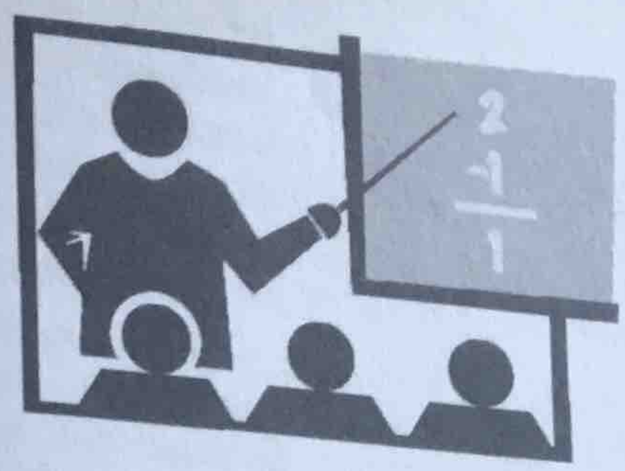


# Chapter 4
# Making the Most Out of How You Are Taught

*You can observe a lot just by watching.*

— Yogi Berra

## Introduction

In Chapter 3, we provided an overview of how your teaching is delivered. In this chapter we will focus on how to take full advantage of that teaching process. By doing so, you will ensure you have a sound foundation on which to build your learning process. Specific ways to design your learning process are presented in the next chapter.

We begin this chapter by discussing early course preparation. We will emphasize that the *start* of a course is very important and that you need to be in the right courses, with the best available teachers, and have your textbooks and other materials. We will also discuss the course syllabus as a potential source of important information.

We then present a number of strategies and skills for taking full advantage of your lectures. One of the most powerful of these strategies is to prepare for lectures so that the lecture becomes a reinforcement of the material rather than an initial exposure to it. Other skills for getting the most out of your lectures are covered as well: skills such as listening, asking questions, and taking notes.

Next, we discuss strategies for making effective use of your professors, another important resource both in and out of the classroom. Too often students either overlook or fail to understand the many benefits their professors can provide them. After describing these benefits, we will teach you how to build the kind of positive relationships with your professors that you will need in order to obtain these benefits.

We close the chapter with a section on "Utilizing Tutors and Other Academic Resources." Taking advantage of these resources will require initiative on your part, but the benefits are well worth the effort.

## 4.1 Early Course Preparation

The beginning of a course can be likened to the beginning of a race. When the starting gun is fired, you have to be off and running. Otherwise you will spend the whole race trying to catch up – something you are unlikely to be able to do. You should be ready to "fire on all cylinders" from the get go. This means that you are in the right class, are mentally prepared, and have your


textbook and other appropriate materials. Ideally, you will have reviewed your course selection with your academic advisor. This all begins with the process of selecting your courses, ideally through an academic advisement session with your advisor.

Being in the right class means that you have the necessary background and prerequisites and that the demands of the course, including its meeting time, fit into an overall manageable workload. When multiple sections of the same course are available to you, the selection of a specific section can be based on an evaluation of the various instructors. Sources of information about instructors include other students, other professors, and published student opinion survey results.

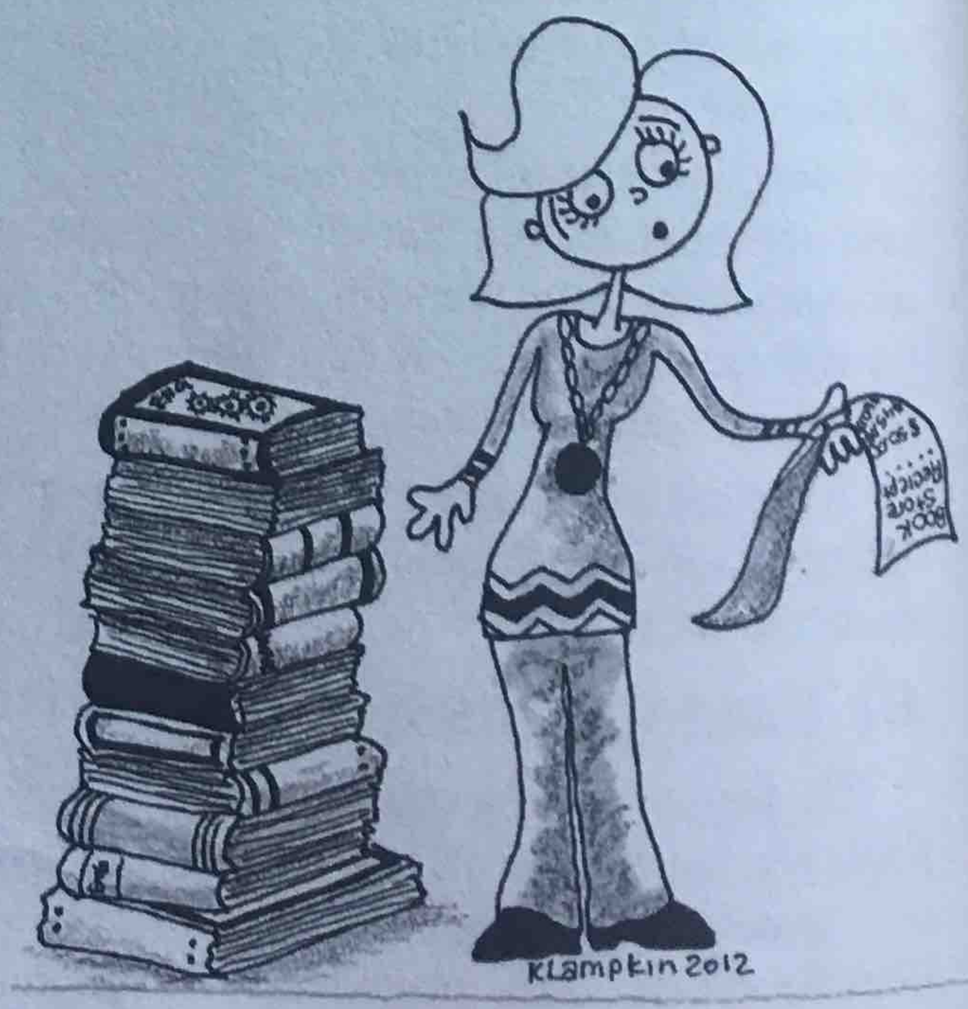
***Don't Be Lulled into Complacency***

Often a course starts slowly, with only a small amount of material presented in the first few classes. Don't use this as an excuse for getting off to a slow start. Remember how we likened the start of a course with the start of the race. Instead of being lulled into complacency, use the slow start to get on top of the course material. Later we will discuss the importance of mastering the material presented in each class before the next class comes. Make a resolve to adopt this approach from day one!

Mental preparation is not unlike getting psyched up for an important competition. As the start of the course approaches, check your mental frame of mind. Are you excited and focused? Are you clear that taking this class is important to you and you want to be there? If not, remind yourself of what you learned in Chapter 2 about why you want to be an engineer and review how this course fits into your roadmap for accomplishing that goal.

## ACQUIRING TEXTBOOKS AND OTHER MATERIALS

You should get your textbooks right away – perhaps immediately after you register for a course. Don't wait until the term starts. You can benefit from scanning your textbooks and even studying the first few chapters during the break period preceding the start of the next term. Also, it is not uncommon for a campus bookstore to run out of books – and you can't afford to be without a book for the several weeks it might take additional texts to arrive. If you do buy your books early, save your receipts and refrain from writing in the books so you can return them if necessary. If money is a problem, consider buying used books either from your bookstore or from Internet book dealers such as Amazon.com or eBay.com (although used books may be more difficult to return).



Another choice to consider is ebooks. An increasing number of college textbooks are available in this format, although the more specialized the subject the less likely it will be available as an ebook. Among the advantages of ebooks are lower cost, live links, searchable text, and readability (e.g., font size can be adjusted). Among the cons are lack of availability and the need for a reader (Kindle, iPad, etc.). Perhaps the biggest issue is your personal preference. Do you prefer to read from a printed book or a digital display?

Make sure you have other materials you need as well. These would include a notebook for taking notes and other supplies and equipment such as a personal computer and/or a hand-held calculator.

## USING THE COURSE SYLLABUS

Generally each of your professors will give you a course syllabus during the first week of the term. The syllabus can be a gold mine of valuable information. My advice is to study the syllabus thoroughly and keep it in a readily accessible place so you can revisit it frequently.

### *Sample Syllabus Content*

**Course Information**
Course title, course number, credit hours, prerequisites, classroom location, dates and times class meets

**Instructor Information**
Full name, title, office location, office phone number, email address, office hours

**Textbook(s)**
Title, author, date (and edition), publisher, cost, extent to be used, other reference materials

**Course Description/Objectives**
Course description, instructional methods, content, goals, and objectives. Note: This item could range from as little as a repeat of the course description from the college catalog to a listing of detailed educational objectives, i.e., what students are expected to be able to do to demonstrate knowledge, skills, and attitudes learned in the course.

