

Taking Notes and Reviewing

- Do you take good class notes?
- Do you take any notes at all?
- If you take notes, why do so?
 - Make sure I have a chance to pass the next test and the final exam.
 - Preserve course knowledge so that I get a good, basic foundation in the course basics, which will assure that I can do well in the next related course, helping to prepare me for my chosen career.
 - It gives me something to do in class.





Quality Notetaking – An Important Skill

- Being able to take good notes in the university class environment is **VERY** important.
- The action of taking good notes helps you **listen** and **concentrate** on the lecture, **aids in understanding**, and helps to **promote effective recall**.
- There are good notetaking strategies available, and if you don't have one, you need to get one! We will talk about a few of them and give suggestions (**and some commandments**) about notes in ECS 1200.
- **Remember, today is a good time to start taking good notes!**

Short Vs. Long-Term Memory

- Your memory is really in two parts – “short term” memory and “long-term” memory.
- Short term memory is **erased every night during sleep.**
- Long term memory is just that – it is more or less permanent and often lasts a **lifetime.**
- **How do important short-term memories get preserved?**
 - During sleep, short-term memory items are culled.
 - The most important memories of the day are duplicated in long-term memory.
 - The rest of the short-term memories are eliminated.
- **Ever see a movie called “50 First Dates?”**



Short Vs. Long-Term Memory (2)

- This memory-culling process means that **only very strong short term memories make it into long-term memory.**
- Further, it means that 90% or more of all short-term memories we gain each day **are destroyed every night!**
- Because of this nightly memory process, **important things that we wish to remember permanently must be reinforced and strengthened.**
- Remember our learning (“agent-building”) process? **One of the things that makes memories stronger is reinforcement through various neural pathways.**

Short Vs. Long-Term Memory (3)

- We listen to the teacher in lectures (**pathway 1, aural**).
- Assuming the teacher has good notes, we see the lecture information as well (**pathway two, visual**).
- In addition to the above, we can take good notes (**pathway 3, tactile**) as another aid.
- Further, we can review, re-organize, and re-write our notes, furthering reinforcement (multiple pathways).
- **NOTE! NOTE! NOTE! This last exercise, the most important, MUST be done the day of the lecture to be maximally effective! More on rewriting notes later on.**



Quick Note-Taking Survey

1. I am always prepared to take good notes in class.
2. I use different notebooks or notebook sections for each separate course.
3. For each new lecture topic, I start a new page and label the topic clearly.
4. I get to class on time regularly, and never leave early.
5. I never miss a class.
6. I focus on the lecture and do not let myself be distracted.
7. I listen carefully but mainly write down what I consider as key points.
8. I have a system for writing rapidly to keep up with the lecture.
9. I study the lecture reference material before class so I know what is going on.
10. I review and organize my notes regularly – right after class, if possible.

Note “Know-How”

- How was your grade on the previous survey?
- First, of course, you had to be honest with yourself.
- If you were, chances are that many of you did not score any higher than a 5, at most.
- If you scored near 10, then your note-taking skills are good, and you just need to follow this lecture and seek ideas for further improvement (or you weren't honest!).
- If you scored near the bottom, is this lecture good news for you! Here's a chance to take notes about taking notes.



Reading Notes*

- **Just a word about this.**
- **YES, you should take notes while you are doing reading assignments. How should you approach a reading assignment?**
 - **Skim the assignment. Look for key words, objectives, definitions, concepts that are emphasized (maybe in bold). Look at pictures and graphics to get the gist. Make a few notes about the overall thrust.**
 - **Read each section or chapter carefully. Note down key questions and answers, main points, important events and their dates, questions that might arise.**
 - **Review. Skim the titles and headings. Summarize sections in your words, organize important points to emphasize key areas or sections.**

***Note: Some of the information on the remaining slides was excerpted from the Channing Bete Company pamphlet on note-taking. Some other material courtesy of Dr. Matthew Goeckner. Other sources are cited as referenced.**

Reading Notes (2)

- **A note about highlighting: In general, highlighting passages in a book for emphasis (or to find the information later) has mixed value.**
- **One of my colleagues believes it is worthless.**
- **I believe it can have value if mixed with formal notes (as discussed on previous slide and slide following) and also perhaps with margin notes in the book itself.**
- **In my opinion, a highlight alone is rarely worth much; a highlighted sentence or topic matched to a margin note may be helpful.**

The SQ4R Method of Taking Reading Notes*

- This method, by the author noted below, suggests the following:
 - Survey the material (similar to our scan on the previous page).
 - Read title.
 - Read the introduction and section headings.
 - Look at graphics and captions.
 - Read the conclusion or summary to get main points.
 - Note down any questions that occur with respect to material.
 - Do the “4 R’s:”
 - Read section by section.
 - After each section, re-read questions and recite the answers.
 - Record the important information.
 - Review the reading, looking for answers to any questions you have. Quiz yourself to be sure you understand all key concepts.

