

## A7 Mental Health For the Engineering Student

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Sadi Carnot died of cholera aged 36. The lives of Boltzmann, Lavoisier, Julius von Mayer, and Rudolf Diesel were likewise marked by tragedy. In my lectures, I like to joke (darkly) about this and tell my students that thermodynamics is a dangerous discipline. But this does not mean it has to be dangerous for *you*, dear reader. So please forgive me for breaking with this book's tone just for the length of this appendix.

Engineering programs in universities are designed to bring out academic performance and rarely give much consideration to mental health. By studying thermodynamics, you embark on a path that is very hard and very straight. Every variable gets one value, and every outcome is inevitable. Yet you navigate this as a human pursuing happiness, not just the temperature at the compressor outlet.

- Take many breaks, and treat your body well. Engineering disciplines are best studied as a habit, not a marathon race, even when you have run out of time.
- You are welcome here. In case no one has done this yet, I welcome you into this field, exactly as you are.
- Don't learn all by yourself. You can be intentional about meeting new people and spending time with them. Unlike the physical relationships we describe with equations, relationships between humans take an infinite variety of forms. Try studying with different people. Talk to them; build a cohort.
- Cultivate yourself. Confront yourself with differing opinions, spend time with people who are studying other things. Get interested in someone else's religion, go to a concert, get involved in an organization, visit an elderly, read a book.
- Clearing thermodynamics is a requisite for most engineering degrees, but not for attaining happiness. You are allowed to fail. Even after you have made it this far. Remember that billions of people on this planet have no idea what an isentropic expansion is, and they are doing just fine. If everything feels too tight, step away for a moment. Go outside, take long breaths and relax.

In short, contrary to engineering thermodynamics, human life is not a single-path problem. If you feel stuck, look for possibilities you can't immediately see. Paying attention to what makes you happy or unhappy and adjusting accordingly is a good practice to develop. Good mental health will also help you learn thermodynamics faster, and apply it more wisely, to better purposes. That's a nice side effect! I wish you well.

With kind regards,

Olivier Cleynen,  
the author.