**Course Calendar/Schedule**
Daily (or weekly) schedule of topics, reading assignments, problem assignments, exam dates, due dates for assignments, special events (e.g., field trips, guest speakers, etc)

**Course Policies**
Attendance, lateness, class participation, missed exams or assignments, lab safety/health, emergency evacuation, academic dishonesty

**Basis of Grading**
Percentage of grade devoted to quizzes, final exam, homework, projects, essays and term papers, attendance, class participation

**Available Support Services**
Library references, learning center, computer resources

The syllabus should contain most or all of the above information. Since all of the items shown are things you need to know, if any are missing from the syllabus, I would encourage you to find them out by asking your professor.

Hopefully this list has persuaded you of the importance of mining the syllabus for important information.

## 4.2 Preparing for Lectures

Preparing for lectures is a powerful and effective strategy for success and an excellent opportunity to reinforce your learning. The idea of preparation is second nature for both engineering professors and engineering professionals. An engineering professor wouldn't think of coming to a lecture unprepared and a practicing engineer wouldn't think of coming to a meeting unprepared.


It is unfortunate that so few students prepare for lectures – or even know how to do it – for it yields so many benefits. It's a little like warming up for a physical workout. Students who take time to prepare for their lectures go into the lecture with more interest, follow the lesson with more ease, and come away with more knowledge than those who walk in cold.

All these benefits derive from preparation's role in the *reinforcement* process of learning. If you study a lecture topic in advance, even briefly, the lecture becomes your first reinforcement, rather than your initial exposure to the subject. Thus, both your level of learning and interest are enhanced.

In their excellent book *How to Study in College* [1], Walter Pauk and Ross J. Q. Owens put it this way:

> Each lecture can be viewed as a piece of a puzzle. The more pieces you have in place, the more you know about the shape and size of the pieces that remain. The course syllabus, the notes from your last lecture, and related reading assignments can all function as these puzzle pieces as you prepare for a lecture.

While preparing adequately for your lectures does require effort on your part, it's not all that difficult or time-consuming. Prior to class – the night before or, if feasible, during the hour just before class begins – review your notes from the previous class, read over the next section in your text, try a few of the problems at the end of the chapter, and write down questions about things you're unsure of.

Try to do this for at least a week or two to see how such little effort can have a big impact on what you get out of your lectures. I'm sure you'll be surprised by the results and subsequently make this part of your regular study routine.

### Reflection

Think about going to a concert given by your favorite musical group. Which songs do you enjoy the most, those that you have heard many, many times before, or those you have never heard? Why do you think a person might enjoy or get more out of hearing songs they've heard before? Do you see how this relates to the idea of preparing for your lectures?

## 4.3 During Your Lectures

Once you have prepared for a lecture, there are several tactics that will help you get the most out of the lecture: sit near the front, concentrate on the material being presented, practice good listening skills, take thorough notes, and ask questions.

## SIT NEAR THE FRONT

Studies show that students who sit near the front of the classroom perform better than those who sit in the back. Sitting near the front has several obvious but important advantages. You will hear better, see better, have fewer distractions, and be better positioned if you want to ask a question or otherwise get your professor's attention.

## "BE HERE NOW"

Getting the most out of your lectures requires that you learn how to keep your attention focused – i.e., that you "be here now." This is not easy, as most students – indeed, most people – have short attention spans. From time to time, your mind will wander to other thoughts. The result? You will tune out the lecture and perhaps miss important points.


When your mind wanders, you need to immediately "slap yourself" mentally and return your attention to the lecture. Every time you do this, you will increasingly strengthen your ability to concentrate on the "here and now." (You'll find this ability extremely valuable not only in lectures but in many other situations, both as a student and later as a practicing engineer. Just one example is the need to "stay on task" when working in study groups, an important success strategy we will discuss in Chapter 5.)

One last point. By all means turn off your cell phone and your laptop computer (unless you are using it to take notes). Having one or both of these devices on will make it even harder for you to "be here now."

## LISTENING SKILLS

Good listening skills can be developed, but working to develop them is often overlooked. To a great extent, being a good listener means being an active listener. We tend to equate hearing with listening. Yet listening is much more than mere hearing. It is a conscious choice process. Once you know the difference between good listening habits and poor listening habits, you can choose one or the other. It's really up to you. Try them!

The following table contrasts nine characteristic of good listeners with those of poor listeners (adapted from *How to Study in College* [1]):

| Poor Listener | Good Listener |
|---|---|
| Tunes out uninteresting and boring topics. Turns off quickly. | Works at finding value in all topics. Listens to discover new knowledge. |
| Tunes out if delivery is poor. | Judges value of the content rather than the delivery. |
| Listens for facts and details. | Listens for central themes. Uses them as anchor points for the entire lecture. |
| Brings little energy to the listening process. | Works hard at listening; remains alert. |
| Readily reacts with opposing views to new ideas. Starts listening to *themselves* when they hear something they don't agree with. | Focuses on understanding completely rather than coming up with opposing views. |

| | |
|---|---|
| Bothered by distractions. | Fights distractions; ignores bad habits of other students; knows how to concentrate. |
| Resists difficult material; prefers light recreational material. | Welcomes difficult material as exercise for the mind. |
| Interrupted by emotionally-charged words or ideas. | Does not get hung up on emotionally-charged words or ideas; listens with an open mind. |
| Daydreams and lets mind wander off with slow speakers or gaps in presentation. | Uses extra time to think more deeply about what the lecturer is saying; summarizes what has been covered. |

**REFLECTION**

For each of the nine items in the table above, decide which column best describes you as a listener during your lecture classes. For each item in which you describe yourself as a "poor listener," decide whether you would benefit from changing your habit to one of a "good listener." Make a commitment to the change and try it out for a week in your classes.

## NOTE-TAKING

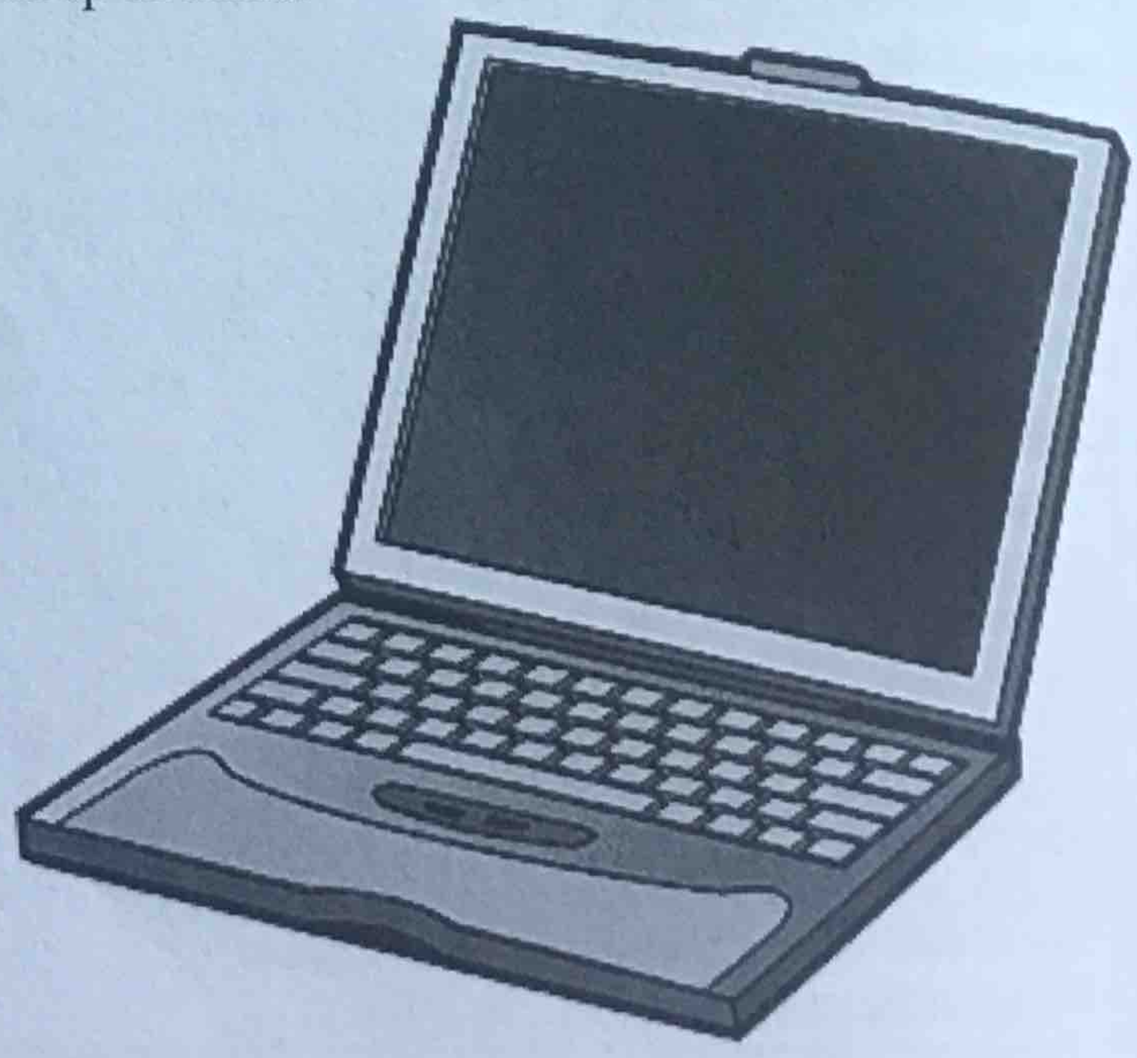
Another effective way to get the most out of your lectures is to take good notes. Your notes essentially create a record of what your professor feels is important, and that in itself is important for two reasons. First, many professors cover only certain portions of a textbook while, second, others present material that the text does not address. In either case, your notes will help you know what to study for tests.