* Francis P. Robinson, *Effective Study*, Harper and Row, 1970 (Original work was in 1946).



Reading Notes Exercise

The Capacitor

A capacitor consists of two conducting surfaces (usually metal) separated by a dielectric, or insulator layer. A capacitor stores electric charge when current flows into it due to an applied DC voltage, just as a water tank stores water pumped into it from a reservoir. The charges on each plate are equal in magnitude but opposite (plus and minus) in polarity.

As it collects electrical charge, the capacitor develops a DC voltage that opposes the applied voltage that is causing current to flow into the capacitor. When the voltage on the capacitor equals the applied DC voltage, current flow ceases, since there is no net voltage to force charge onto the capacitor plates.

Charge cannot cross the dielectric barrier (the insulator) in a capacitor. Since the capacitor, when totally uncharged, appears like a short circuit to the imposed voltage, its instantaneous resistance is approximately zero. Therefore, voltage cannot appear instantaneously across an uncharged capacitor.

Capacitor Quiz

- **How is a capacitor made?**

It consists of two metal plates separated by an insulator.

- **What does a capacitor store?**

It stores electrical charges on its metal plates.

- **What sort of voltage develops in the capacitor?**

A DC voltage that is the opposite sense of the applied voltage.

- **Can current flow through a capacitor?**

No. Charge cannot cross the dielectric (insulator) barrier.



Taking Lecture Notes

- Clearly, **taking notes in class is probably the most important notetaking exercise**, as the teacher's words fly into the air and then dissipate forever!
- **Therefore class notes have to capture transient, ineffable intelligence and preserve it so that you can have the opportunity to turn “short-term knowledge” into “long-term knowledge.”**
- This is really where the “rubber meets the road” – **the content preservation that will determine whether you can master the class material or not.**



Basic Approach

- 1. Come prepared! Try to get a good night's sleep and have the proper material (pencils, good note pads, even your PC if it is allowed) to assure success.**
- 2. Get to class on time and stay the entire session. Not only will you get exposed to all the information, but you won't irritate the teacher!**
- 3. Avoid distractions. Turn off your cell phone. Don't sit next to someone who chatters. Sit on the front row if it helps your focus.**
- 4. Focus and don't let your mind wander! If you get confused, ask a clarifying question.**



**There is NO
disgrace in asking
questions!**



What Notes Do I Take?

- **Your instructor was only a fair note taker. I used to write down EVERYTHING that I could.**
- **Bad strategy! You need to take notes selectively. Sometimes a teacher will make clarifying comments that emphasize a point, but don't really expand on a basic idea.**
- **Sometimes an anecdote may be given. Don't write it all down – just write a key word that will remind you of the story.**
- **In general, be sensitive to keys about importance!**

“Keys”

- **Generally the teacher will state a main idea or theme. If you are not sure of it, **ASK**.**
- **In general, record formulas, examples, etc.**
- **Watch the teacher for behavioral clues. A hand gesture may emphasize an important point. Clearly, a problem or chart written on the board is a big hint!**
- **Listen for key sentences or phrases that emphasize important points: “A key point is,” “In summary,” “For example,” and so forth. Often the teacher will repeat a key point or change the delivery somewhat.**



Shortcuts and Symbols

- Often, you can develop a set of shortcuts which can speed your note-taking. These are similar to the short-cuts we take nowadays in texting: bff, imho, lol, w8, etc.
- You can mix symbols with text abbreviations to develop your own shorthand (not necessarily related to the old Gregg system, but similar in purpose):

