



CHAPTER 7

Succeeding in the Classroom



Everyone is Unique

- This lecture gives you a variety of possible techniques to prepare
- What works for one student might not be most effective for another student
- Figure out what works for you.
- Abandon old habits that don't work and adopt new habits that do.
- Reinforce old habits that do work.

The Right Attitude Breeds Success



- Success in an engineering curriculum depends on a student's attitude and work ethic
- If the student's attitude is one of failure, the student will most likely fail
- Every challenge is an opportunity to demonstrate your worth and abilities.



Positive Attitude

- Brain doesn't understand "NOT". Saying "I will not fail" instructs the brain "I will fail."
- Saying "I will fail" (in any of its variations) almost guarantees that you will accomplish that goal.
- "Positive attitude" refers to articulating accomplishment goals. E.g. "I will complete this homework today" versus "I will NOT procrastinate."



Goals

- For a long term project, pick a “way out goal” or something that will not be accomplished for a very long time (if ever)
- Back up from the “way out goal” to determine accomplishments that lead to the goal
- The nearer term steps represent your true short term and long term goals.
- In engineering, a “way out goal” might be “Get a man to Saturn”. Near term goals that lead to that goal might be “Get a man to Mars”.



Stretch Goals

- The body and mind tend to build needed resources when stretched but atrophy when relaxed.
- Set “stretch” goals that will be difficult to attain, but not impossible. This will help you grow.
- One objective of an engineering curriculum is to build the ability to work (at least 40 hours per week).
- This cannot be done if the student works 20 hours per week and goofs off for the rest of the time.
- Impossible goals are defeating. If you have a long term goal that appears impossible, break that goal down into smaller, achievable goals.



Keys to effectiveness

- GO TO CLASS
- **Allow 2 hrs. of study time outside of class for every hour in class**
- Skim the reading assignment before the class and re-read in more detail after class (usually in combination with doing the homework).
- Depending on past preparation and abilities, the time commitment might vary.
- Might need to do more than 2 hrs/wk if you are behind. Less than 2 hrs/wk might get you through, but with a lower grade



Job One

- A 15 credit load should translate into about 45-50 hours per week (which is a normal work week for those of us who are gainfully employed).
- With some planning and maximizing the use of time, you can easily “get your work in” from M-F.
- Keep up with class and reading
- Take notes- this reinforces what you’re hearing
- Work lots of problems, not just the minimum amount for homework



Study in groups

- Engineering students tend to be “lone wolves.” But, engineers work in teams
- Group studying can help in developing team skills.
- Don’t just meet. Plan and prepare.
- Divide the assignments. Each person should do a different problem and explain to the group.



7.5 Exam Preparation

- If you keep up with class, studying for exams is not hard. Learn a little each day and let it compost in the fermentation bin of your unconscious.
- Cramming for exams is a poor practice in engineering. You will need to learn the skills for successive classes. Not memorize, test, and forget.
- Obtain past exams
- At least read all the problems in your book. Work the extra problems that illuminate points that might mystify you.
- Practice helps with nerves and confidence.



Test Taking

- Skim test first to get a sense of the scope of the test
- Start with problems you know how to do, then work on the harder problems
- Partial credit is your friend! Put something on every problem. Professor cannot give credit for blank space.
- Purpose of test is to evaluate what you have learned.
- If possible, put one problem on each page. If you make the grader work, he might miss some of your answers.
- If you are running out of time, at least indicate how you would proceed if you had enough time.
- If you get stuck on a problem, move on!

Make the Most of Your Professors



- Every one of your professors (including graduate students) has already succeeded (usually towards the top of the class) at what you're trying to do.
- Professors can be a source of extra knowledge, employment and funding (although this is drying up), job contacts, and recommendations.
- Most professors are "real people." Treat them with respect, and they will likely treat you with respect. (The converse is also true.)
- If you can locate a mentor, you will get far more out of your undergraduate experience than just following the curriculum.