Tips or instructions on how to take good notes are difficult to give, for there is no one "correct" way to go about it. Your note-taking techniques will depend on a variety of factors, such as your own preferred style, the type of class, and the professor's teaching methods. The following generalizations might be helpful to keep in mind:

(1) Note only important details: Do not try to record everything the professor says.

(2) Include anything the professor writes on the board or conveys through visual aids (such as slides or overheads), for that usually signals "important details."

(3) Write down whatever you think you might encounter on the exam.



You might wonder whether to take notes in the traditional way (pen and paper) or take them on a laptop computer. Each has its advantages and disadvantages.

**TAKING NOTES ON A COMPUTER.** If you use a laptop or tablet computer, you can take notes using a word processor (such as Microsoft Word or Apple Pages) or note-taking software (such as Microsoft OneNote or Evernote).

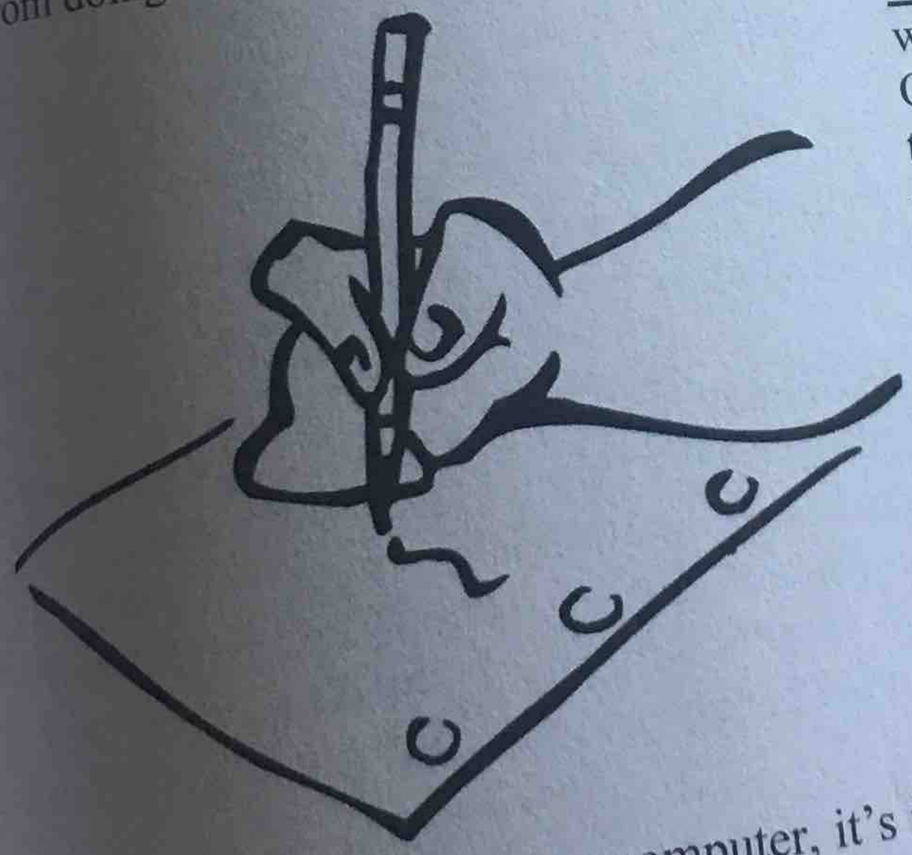
Following are some **advantages** of taking notes on a computer:

- You will have a perfectly legible set of notes.
- You can keep all your notes in one place – organized and safe (provided you back them up).
- Sharing your notes electronically with others is easy.
- Your notes will be searchable.
- You can download information from websites or other electronic sources directly into your note file.
- You can move information around easily.

Following are some **disadvantages** of taking notes on a computer:

- You have to bring your laptop or tablet to class.
- You may type more slowly than you write. (Note: To improve your typing speed, try one of the many online programs such as www.keybr.com. It's free. And it's fun!)
- You have to worry about battery life and remember to back up your notes.
- You can only see a portion of your notes at one time.
- Note taking on the computer is not generally appropriate in courses that have lots of equations (i.e., most math/science/engineering courses).

After all these pros and cons, you may not have a choice if your professor does not permit laptops in class. The main reason for this would be to prevent students from playing computer games, surfing the web, checking email and Facebook, and the like during class. Just ask your instructor whether you can bring a laptop to class. If the answer is "yes," by all means refrain from doing anything other than using it to take notes.



**Taking Handwritten Notes.** Taking notes with pen and paper has its own considerations. One is whether to use a spiral notebook or a three-ring binder. Each offers advantages. With the three-ring binder, notes you take while reading the textbook, solutions to homework problems, and handouts and other reference materials can be easily integrated into your class notes. Another benefit is that you can spread your notes from a lecture out in front of you. On the other hand, if you use a spiral notebook, you're not likely to lose or misplace anything you have written in it.

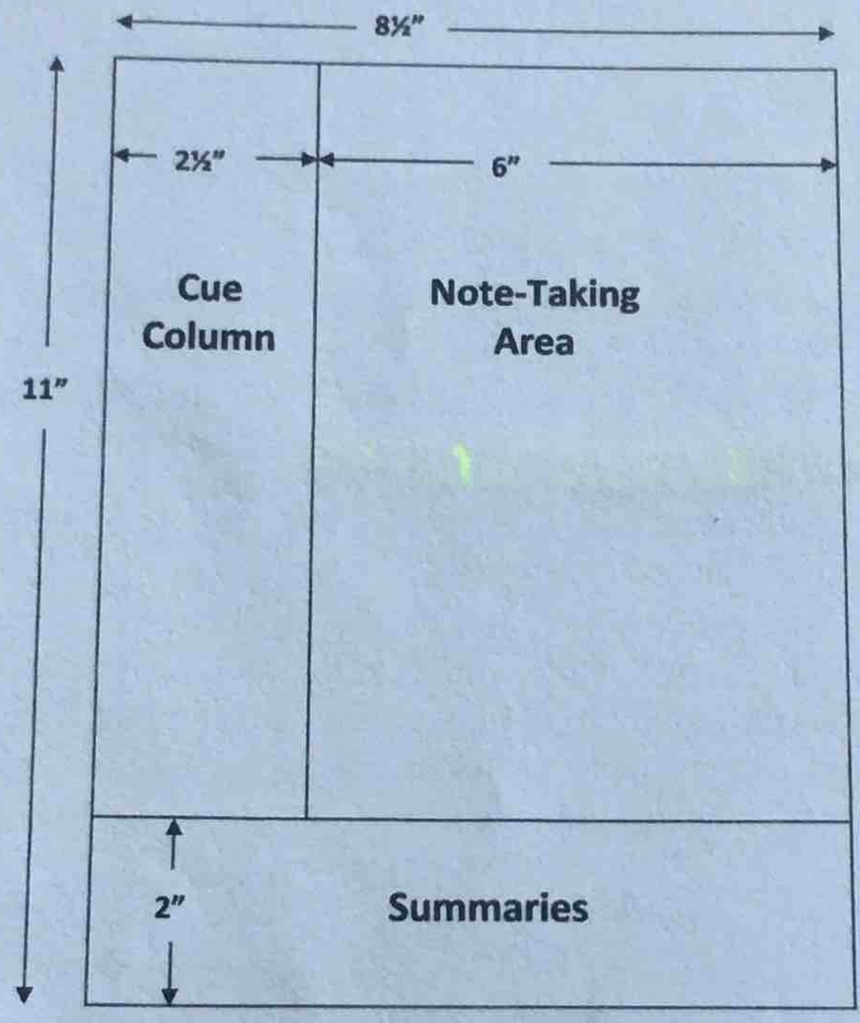
**Layout of Notes.** Whether you take notes manually or type them on a computer, it's important to lay out each page of your notes in a way that best facilitates your learning process. My suggestion is that you format each page to allow for three content areas:

1. Your actual note taking
2. Questions that your notes answer
3. A summary of the content of each page of notes

The Cornell Note-Taking Method, developed by Walter Pauk at Cornell University [1] and illustrated below, provides an excellent template with three structured areas – a place for your

notes ("Note Taking Area"), a place for questions ("Cue Column"), and a place for a summary ("Summary Area"). A Microsoft Word template for Cornell Note Taking can be found at: www.timeatlas.com (Click on "5 Minute Tips").