w/o – without → – leads to or results in & – and

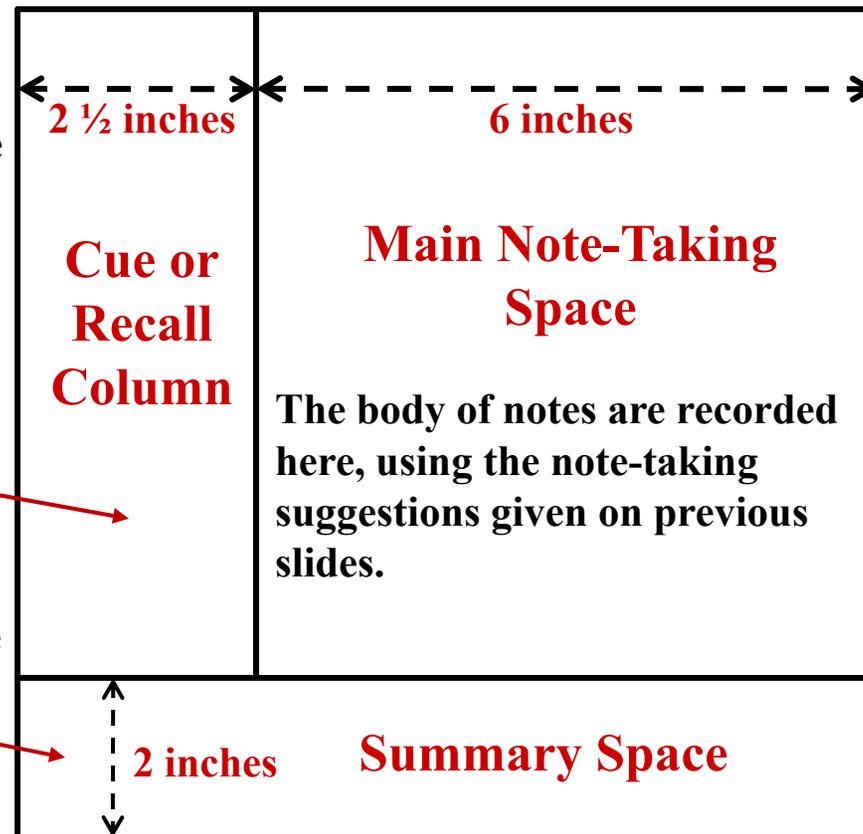
> – greater than b/c – because ~ – about or near

ex. – example (underline) – important @ – at

Cornell Note-Taking Method*

- The Cornell Method can be a big help in summarizing class notes.
- The paper is separated into three zones as shown.
- (Sometimes a heading zone is added – next page).
- The cue or recall column contains key words or questions to help stimulate the recall of major points in the notes.
- The summary space contains one or more pithy statements that summarize the notes.

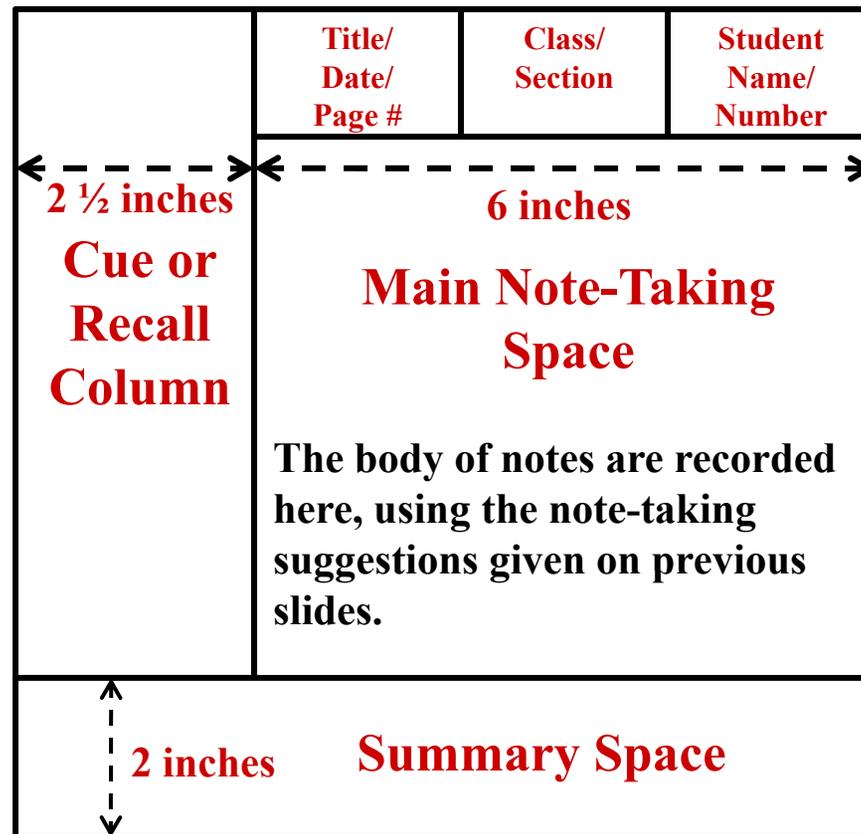
*Adapted from How to Study in College 7/e by
Walter Pauk, 2001 Houghton Mifflin Company*





Cornell Method (2)

- The upper section can also have a title space with key information about the note material.
- This identification data can be extremely important when you use the material in the future for reference.





