Is EE Right for You?

• “Toto, I have a feeling we’re not in Kansas anymore.”
• Now that you are here, did you make the right choice?
• Electrical engineering is a challenging and satisfying profession. That does not mean it is easy. In fact, with the possible exceptions of medicine or law, it is the MOST difficult.
• There are some things you need to consider if you really, really want to be an engineer.
• We will consider a few today.
Is EE Right for You (2)?

• Why did you decide to be an electrical engineer?
  – Parents will pay for engineering education (it’s what they want).
  – You like math and science.
  – A relative is an engineer and you like him/her.
  – You want to challenge yourself, and engineering seems challenging.
  – You think you are creative and love technology.
  – You want to make a difference in society.
The High School “Science Student” Problem

• In high school, you were FAR above the average.
  – And you probably didn’t study too hard, right?
• You liked science and math, and they weren’t terribly hard.
• You figured out that the professions that make the “big bucks” are law, medicine, and engineering.
  – But those lawyers have to memorize a bunch of dry facts!
  – And who wants to see all that blood and cut up bodies?
  – Engineers get to make design and build cool stuff.
  – So here you are.
One Catch…

- **Science and engineering are NOT THE SAME.**
- **Generally, scientists try to discover new facts on the horizon of human knowledge.**
- **Engineers use scientific knowledge to produce cost-effective technological answers to societal problems.**
  - To an engineer, the cost is as important as the solution (sometimes MORE important!).
  - The engineer is not interested in doing something once, but in producing something that can be replicated inexpensively.
  - The engineer has a responsibility to help his company make a profit.
You Should Be an EE If:

• The thought of creating something entirely new is very exciting to you (think iPhone!).
• You work and play well with others (NO engineer EVER works alone!).
• Hard work and long hours are fine with you so long as the work is not repetitive or boring (and yes, even the best engineering tasks have boring parts – try negotiating price and delivery with a vendor!).
• You really, really loved trigonometry. And you can’t wait to study calculus!
You Should Be an EE If (2):

- You are patient and enjoy the challenge of different courses, even though you are not sure why they are in the curriculum.
  - Don’t think you need English? Wait until that first presentation to your boss or that first report to the VP of engineering!
  - Don’t understand why you need history? George Santayana: “Those who cannot remember the past are condemned to repeat it.”
  - Think chemistry is a waste for EE’s? Wait until you get that first job in a wafer fab at Texas Instruments!
You Should Be an EE If (3):

- The idea of building circuits in the UTD EE labs is so cool you just cannot wait to get there.
- The idea of contributing to society sounds exciting or fulfilling.
- You like the idea of having responsibility and taking a major role in an important project.
- You think you would like the idea of managing a development team and completing a significant engineering accomplishment.
Succeeding in the University

• **BUT – wanting to be an EE is not enough.**

• **You must learn to succeed in school when things are not going well, or when you encounter a problem:**
  - A test grade will be bad – or worse than you anticipated.
  - A lab project will tank.
  - Personal problems may arise (a bad romance, a family member’s illness or death).
  - You may have fewer friends (at least at first).
  - A specific topic or course may prove extremely difficult.
  - The change from “coddled” HS student to “independent” (and largely on-your-own) college student may seem overwhelming.
Good News: You Have the Ability!

• **No one here** will fail because she is not smart enough.
  – You are the “cream of the crop” – the best from high school. If not, you would certainly NOT be in engineering.

• **If you fail, it will be because you:**
  – Do not focus.
  – Are lazy.
  – Have bad (ineffective) study habits.
Survival Techniques

You heard some of this in ECS 1200, but let's review a few things that can make success at UTD a “sure thing.”
Time Management

- **Time management is key.** Understand the time investment required.
  - Example: For a 15-hour course load, you will need to study ~3 hours/week for every hour in class. So, 15 credit hours → 60 hours/week. And that does not count eating, sleeping, a job, and even leisure activities(!).

- **College is NOT high school.** High school study habits will NOT see you through UTD! If you do not study effectively, **you will fail**.
  - Make a schedule (Text, p. 13), **then follow it**.
  - Don’t put off scheduled course-related items: homework, test study, etc.
  - Let recreation be a REWARD for study items that are completed!
  - Limit distractions. Resist the seductive pull of a friend’s visit, a TV show, even going out to eat versus having a snack and continuing your study (**make it a nutritious snack**).
Don’t Dilute Your “Educational Opportunity”

• Unless you are one of the lucky few that have the “national bank of dad” (or mom) behind you, many of you are probably on a “college budget.” I.e., $$ are tight.

• Many students take jobs to supplement income while in school. I did it myself. However if you do take a job:
  – NEVER work more than 10 hours/week with a full load.
  – Or more than 20 hours/week with 9-12 hours.
  – And if working a full 40 hours/week, take no more than 6 hours (3 preferable).
  – IF WORKING X HOURS PER WEEK WILL AFFECT YOUR GRADES, DON’T DO IT!
Other Important Considerations

• Learn to be a social butterfly! You need to be able to make friends, work well with others, and “get along.”
  – At lot of your instructor’s “best studying” was with a group!

• As mentioned in ECS 1200, keep up your health!
  – Eat properly (avoid the “freshman 15”).
  – Avoid “empty calorie” snacks.
  – Get enough sleep especially before tests (example).
  – Avoid developing bad habits (staying out too late, drinking too much alcohol, eating too much starch, etc.).
  – The good news: There’s nothing wrong with an occasional indulgence (e.g., cheeseburger and fries) every once in a while. Just not twice a day!
How Do You Get There (Graduation)?