If you prefer to take your notes manually, use a standard 8½" x 11" sheet of paper and divide it as the illustration below shows. Allow a 6" x 9" note-taking area, a 2½" margin on the left side for questions, and a 2" margin at the bottom for your summary.




Take your notes as you normally would, but restrict them to the 6" x 9" note-taking area. Leave the cue column and the summary area blank. In Chapter 5 we will discuss how to use the blank areas as part of your learning process.

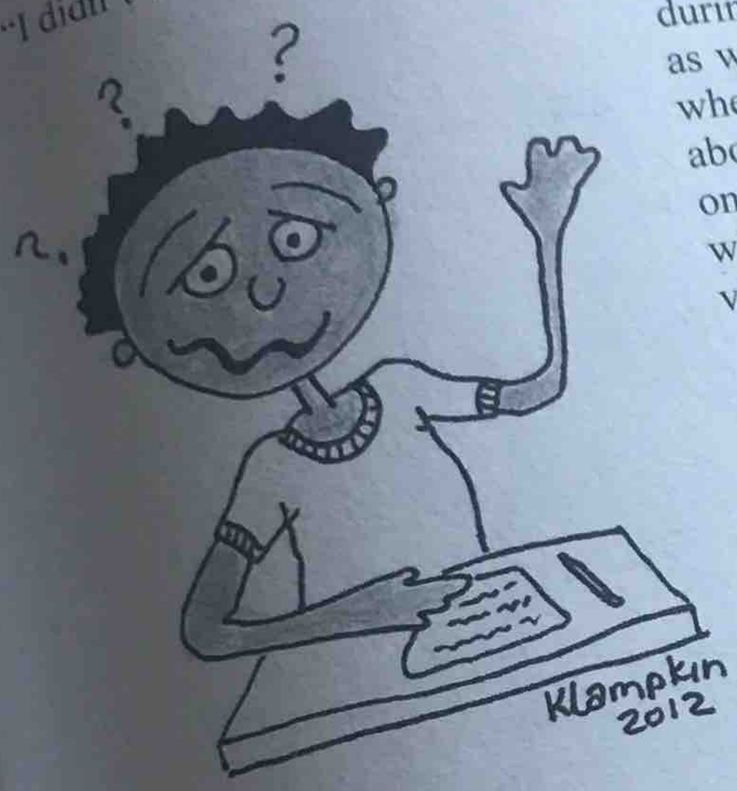
Whether you use the format above or just the old, reliable "fill-up-one-page-and-then-go-to-the-next-page" approach, remember that if you don't write something important down, it is unlikely you will be able to recall it later. Research in brain cognition has repeatedly shown that human memory is mostly short-lived. Unless an idea or information is consistently reinforced over a long period of time, it is quickly forgotten – usually in a matter of days. Your only alternative, then, is to record important information. That's why note-taking is an essential academic success strategy.

**ONE LAST THOUGHT.** More and more professors are turning to PowerPoint presentations for their lectures as an alternative to writing on a whiteboard or chalkboard. Ideally, you will be given copies of the slides, allowing you to concentrate mainly on listening to the lecture and jotting down important points rather than taking comprehensive notes. If you are not provided with copies of the PowerPoint slides, it will be virtually impossible for you to both transcribe the information on the slides and take notes on what the professor says. So do your best to capture the *main* ideas.

## ASKING QUESTIONS IN CLASS

Another way to get the most out of your lectures is to ask questions. Don't be reluctant to do this. Many students are. When asked why, they give reasons like:

"I was afraid I would look stupid."
"I didn't want to bring attention to myself."
"I was too confused to know what to ask."
"I didn't want to take time away from the instructor or other students."




Don't be one of these students. If you're confused during a lecture, it's likely that many other students are as well. Just acknowledge it by raising your hand and, when called on, saying something like: "I'm confused about the last point you made." Take the view that the only dumb question is one that was never asked. And whose time do you think it is anyway? How about the view that it's your time? You deserve to ask questions!

While asking questions is a useful way to gain information in the classroom, improving your ability to ask good questions can benefit you in your career and all aspects of your life.

The importance of this subject was well-stated by the Greek philosopher Socrates more than 2,500 years ago:

> ***The highest form of Human Excellence is to question oneself and others.***

Because of the importance of questioning skills, let's delve into the topic a bit more.

There are many ways to categorize questions. For our purpose, we can divide them into four types:

- Memory-level questions
- Convergent thinking questions
- Divergent thinking questions
- Evaluation thinking questions

Each of these types is related to a different way we receive and process knowledge.

**Memory-level questions** exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers. These questions usually begin with "Who," "What," "Where," or "When." Memory-level questions often solicit a "Yes" or "No" or very short answer. Examples might be:

- Who invented the electric light bulb?
- What chapters will be covered on the midterm?
- Where do I go to sign up for academic advising?
- When is the final exam?

**Convergent thinking questions** represent the analysis and integration of given or remembered information. These questions usually begin with "Why," "How," or "In what ways," and their answers involve explaining, stating relationships, and comparing and contrasting. Examples are:

- Why do we use AC current rather than DC current in our homes?
- How does a microwave oven work?
- In what ways does the Linux operating system differ from the Windows operating system?

**Divergent thinking questions** are those that require you to formulate answers by combining elements in a new pattern or proposing alternative solutions. These questions usually begin with "Imagine," "Suppose," "Predict," "If . . . then," "How might," "What are some of the possible consequences," "What could be changed to improve." These are often described as *open-ended* questions. Answers to these questions involve predicting, hypothesizing, inferring, reconstructing, or designing. Some examples:

- Suppose Einstein had never discovered his "Theory of Relativity." How would things be different now?
- How might you go about improving your writing skills?
- What could be changed to improve the gas mileage of SUVs?
- What are some of the possible consequences of global warming on engineering job opportunities in the future?

**Evaluation thinking questions** are those dealing with matters of judgment, value, and choice. These questions usually begin with "Defend," "Judge," "Justify," "What do you think about," "What is your opinion about." Examples might include:

- Could you justify why two years of calculus is required in the engineering curriculum?
- What do you think about the new drop/add policy?
- What is your opinion about the value of mandatory academic advising?

I hope these classifications will help you improve your skill at formulating and asking questions.

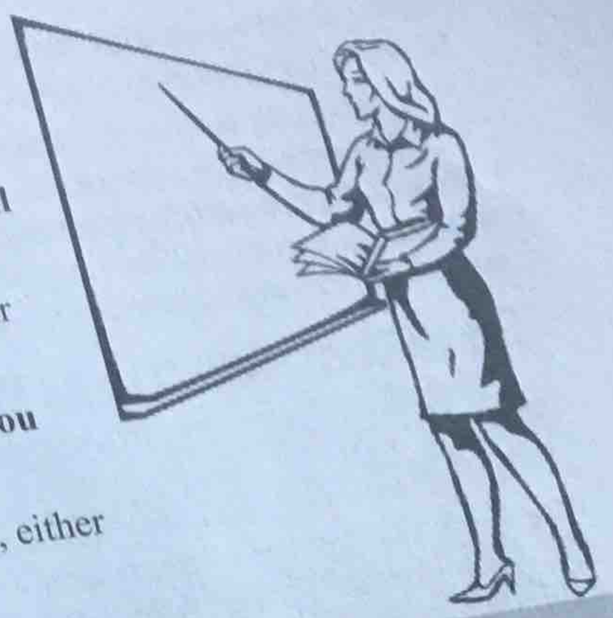

## 4.4 Making Effective Use of Your Professors

As discussed in the previous section, most of your professors are committed to a lecture style of teaching in which they convey knowledge to you in a one-way communication style. Most assign homework problems for you to do, collect and grade the problems, and so provide you with valuable feedback. Professors also determine your grade in the course – generally based on your scores on one or more tests and a final examination. This process of the professor lecturing, evaluating homework assignments, giving exams, and determining final course grades (which reflect students' mastery of the subject) is the standard teaching/learning process in engineering education.

### Important Roles for Your Professors

But your professors can contribute much more than this to your overall education. The following is just a partial list of what professors can do for you:

- Give you the **benefit of the doubt** on a borderline grade.
- Provide you with invaluable **one-on-one instruction.**
- Give you **academic advising, career guidance**, and **personal advice.**
- **Monitor your progress** and **hold you accountable** for your performance.
- **Help you find a summer job** in industry and even **hire you** on their research grants.
- **Serve as a valuable reference** when you apply for jobs, either while you are a student or after you graduate.
- **Nominate you** for scholarships or academic awards.