Cornell Method (3)

- Recall column can help you learn material. Cover notes and answer key questions.
- Note that minimum words used to summarize our previous description of the electrical component called the capacitor.
- Summary contains key points only.
- The Cornell method is a good one to use in rewriting your notes.

	Class notes, Tues., March 3.	EE 1202, Section 002	Sally Smith, # 1248487
<p>What is cap?</p>  <p>Cap collects what?</p> <p>When cap. v = applied V. what happens?</p> <p>Can charge cross insulator?</p> <p>No charge, cap. V. = ?.</p> <p>Uncharged, cap = what?</p>	<p>“Capacitor = two conducting surfaces (usually metal) separated by dielectric, or insulator.” Cap. stores elec charge when current flows due to DC voltage (like water tank stores water). Charges on each plate are = in mag. but opp. polarity (+/-).</p> <p>As charge collects, cap. develops a DCV opposite to applied V. When the V on the cap. = applied V, current → 0, (no net V on cap.).</p> <p>Charge can’t cross dielectric (insulator) in a cap. Totally uncharged, cap. looks like short ckt. to applied V. → instantaneous resistance ≈ 0. Therefore, <u>V cannot appear instantaneously on cap.</u></p>		
<p>Capacitor – elec. component that collects charge when DCV applied. 2 metal plates separated by insulator (“dielectric”). Applied current only flows until cap. DCV = applied DCV. No instantaneous voltage on cap.</p>			



Outline Method

- **The outline summarizes lecture ideas in the “bullet point” or number point summary.**
- **Main points start out at the left.**
- **Sub-points, sub-sub-points, and still more minor point are indented further and further to the right.**
- **Major paragraphs may be roman-numeral, lower points using capital letters, still lower points using numbers, and lowest points perhaps using small letters.**
- **Another method is to use a decimal numbering system, with sub-points as shown on the next page.**



Outline Method (2)

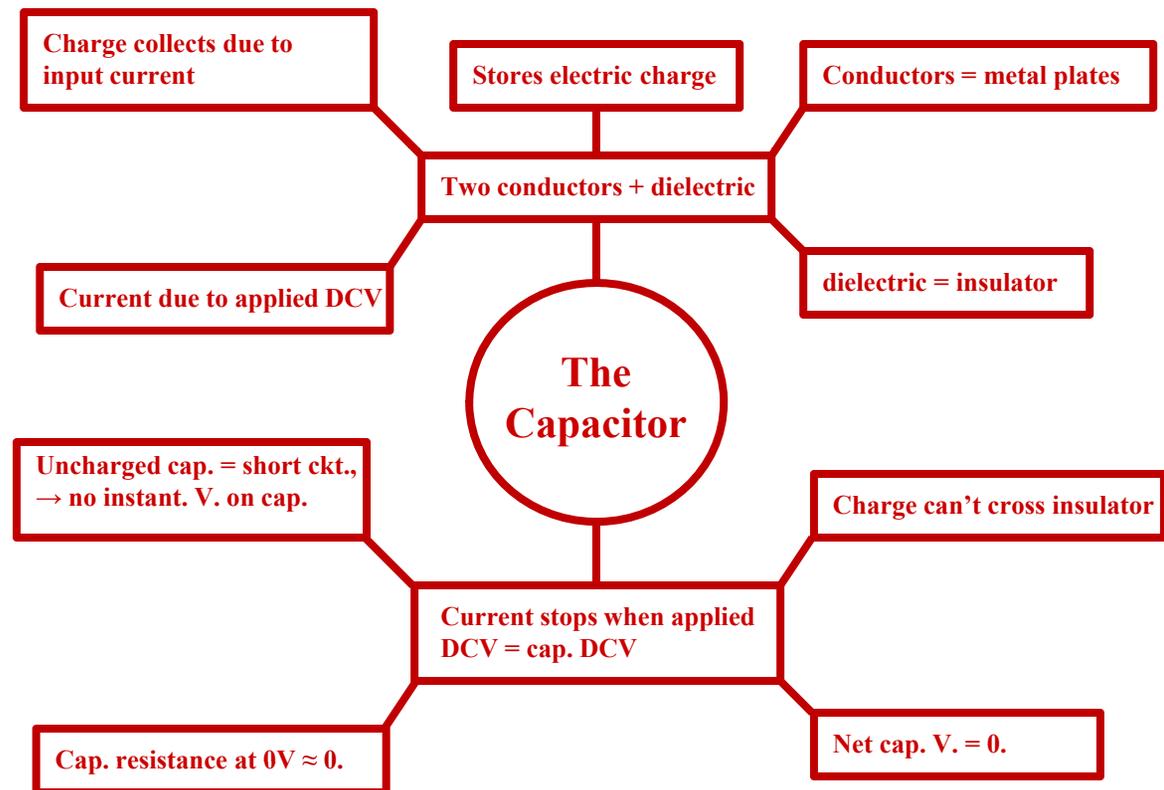
- In the outline method, notes are compacted, broad use of abbreviations and symbols, notes are really the summary, somewhat fleshed out.
- Often this is the best way to initially collect notes, while the Cornell method, or some variation of it, is the best way to rewrite them (more on rewriting later in this lecture).

