.
19. Doing something is hard the first time. But after 20 or 30 times, it becomes pretty easy.
20. Once you're good at identifying, articulating, and solving problems, you will quickly become a victim of your own competence. (This is not necessarily a bad thing.)
21. To truly understand and master a technology, play with it. Seriously, play with it. Have fun with it and do something to make you and others laugh. What's better than fun? Stupid fun.
22. If you don't know what you're doing, "RTFM" (Read the Manual).
23. Never get your physics from Hollywood. Go ahead, willingly suspend your disbelief while enjoying a good yarn and don't sweat the details. It's a plot-driven story, not a textbook.
24. Free advice is freely ignored.
25. Just because you can, doesn't mean you should. [Case in point: Sriracha-flavored Peeps®.]
26. If it is worth engineering, it's worth over-engineering… to a point. (i.e., stop before "sub-optimal").
27. Better is the enemy of good enough. (See Rule 26)
28. Top two (2) Prime Directives of CNC programming: 1. The cutter never stops. 2. Leave no islands.
29. "The Five Ps:" Prior preparation prevents piss-poor performance.
30. Always anticipate change & provide suitable accommodations. Everything evolves... or dies.
31. Pick and choose your fights… as well as your allies.
32. The purpose of shared governance is avoiding the effects of the Law of Unforeseen Consequences.
33. When you see something's wrong, begin fixing it.