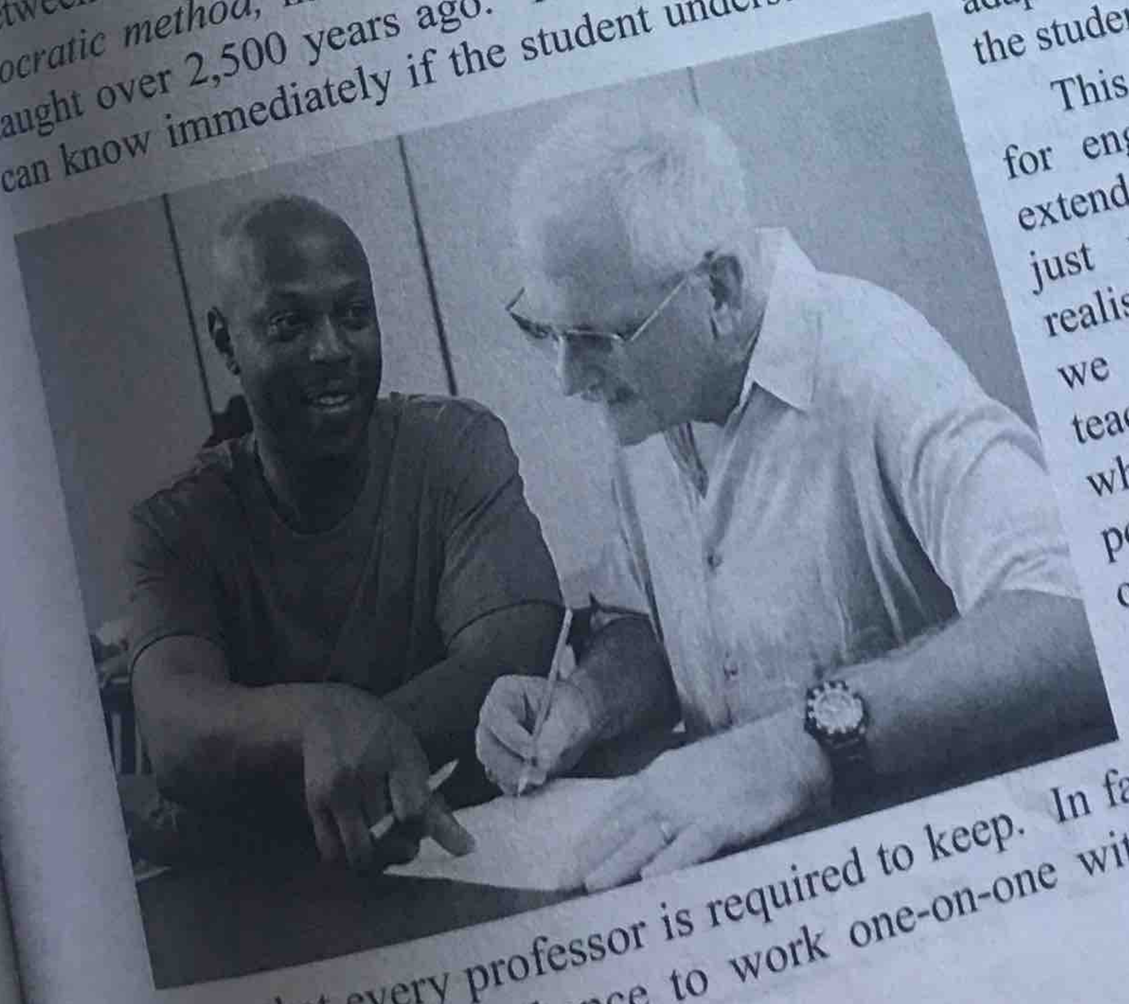


**REFLECTION**

Reflect on the above list of important roles for your professors. Are these things you would like your professors to do for you? Which ones would be particularly important to you? Would you like to have a close advisor or mentor? Would you like to have one-on-one instruction from an expert? Would you like to have a future reference for a job or scholarship? What would it take on your part to ensure that your professors do these things for you?

**VALUE OF ONE-ON-ONE INSTRUCTION.** Of these roles, there is one in particular I'd like to expand on briefly, and that is one-on-one instruction – for this is probably the most valuable and beneficial role your professor can play outside of class.

One-on-one instruction is one of the best ways to learn, especially if the interaction is between an expert (i.e., teacher/professor) and novice (i.e., student). It is often referred to as the *Socratic method*, named after the Greek philosopher Socrates, who used this method when he taught over 2,500 years ago. The primary advantage of the Socratic method is that the teacher can know immediately if the student understands the subject of their dialogue and, if necessary, adapt the lesson on the spot to ensure that the student truly learns it.



This teaching method would be ideal for engineering education – i.e., daily extended one-on-one meetings between just you and your professors – but realistically it is not possible. The most we can do is try to keep the teacher/student ratio as low as possible, while providing as many opportunities as possible for one-on-one instruction outside of the classroom or lecture hall.

One of these opportunities, and perhaps the best, is the weekly office hours that every professor is required to keep. In fact, the primary purpose of office hours is to give students the chance to work one-on-one with their instructors. If a student's schedule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conflicts with his or her professor's office hours, as is often the case, most professors are willing to make appointments to meet with students at other times.

I urge you to use this opportunity regularly and frequently. As your education progresses, look for other opportunities to work one-on-one with your professors, such as offering to help them in their research projects or help out in their labs. Not only will such interactions enable you to learn more about engineering, you will establish the kind of relationships with your professors you need to derive the many benefits they can offer you.

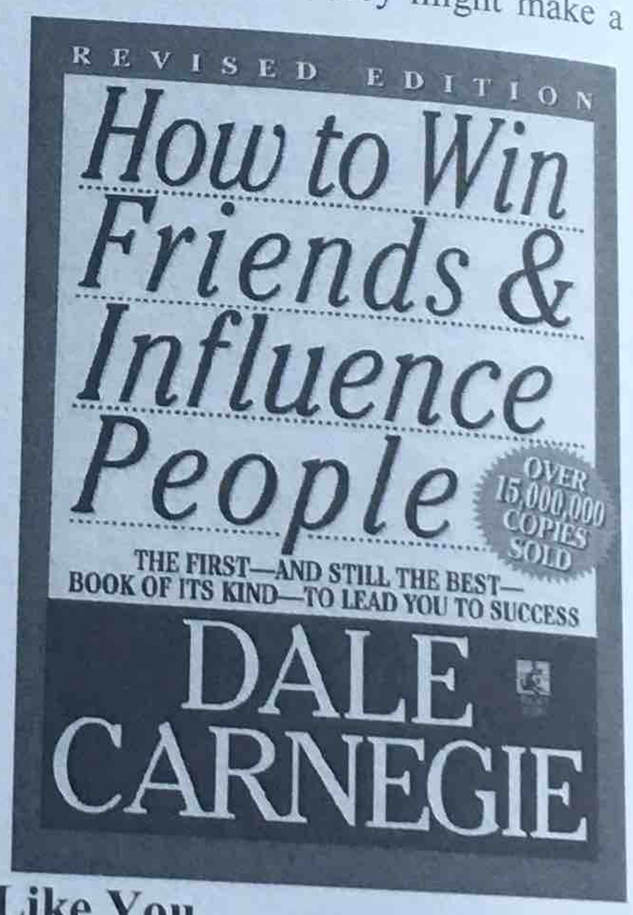
## TAKE RESPONSIBILITY FOR WINNING OVER YOUR PROFESSORS

To make effective use of your professors, you first must overcome any fear or intimidation of them you may feel. Being awed by your professors is a natural inclination since they are older and better educated, and they often project a confident "know it all" attitude. As a result, you may think that your professors don't care about you – or even that they are somehow "against" you. But this isn't true. After all, most professors chose an academic career because they like teaching and enjoy working with students.

Remember, too, professors are human beings just like you, and they have similar needs, fears, and insecurities as you do. They may very much need to be liked, want you to think they are good teachers, need to impress you with their knowledge, or fear that they might make a mistake and reveal that they don't have a total command of their subject matter.

Once you get past any feelings of fear or awe, you need to realize that winning over your professors is your responsibility. You must take the initiative in establishing positive relationships with them.

**HOW TO WIN OVER YOUR PROFESSORS.** The real question is how can you go about winning over your professors so that they want to help you. Perhaps the "bible" for winning people over is the classic book by Dale Carnegie, *How to Win Friends and Influence People* [2]. Written in 1936, this book has stood the test of time and is still a best seller. I recommend it to you as an excellent resource to improve your "people skills."