• **Learning = “rewiring neurons” = STUDY!**

• **Homework is NOT drudgery. Homework gives you the opportunity to practice and perfect new problem-skills.**
  – Never miss any homework problems.
  – Do all optional work. The extra items will help make you more proficient.
  – Properly done, homework not only hones skills, but also points to holes in your knowledge (a good reason to visit your instructor during office hours!).

• **Make study time count:**
  – Have a good place to study (good desk, good chair, plenty of light).
  – If your apartment/dorm, etc. is noisy, go somewhere else – library, friend’s place (that is quieter), etc. AVOID DISTRACTIONS!
Getting There (Continued)

• **Be prepared:**
  – You will see most instructors a few hours/week (1.5-4). We cannot possibly teach you all course content unless you are prepared.
  – When you need additional help, come to office hours.
• **Take good notes.** I do not require note-taking in EE 1202 (that is, notes are not taken up and graded). However, if you are NOT taking notes, you will have a SHORT college career!
• **Remember that studying your textbook is NOT like reading for entertainment.**
  – Print out lab exercises, read carefully, make notes in the margins. Preparation is VERY important.
  – As mentioned earlier, do ALL the homework!
  – And finally, SELLING TEXTBOOKS IS EVIL!!!!

EE 1202 Lecture #1 – Why Electrical Engineering?
Exploring Your Choice

• How do you find out if electrical engineering is right?
  – Internships and co-op positions give “real experience.”
  – A mentor – faculty or upper class person – can help.
  – Student chapters of professional societies – SWE, TSPE/NSPE, IEEE, NSBE, etc. can also gain you perspective (guest speakers).
  – Hopefully, EE 1202 will help as well.
Taking Tests (1): Prior to the Test

• Review thoroughly for tests.
• **Repetition is good.** One of the great **forgotten techniques** is “concentrated staring.” It does NOT hurt to go over material several times.
• Get enough sleep before the test! (Story to illustrate).
• Prepare well in advance. Make sure you have done ALL the homework’s. Review lectures and assure that you understand all the basic principles to be covered on the test.
• Do NOT memorize specific problems, but solution methods and fundamental principles.
• If allowed a “cheat sheet,” **prepare it by hand**, if possible. A great deal of knowledge can be gained by writing out a “cheat sheet” manually. **Completing this sheet can be half the studying process.**
Taking Tests (2): During the Test

• I have seen students start writing before they finish reading a problem! 
  Read a problem **thoroughly** FIRST, to be sure you understand it.
• Follow instructions carefully. Make sure you understand all problem 
  parameters and proceed as directed.
• **Meter your time.** Do NOT spend too much time on any one problem. 
  **Partial credit cannot be given if you did not attempt the problem.**
• If not sure how to complete a problem, **write down applicable formulas** 
  and/or **principles.** State how you think you should proceed. **Even if you** 
  do not complete the problem, you can earn some partial credit.
• Don’t panic! Students sometimes draw a blank reading a problem for the 
  first time. Take your time and read it again. **The steady, ordered** 
  **approach always works** (if, of course, that you are well prepared!).
• If all else fails, work on another problem then return to the problem that 
  has you “stumped.”
• If still not able to complete it, move on, after putting down as much as you 
  can for partial credit. Don’t spend time dithering unproductively!
Aids in Learning

• **Group study is fine if done right.**
  – Do homework together (but DON’T copy!).
  – Studying together for tests is fine. Learn to bounce questions off each other, compare answers, debug wrong solutions together.

• **Resources – UTD has many good resources:**
  – Mentors – Upperclassmen can be a big help. A good way to meet upper class students is in student organizations.
  – Tutors – Tutoring is also available (E.g., math recitation sections [usually part of math courses], student organizations [SWE, IEEE]).
  – Reference material – Consider the ECSN and UTD libraries.
  – Course TA’s – Your teaching assistants (for instance, for EE 1202 lab) can be a great source of information. Graduate students know a lot!
  – Your Instructor – When all else fails, go to office hours.
Some Other Important Items

- **Network(!!).** Make lots of friends. Your future depends on your professional connections so start making them now. Your instructor got his current UTD position via networking!

- **Learn to write and present well.** Being a clear writer and speaker will greatly enhance your career! (Examples)

- **Practice being a logical thinker.** Be prepared to debate when you think someone is uninformed, ignorant, or prejudiced.

- **DON’T STUDY TO PASS AND MAKE A GRADE! Study to learn the material.** If you know the material thoroughly, a good grade is a foregone conclusion (as is success at UTD!).

- **Back up computer study material and always have a backup that is NOT at the same location as your laptop (a fire could then be a disaster).**
And While You Prepare to be an EE:

• **Be a whole person.** One of the best classical organists I ever met is a brilliant physician and chief of emergency medicine at one of the local hospitals. Cultivate outside interests and enjoy life as well as enjoying engineering.

• **Read everything! Read constantly!** Read your local newspaper every day. Read magazines – especially those having to do with current affairs, news, and business (I recommend Forbes and Business Week). EVERYTHING YOU SHOULD READ IS NOT, NOT, NOT ON-LINE!

• If you get a chance for a job, especially a job before graduation, make sure you are well-prepared to impress your prospective employer (and remember slide 12 about school/work ratios!).