

# Reflective Teaching

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## Physics for Deans: 11 Inviolable laws that just make it harder

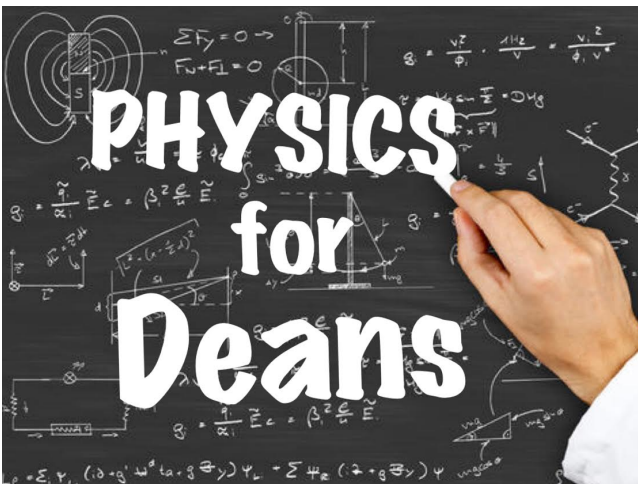
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An academic dean friend of mine once asked in frustration, "Why is this work so hard?!" I'm not sure I know the answer to that question. Some jobs are just more challenging due to the complexity of the work and the span of responsibility. But, here are eleven inviolable scientific laws that (playfully and unscientifically) may help explain why the job of the academic dean is so hard (or, why it's almost impossible to get things done).



### 1. Heisenberg's Uncertainty Principle

This principle states that two complementary parameters (such as position and momentum,

energy and time) cannot both be known to infinite accuracy; the more you know about one, the less you know about the other. The same tends to be true in an organization. You'll never know everything that goes on in the institution. The more you focus on one thing (e.g, assessment, personnel issues, re-writing the academic manuals), the less you'll be able to give attention to other things. **Corollary:** Intuition is necessary for academic leadership. Sometimes, you just have to feel your way through a situation because you'll never know everything you need. **Rule:** Sometimes, when you need to make a decision, the data will not help, just go with your gut.

## 2. The Complementarity Principle

The principle that a given system cannot exhibit both wave-like behavior and particle-like behavior at the same time. That is, certain experiments will reveal the wave-like nature of a system, and certain experiments will reveal the particle-like nature of a system, but no experiment will reveal both simultaneously. **Corollary:** How people view you as dean will be complimentary to their place in the system, and based on their perspective of reality. You'll be viewed by some as a good dean and by others as a poor one, but not both simultaneously. **Rule:** While people's perspective may define their reality, and their relationship with you as dean, at the end of the day, it's your own perspective that counts. Set your own standards.

## 3. Archimedes' Principle:

A body that is submerged in a fluid is buoyed up by a force equal in magnitude to the weight of the fluid that is displaced, and directed upward along a line through the center of gravity of the displaced fluid. **Corollary:** When you submerge yourself in (the fluid of) your context you will displace things toward the center of gravity you set for your organization. **Rule:** Strive to displace the bad stuff in your system and let the good stuff float to the top. The *gravitas* of the dean's office can provide a deep center of gravity.

## 4. Brownian Motion

Brownian motion is the continuous random motion of solid microscopic particles when suspended in a fluid medium due to the consequence of ongoing bombardment by atoms and molecules. **Corollary:** Organizations need someone in the system to provide direction. Work to align the particles in your system to move toward the same direction with intention and purpose. Random activities will get you nowhere. **Rule:** Learn the art of politics: the ability to get people to join together for the common good.

## 5. Coriolis Pseudoforce

Coriolis Pseudoforce is a pseudoforce which arises because of motion relative to a frame of reference which is itself rotating relative to a second, inertial frame. The magnitude of the Coriolis "force" is dependent on the speed of the object relative to the noninertial frame, and the direction of the "force" is orthogonal to the object's velocity. **Corollary:** A school does not exist in a vacuum. It is subject to the forces and influences in the "fields" of higher education, the matrix of competing schools and programs, economic forces, etc. How fast you can make progress in your school is often determined by larger issues outside your control. Additionally, the speed of progress you can achieve in one area is often dependent on the relative speed of change in another area in the institution. **Rule:** Be judicious about what things you need to speed up and what things can wait.