Dale Carnegie's "Six Ways to Make People Like You" lists helpful strategies that you can use to win over your professors:

**Six Ways to Make People Like You**

| | |
|---|---|
| Rule 1 | Become genuinely interested in other people. |
| Rule 2 | Smile. |
| Rule 3 | Remember that a person's name is to him or her the sweetest and most important sound in any language. |
| Rule 4 | Be a good listener. Encourage others to talk about themselves. |
| Rule 5 | Talk in terms of the other person's interest. |
| Rule 6 | Make the other person feel important – and do it sincerely. |

Dale Carnegie's book is filled with anecdotes. Most are dated, but their messages are timeless. The one I like the best is this story:

> C. M. Knaphle, Jr., of Philadelphia, had tried for years to sell coal to a large chain-store organization. But the chain-store company continued to purchase its fuel from an out-of-town dealer and continued to haul it right past the door of Knaphle's office. Mr. Knaphle made a speech one night before one of my classes, pouring out his hot wrath upon chain stores, branding them a curse to the nation.
>
> And still he wondered why he couldn't sell to them.
>
> I suggested that he try different tactics. To put it briefly this is what happened. We staged a debate between members of the course on "Resolved that the spread of the chain store is doing the country more harm than good."
>
> Knaphle, at my suggestion, took the negative side; he agreed to defend the chain stores, and then went straight to an executive of the chain-store organization that he despised and said, "I am not here to try to sell coal. I have come to you for help because I can't think of anyone else who would be more capable of giving me the facts I want. I am anxious to win this debate, and I'll deeply appreciate whatever help you can give me."
>
> Here is the rest of the story in Mr. Knaphle's own words:
>
> *I had asked this man for precisely one minute of his time. It was with that understanding that he consented to see me. After I had stated my case, he motioned me to a chair and talked to me for exactly one hour and forty-seven minutes. He called in another executive who had written a book on chain stores. He wrote to the National Chain Store Association and secured for me a copy of a debate on the subject. He feels that the chain store is rendering a real service to humanity. He is proud of what he is doing for hundreds of communities. His eyes fairly glowed as he talked, and I must confess that he opened my eyes to things I had never even dreamed of. He changed my whole mental attitude. As I was leaving, he walked with me to the door, put his arm around my shoulder, wished me well in my debate, and asked me to stop in and see him again and let him know how I made out. The last words he said to me were: "Please see me again later in the spring. I should like to place an order with you for coal."*
>
> *To me that was almost a miracle. Here he was offering to buy coal without my even suggesting it. I had made more headway in two hours by becoming genuinely interested in him and his problems than I could have made in ten years by trying to get him interested in me and my coal.*

I'm sure you get the point of this story; more importantly, I hope it has given you ideas on how to approach your professors. The anecdote and Dale Carnegie's "Six Ways to Make People Like You" emphasize the importance of both showing interest in others and approaching them from their perspective.

### Reflection

How do you relate to Mr. Knaphle's story? Have you had experiences where you came at people from your side of things and didn't get what you wanted from them? Have you ever tried approaching someone from their side of things? Who was it? Teacher? Parent or close relative? Friend? Co-worker? Boss at work? How could you apply the lessons of Mr. Knaphle's story to interacting effectively with your professors?

**CHARACTERISTICS OF YOUR PROFESSORS YOU CAN COUNT ON.** Just as Dale Carnegie knew Mr. Knaphle could win over the chain store executive by appealing to his interest in promoting chain stores, there are three characteristics of professors that you can almost always count on and therefore use to win them over:

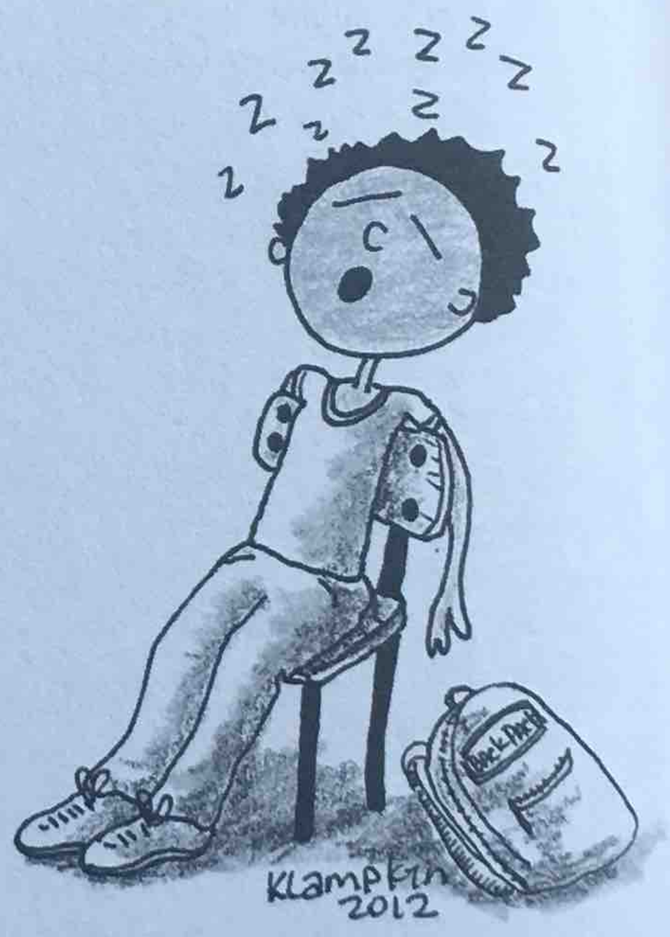
(1) Professors think their areas of technical specialty are critically important and extremely interesting (and they have stories they love to tell about how they got involved in their specialty).

(2) Professors have elected an academic career over professional practice and they believe they are outstanding teachers.

(3) Professors aren't called "professors" for nothing. They have big intellects and lots of knowledge, and they love to convey what they know to others.

Your challenge as a student is to avoid doing anything that conflicts with these characteristics of professors; rather, think of ways to interact with your professors that tap into these characteristics.

**BEHAVIORS TO AVOID.** We could make a long list of behaviors that conflict with professors' belief in the importance and interest of their technical specialties:




- Coming late to class
- Yawning or sleeping in class
- Talking in class
- Doing homework in class
- Using a cell phone in class to search the Internet, play video games, or text
- Leaving class early
- Failing to do the assigned homework

I'm sure you can add to this list.

The above behaviors also conflict with professors' belief that they are good teachers, as do other behaviors such as:

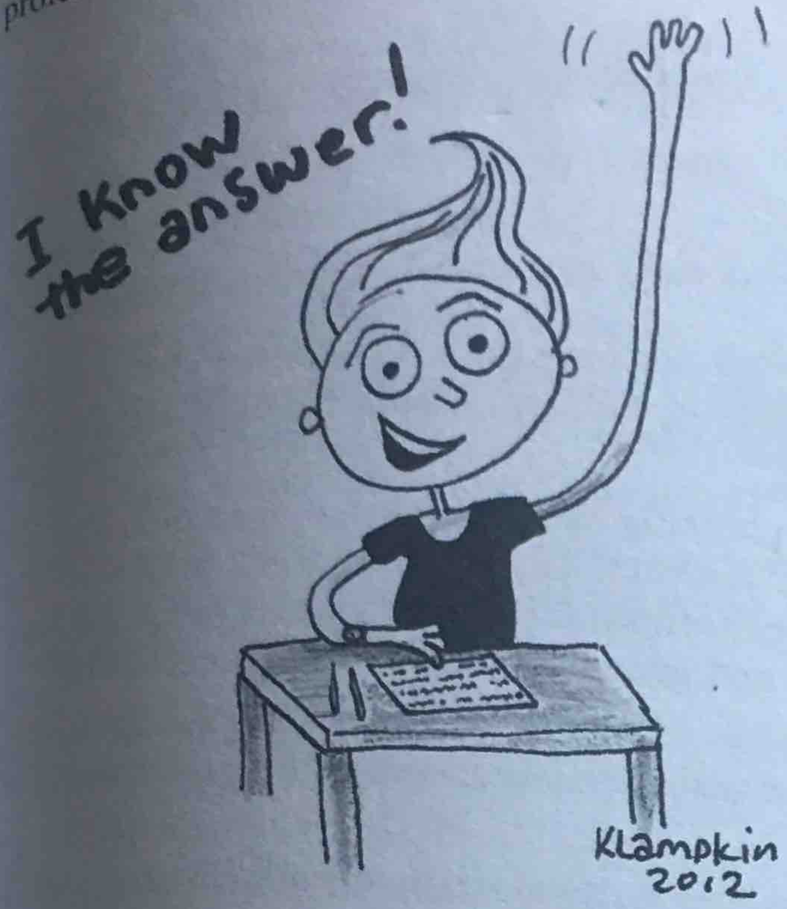
- Correcting professors' mistakes in an antagonistic tone
- Complaining that exams are too hard
- Complaining that grading is unfair
- Sending non-verbal messages to your professors that you dislike them personally

### REFLECTION

Reflect on the list of "behaviors to avoid." Do you engage in any of these behaviors? If so, make a commitment to stop them. Are there additional behaviors to avoid that should be on this list? Make a commitment to stop those as well.

**WINNING BEHAVIORS.** Given what you now know, a good way to win over your professors is to send them messages that you find their subject both interesting and important, and that you value

professor asks




There is also a much more direct way. Just tell them! In my experience, professors get far too few compliments. I'm not sure why students are so reluctant to tell their professors that they like the course, are interested in the subject, or appreciate the good job the professor is doing in teaching the class. I can assure you that doing so will go a long way toward winning over your professors.