Quid Pro Quo

- Your tuition buys you a place in class and access to specific office hours.
- Professors are only allocated to you for that chunk of time.
- If you want more, prepare to work for it (i.e., you might have to trade your time and some work in exchange for access)
- Independent studies are a good way to get extra access and get a little elective credit.



Learning Styles

- Each person's brain is unique to him or her
- Each person is born with all the brain cells, or neurons, they will ever have (estimated at 180 billion neurons)
- Proper nutrition and rest promote good thinking.
- Stress, drugs and alcohol, poor nutrition, and illness harm and inhibit a developing brain.



Learning Styles

- None of us is ever too old or too dumb to learn something new!
- People think and memorize in several different ways
- Folks are classified as Auditory, Visual, and Kinesthetic learners.
- Figure out what you are and you might be able to tailor your learning strategy.



Learning Styles

- **Memorizing:**
 - Refers to how people assimilate new material to existing knowledge and experience
 - How we accommodate, or change our previous way of organizing material
- **Thinking:**
 - Refers to how we see the world, approach problems and use the different parts of our brain.



Auditory Learner

- Record lectures if you can (ask the professor if this is OK first)
- Sit where you can hear the professor well
- Focus on what is said in class, take notes from the tape recorder later
- Ask the professor questions
- Read out loud to yourself
- Keep visual distractions to a minimum



Visual Learner

- Sit where you can see the professor and board or screen clearly
- Write notes during lecture with lots of pictures and meaningful doodles
- Rewrite notes later in a more organized fashion and highlight main ideas
- Write out questions to ask the professor
- Highlight and take notes in your book



Kinesthetic Learner

- Difficult to learn in conventional classroom
- TAKE Labs!
- Connect what is being said and what you've done in the past
- Talk to professor about ways to gain more hands-on experience, such as volunteering in his/her lab
- Use models or experiments at home
- Walk around or exercise while you process your learning material
- In a test, it might be productive to walk around if you get stuck



Organization of the Brain

- Different people think differently
- Two hemispheres in our brain (right and left), and four quadrants (from Hermann). Wait another few years and there will be another model.
- Left Brain is for Engineers and Scientists:
 - Quadrant A: Factual, analytical, quantitative, technical, logical, rational, critical (Sounds like an Engineer!)
 - Quadrant B: Organized, sequential, controlled, planned, conservative, structured, detailed, disciplined, persistent



The Other Half of the Brain

- Right Brain is for Artists and Dreamers
 - Quadrant C: Sensory, kinesthetic, emotional, interpersonal, symbolic
 - Quadrant D: Visual, holistic, Innovative, metaphorical, creative, imaginative, conceptual, spatial, flexible, intuitive
- Need elements of all four quadrants to be a great designer or inventor



Well Rounded Equals Effective

- All aspects of your being must be functioning for you to be truly effective over a long term
- Five elements: Physical, Emotional, Social, Intellectual, Spiritual
- If your body is unhealthy, the physical aspects of your brain will not work as effectively. Take care of your health and nutrition.
- College's purpose is to expand your Intellectual dimension. Take advantage of all opportunities (seminars, clubs, etc.)

The Subtle Elements of Well-being



- Humans are social animals. You need “strokes” (see Eric Berne, Games People Play) to stay socially healthy.
- Emotional health can be sneaky. If you have no outlet to express your emotions, you can “seize up” or “run out of gas.”
- Spirituality refers to your connection to your core values. In college, this connection is easy to neglect.



Effective Use of Time

- Remember, everyone will “fail” at some point, it’s how you respond to a failure that determines your future success or failure
- “We learn wisdom from failure much more than from success. We often discover what will do, by finding out what will not do; and probably he who never made a mistake never made a discovery.” - Samuel Smiles
- Some Organizational Techniques
 - To do lists
 - Schedules and calendars
 - Assign tasks a priority level and a deadline
- When you are overwhelmed, just complete something!