## 6. Dalton's Law of partial pressures

The total pressure of a mixture of ideal gases is equal to the sum of the partial pressures of its components; that is, the sum of the pressures that each component would exert if it were present alone and occupied the same volume as the mixture. **Corollary:** Deans need to introduce a certain amount of pressure and anxiety into the system to bring about change and progress. However, systems can only tolerate a certain amount of pressure. Too little and there is not sufficient motivating force for change; too much and the system gives in to despair and frustration. Deans are often the safety valve in the system who regulate for optimum pressure. **Rule:** Discomfort is a motivator for change; satisfaction is not. Maintain the appropriate level of discomfort in your system.

## 7. Equivalence Principle

Equivalence Principle is the basic postulate of Einstein's general theory of relativity, which posits that an acceleration is fundamentally indistinguishable from a gravitational field. **Corollary:** Often, it seems we are not making progress at any give moment. Sometimes it seems the amount of progress deans are able to make is in direct inverse proportion to the amount of effort they exert. It takes persistence of vision to get to the point where momentum breaks into escape velocity. Getting past institutional inertia means working through the drag of homeostasis and resistance in the system. **Rule:** It's always too soon to quit; in organizations, progress happens slow and steady.

## 8. Hooke's Law

The stress applied to any solid is proportional to the strain it produces within the elastic limit for that solid. The constant of that proportionality is the Young modulus of elasticity for that substance. **Corollary:** similar to Dalton's Law, strain, crises, and challenge helps cultivate

adaptation in the system. Effective deans never waste a crisis. They allow pain to be a motivator for change. How much stress can you put on your system when trying to bring about change? What is the capacity for adaptation in your system? **Rule:** Institutions can bear more stress than we assume. Remember that threat yields adaptation, while resilience is a product of catastrophe. It's easier to work on adaptive change than to deal with the experience of resilience.

### 9. Newton's Law of universal gravitation

Two bodies attract each other with equal and opposite forces; the magnitude of this force is proportional to the product of the two masses and is also proportional to the inverse square of the distance between the centers of mass of the two bodies. **Corollary:** Health attracts health and dysfunction attracts dysfunction. This may answer the question of why anyone would want the job of dean, and, why the school picked YOU. Healthy and adaptive systems are able to attract leaders who will challenge the organization toward development, growth, and into the changes necessary. Immature and anxious systems seek leaders who will ease their anxiety and solve their problems for them. In other words, dysfunctional systems want a superhero or a wizard, not a leader. What is your system asking of you? **Rule:** Challenge promotes growth; coddling promotes dependence.

### 10. van der Waals force

van der Waals force refers to & is responsible for the non-ideal behavior of gases, and for the lattice energy of molecular crystals. There are three causes: dipole-dipole interaction; dipole-induced dipole moments; and dispersion forces arising because of small instantaneous dipoles in atoms.\* **Corollary:** Deans need to be the "positive deviant" in the system, the one who can bring positivity to the system in the form of respectful relationships, transparent communication, and trust in the midst of disagreement. Leadership is not about power, despite the common application of that concept to leadership. Strictly speaking, power is energy divided by time. Those who make leadership an issue of power merely invite conflict and resistance. Leadership, however, is about influence, and that is mediated by the nature of the relationships you are able to cultivate with those in your system. **Rule:** Deans lead through influence.

### 11. Murphy's Law

If anything can go wrong, it will. **Corollary:** None needed. **Rule:** "Stuff" happens.

\*Dipole: a molecule in which a concentration of positive electric charge is separated from a

concentration of negative charge (in chemistry).

<https://www.wabashcenter.wabash.edu/2015/05/physics-for-deans-11-inviolable-laws-that-just-make-it-harder/>