One additional strategy for developing a positive relationship with your professors: show interest in them. In my *Introduction to Engineering* class, I assign students to visit one or more of their professors during their office hours and ask them questions like: "Where did you go to college?" "How did you choose your technical specialty?" "How did you decide to become a teacher?" Students report very positive experiences from such interactions. Try it!

And a final bit of advice. Make the effort to know your professors' names. One of Dale Carnegies "Six Ways to Make People Like You" is:

> ***Remember that a person's name is to him or her the sweetest and most important sound in any language.***

I have frequently encountered students who couldn't tell me the name of their professors. Please don't be such a student.

**MAKE SURE YOUR PROFESSORS KNOW YOUR NAME.** I'd like to raise one more issue related to names. Do your professors know your name? Probably not. Professors are busy people generally with too many students to learn and retain all of their names. But they do know some of their student[illegible] shouldn't you

## UNDERSTANDING WHAT YOUR PROFESSORS DO

You might benefit from understanding what university professors do. By doing so, you can be more sensitive to the demands placed on them and be more effective in building relationships with them.

University professors do much more than teach classes. In fact, they are expected to perform in three primary categories:

- Teaching
- Research
- Service

The **teaching category** includes not only classroom teaching but also course and curriculum development, laboratory development, academic advising, and supervision of student projects or theses.

The **research category** includes creating and organizing new knowledge; disseminating and organizing new knowledge through publication of research papers, textbooks, software, and presentations at scholarly meetings; participation in professional societies and other activities that keep the faculty member up-to-date technically; and generating funds to support research.

The **service category** may include community involvement, participation in faculty governance through service on university committees, public service, consulting, and a variety of other activities.

Although most universities expect a faculty member to demonstrate accomplishments in all three categories, the relative importance given to each varies from one university to the next, depending on the characteristics of the institution. At one end are the so-called "research universities," which emphasize success in creating new knowledge, publishing the results, and obtaining funds to support these activities. Teaching loads at these institutions are relatively light – usually one or two courses a term.

At the other end of the spectrum are predominately undergraduate universities, which emphasize teaching. At these institutions, the teaching load is generally heavier – usually three to four courses a term. Some research or equivalent professional activity also is expected of faculty members, but much less than at research institutions.

## COMMUNICATING WITH PROFESSORS BY EMAIL AND TEXT MESSAGING

Until recently, most communication between students and their professors occurred either in class (just before class, during class, or just after class) or during face-to-face meetings in the professor's office. Nowadays, email (and to a lesser extent texting) has become a powerful tool for communication between students and their professors.

**Emailing Your Professors.** Because of its potential for misuse and abuse, it is particularly important that you make judicious use of email. If your professor puts his or her email address in the course syllabus, you can assume they will be receptive to your messages. If not, you should ask the professor whether they welcome e-communications from students.

An article in the *New York Times* about emailing professors [3] starts out:

"One student skipped class and then sent the professor an email message asking for copies of her teaching notes. Another did not like her grade, and wrote a petulant message to the professor. Another explained that she was late for a Monday class because she was recovering from drinking too much at a wild weekend party."

Hopefully, you wouldn't be inclined to send similar messages to your professors. Here are some guidelines that might help you with the protocols for emailing your professors.

- **Write from your college or university email account** – Shows that your email is legitimate and not spam.
- **Include the course number in your subject line** – Relieves your professor of the chore of figuring out what class you're in.
- **Use an appropriate greeting** – "Hi/Hello/Dear Professor _____" is always appropriate. Don't use "Hey _____." Avoid first names unless you have been specifically invited to do so. Avoid "Dr." unless you are sure the professor has a doctoral degree.
- **When you get a reply** - Express your gratitude. Just hit "Reply" and write "Thank you" or a little bit more if appropriate. Try to avoid sending a second message that requires the professor to respond again.
- **Things to avoid**

  Rote apologies (better to relate any sad or serious circumstances in person)
  Unexpected attachments
  Criticism of the professor or other students
  Requests for information you can find from other sources
  Email abbreviations and jargon you might use with a friend
  Emoticons
  Exclamation points
  Quotes from famous people in your signature line
  Anything you would not say in a face-to-face meeting with your professor
  Making unreasonable demands on your professor's time

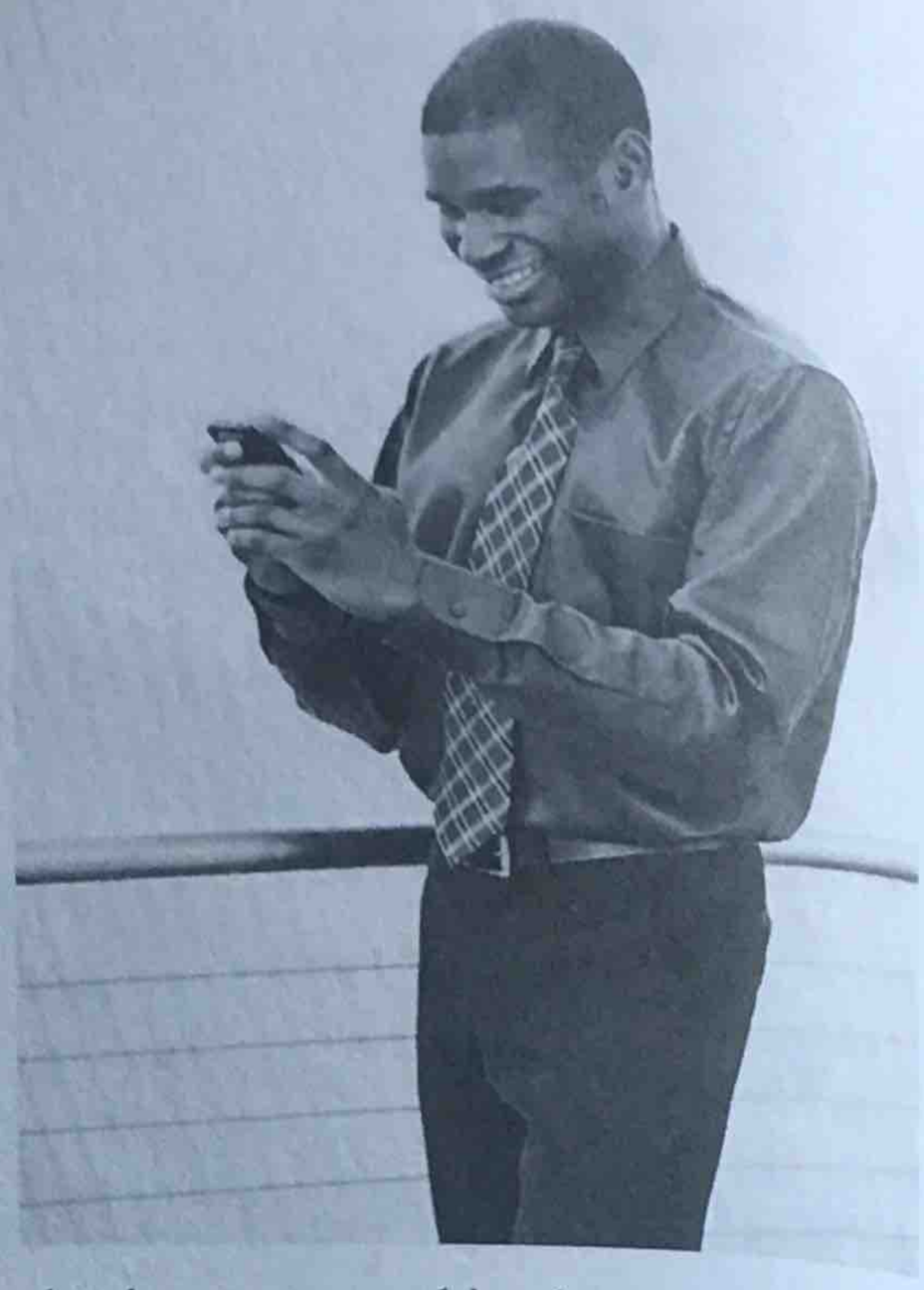
- **Things to do**

  Be clear, concise, and polite
  If you are emailing with a problem, suggest a solution
  Capitalize and punctuate correctly
  Proofread what you've written
  Sign with your full name, course number, and meeting time

Although wide-scale adoption of email started over 20 years ago, it is still developing as a tool for communication between students and their professors, and both groups are still learning how to best use email to mutually benefit the teaching/learning process. You can make a positive contribution to this process by following the guidelines above.

**TEXTING YOUR PROFESSORS.** Although texting is a common means of communication among friends and family, it is not widely used for communication between students and professors. It is unlikely that your professors will provide you with their cell phone numbers and encourage you to text them. But you certainly can ask whether they are open to it. Don't be surprised,

however, if the answer is "no." If your professor does invite you to text him or her, use this privilege sparingly, perhaps only when time is of the essence. Receiving numerous text messages can be onerous and distracting. And unless your professor has purchased a texting plan, he or she will incur a charge for each text message you send.



## 4.5 Utilizing Tutors and Other Academic Services

Your university or college offers a number of academic services to support your education. Examples of these are tutoring, recitation sections of large lectures, and other academic services. These services are generally free to you, since you pay for them in advance in your tuition and student fees. However, receiving the benefits of these academic services almost always requires that you take the initiative. They will not seek you out. Part of good academic gamesmanship, then, is for you to find out about the resources available to you and make optimal use of them. Remember, you paid for them!

### Tutoring

Tutors are an excellent source of the type of one-on-one instruction discussed previously in this chapter. Some students are reluctant to utilize tutors, equating the need for tutoring with an admission they are doing poorly or need help.

After what we've said about the myth of "succeeding on your own," you should realize how unfounded and counterproductive such reluctance is. If, however, you find yourself in this bind – in need of help but resistant to seek tutoring – try looking at tutoring in a more positive light: as an opportunity for you to have a dialogue with an expert on a subject you want to learn.

Your university may provide tutoring services through a variety of sources. Tutoring may be available through a campus-wide learning assistance center. Your mathematics department may run a math lab. Members of your engineering honor society, Tau Beta Pi, may provide tutoring as a service to the engineering college.

If free tutoring is not available, you might find listings for tutors available for hire at your career center. You could also just ask an upper-class student to help you. Lots of students like to "show off" their knowledge.

### Recitations/Problem-Solving Sessions

A common teaching mode is large lectures (100 to 300 students or more) accompanied by small recitations. Recitations are generally taught by graduate students serving as teaching assistants. The purpose of the recitation is to amplify and reinforce the main concepts from the lecture and to work on problems. While there is a limited opportunity for you to ask questions in large lectures, you will find more than ample opportunity to ask questions in recitations. To get the most out of recitations, it is important that you have studied the material presented in the lecture and attempted the assigned problems.

## Other Important Academic Resources

Among the other academic resources available to you, here are some you should certainly look into and use.

- The **academic resource center** not only provides tutoring in math and science; it can also help you improve your reading, writing, and study skills.
- Your **university library** is certainly a source of important books, periodicals, online material, and other references to support your engineering education. It also holds workshops and seminars on how to access all these sources of information. Reference librarians are available through email, telephone, or in person to assist students individually in identifying and retrieving information for research, study, or personal use.
- **Student computer labs** provide access to computer hardware and applications software, access to the Internet, resource materials, and training.

- **Academic advising** gives you help in reviewing your overall academic plan and your progress in following it as well as guidance in selecting courses for the next term. More information on this important academic resource can be found in Chapter 8.
- The **university/college catalog** is your "bible" of important academic information such as rules and regulations, college and department information, curricular requirements, and course descriptions.
- Your **registrar's office** can help you with various academic procedures, including changing majors, dropping and adding classes, enacting/processing grade changes, and transferring course credits from other institutions.

To find out what your campus offers and where these services can be found, check your university or college webpage, catalog, or department or school student handbook. Freshman orientation programs are also helpful for learning about student services. And don't forget one of your best resources: other students.

## Summary

In this chapter, we presented strategies and skills for making the teaching process work for you. We began by likening the start of a course to the start of a race, pointing out that you need to be ready to go as soon as the "starting gun is fired" and discussing ways to ensure this happens.

Then we discussed a number of important strategies and skills for taking full advantage of your lectures. One of the most powerful of these is to prepare for lectures so that the lecture becomes a reinforcement of the material rather than an initial exposure. Other skills for getting the most out of your lectures, such as good listening, effective note-taking, and asking good questions in class, were covered as well.

We next explored the contributions that faculty can make to the quality of your education, both in and out of the classroom. We explained that deriving these benefits is your responsibility to pursue and presented a variety of strategies and approaches for you to take in order to establish the kind of positive relationships with your professors you will need to receive these important "extras."

In addition to the support that your professors can offer you, we listed other academic resources that can provide you equally valuable support. But, once again, you must assume responsibility for seeking them out and taking advantage of them.

In the next chapter, we focus on how to make the learning process work for you. If you have implemented the skills and strategies presented in this chapter, you should have a strong foundation on which to build that process.

## REFERENCES

1. Pauk, Walter and Owens, Ross J.Q., *How to Study in College, 10th Edition*, Wadsworth Publishing, New York, NY, 2010.
2. Carnegie, Dale, *How to Win Friends and Influence People*, pp. 65-66, Simon and Schuster, New York, NY, 1936.
3. Glater, Jonathan D., "Emailing Professors: Why It's All About Me," *New York Times*, February 21, 2006.

## PROBLEMS

1. In the section on early course preparation, an analogy was made between the start of a course and the start of a race. Think about the idea that the start of things can be very important. Make a list of situations in which the start is extremely important. For each item on the list, consider whether a poor start can be overcome and what it would take to do so.
2. How do you decide which section to take in courses in which multiple sections are offered? Do you work proactively to get in the section with the best teacher? What do you do? What are some strategies you could adopt that you haven't been using?
3. Review the course syllabus in at least one of your key courses. Compare the information there to the list of items presented in Section 4.1 on "Using the Course Syllabus." Are most or all of the items included? If not, which ones are missing? Take on the task of filling in the missing items.
4. Conduct an Internet search on the subject "ebooks versus print books." Read several of the articles you find and make a list of the pros and cons of ebooks. Make another list of the pros and cons of print books. Do you prefer using ebooks or print books? Has this exercise influenced your view toward either? Are your current textbooks available as ebooks?
5. Make a commitment to prepare for your lectures using the approach discussed in Section 4.2 for a two-week period. At the end of the two weeks, write a two-page paper discussing the benefits you received (or didn't receive) from doing this.
6. Review the characteristics of good and poor listeners presented in Section 4.3 on "Listening Skills." Pick two or three items from the "poor listener" list that describe you, if only occasionally. Make a commitment to try to change the habit to that described in the "good listener" column. Try out the new habit for two weeks and reflect on how it worked.
7. Weak typing skills can limit your productivity during both college and your career. On a scale of zero to ten, how would you rate your typing skills? Go to www.keybr.com and take

the typing test there several times to get a baseline on your typing speed and accuracy. If your speed is less than 45 words per minute, make a commitment to practice on this website until your speed reaches this level.

8. Try out the Cornell Note-Taking System presented in Section 4.3. Check if your bookstore sells pre-made forms for this purpose. If not, make up your own forms. Preview the information on studying and annotating your notes in Section 5.2 of the next chapter. Make a commitment to follow the process of annotating your notes, including developing questions in the "cue column" and summarizing each page in the "summary area." Try answering the questions in the cue column out loud over a period of two weeks and reflect on how well it worked.

9. Practice your questioning skills by making up three additional questions that would be appropriate to include as problems at the end of this chapter. Email them to your *Introduction to Engineering* course instructor and to me at: rlandis@calstatela.edu.

10. For one of your key classes, make up two questions that fit each of the four categories of questions presented in Section 4.3 (memory level, convergent thinking, divergent thinking, evaluation thinking). Take them with you to the next lecture and see if you have an opportunity to ask one or more of them.

(11) Pick one of the important academic success skills below and conduct a search on that skill using your favorite Internet search engine.

Note-taking skills
Listening skills
Questioning skills

Gather information from a number of sites and write a 250-word paper on what you learned about the skill.

12. Make a list of behaviors that would send signals to your professors that you don't think their technical specialty is either interesting or important. Do you engage in any of these behaviors? Which ones?

(13) Explain how the skills you develop in learning how to make effective use of your professors will directly carry over in the engineering work world.

14. Do you think that grading is objective or subjective? Ask two of your professors how they go about making up their final grades. Ask them what factors they consider in deciding borderline grades. Are these factors objective or subjective? Write a one-page "opinion report" on what you learned.

15. Go see one of your professors during his or her office hours. Ask one or more of the following questions:

a. Why did you choose teaching as a career rather than professional practice? Would you recommend an academic career to others? Why or why not?
b. Would you advise me to continue my engineering education past the B.S. degree? What are the advantages of getting an M.S. degree? A Ph.D. degree?
c. I understand that your technical specialty is in the field of _____. How did you get interested in that field? Do you think it would be a good field for me to consider?
d. What do you think are the most important factors in an engineering student's academic success?

16. Make up five additional questions like the ones in Problem 15 that you could ask one of your professors. Pick the three you like the best and ask them of one of your other professors.
17. Study the "protocols for emailing your professors" in Section 4.4. Do you agree with these guidelines? When you email your professor, do you follow them? Write down reasons why each of the "things to avoid" are on the list.
18. Look into the availability of free tutoring services on your campus. Are there tutors to help you with your mathematics classes? Are there tutors to help you write a term paper?
19. Pick one of the following offices on your campus. Stop by and seek information about the academic services offered there. (Note: The specific names may vary from campus to campus.)

    Academic Resource Center
    Library Reference Desk
    Open Access Computer Laboratory
    Registrar's Office
    Academic Advising Center

    Prepare a two-minute presentation on what you learned for your next *Introduction to Engineering* class meeting.