The Capacitor

1. Capacitor = two conductors plus dielectric.
 - 1.1 2 metal plates.
 - 1.2 dielectric separator (insulator)
2. Cap. stores charge
 - 2.1 Current flows into plates due to applied DCV.
 - 2.2 Like water tank stores water.
 - 2.3 Charges on each plate are = in mag. but opp. polarity (+/-).
3. As charge collects, cap. develops a DCV opposite to applied DCV.
 - 3.1 When the cap. DCV = applied DCV, current ceases (No current due to no net V. on cap.)
 - 3.2 Charge can't cross dielectric (the insulator) in a cap.
4. When totally uncharged, cap. looks like short circuit to applied DCV.
 - 4.1 Instantaneous resistance ≈ 0 .
 - 4.2 Therefore, no voltage instantaneously across cap.

Mapping Note Method

- This method doesn't really light my fire, but it is shown for interest.
- Note that it is basically a chart or graphical method to display your note information.





Reviewing and Rewriting

- **We have already discussed several types of taking notes.**
- **Part of the assignment in this ECS 1200 class (and in other ECS classes) is to rewrite and re-organize your notes and then turn them in for credit (it is part of your homework assignment set).**
- **This required exercise is an important step in firming up the lecture knowledge and emphasizing important points in the lecture (turning “short-term” to “long-term” memory).**
- **What are the best ways to do the rewrite?**



Reviewing and Reorganizing

- **Label your notes carefully (in class).**
 - Help later access, remind you of material as you start to review.
 - A good labeling approach is shown on slides 19 and 20.
 - Transfer this labeling as you review and rewrite your notes.
 - On the rewritten notes, this careful labeling will assist you when you access the information to prepare for a test or start on a homework assignment.
- **Review, organize, and rewrite your notes ASAP!**
 - Reinforces today's learning today.
 - Remember short-term v. long-term memory!
 - A good approach is to use an outline approach to in-class note generation, then convert to the Cornell format as you review/rewrite.
 - Clean up (re-organize) and flesh out ideas which you might have recorded sketchily in class. This will help recall in later reviews.

Reviewing and Reorganizing (2)

- **Cleaning up and elaborating.**
 - Add clarifying notes from your memory – things you remember from class but did not have the time to note down.
 - Add any questions you have for office hour visits!
 - “Neaten up” to aid later recall and understanding. That is, change sequence of notes, where appropriate, to assure that the linear flow of ideas is as you remember from the lecture.
- **Summarize to broaden understanding.**
 - Add connections to points in lecture. There may have been verbal points made in class that connect points in your notes that you did not have time to record.
 - Add questions of items you need clarified (for later office hour visits!).
- **Keep notes for each course together, in sequential folders or areas.**
 - Aids in review, come test time.
 - Won’t waste time looking for course information.

Reviewing and Reorganizing (3)

- **Read text assignments as well. Textbook authors will often give the same information in a slightly different manner. This difference may help you understand the general topic better.**
- **Read any other related books which are referenced. They may give another slightly different viewpoint – which will help you understand the topic in general.**
- **As you do this reading, make notes as discussed above.**
- **Merge written and class notes as you do your rewrite to get a master set of notes that represents the best of the text material and the lecture. This material can then be the primary material for study before tests, along with your homework.**
- **This rewrite should be done before attempting homework, if at all possible.**

Result: World-Class Notes

- **When you have completed the review/rewrite sequence, you will have exceptional-quality notes that will:**
 - **Assure that you have an excellent basis of knowledge to attack the homework assignments.**
 - **Have you well-prepared for test review and study.**
 - **Assure you have preserved the key knowledge of the course.**
- **Pursued regularly and with focus and determination, this note-taking and review method will quickly become the natural thing to do.**
- **In general, it should take no more than 2-3 hours/week per class and make doing the homework far easier.**

Reviewing for Tests

- **With the note-taking methods mentioned, test review will be far easier and less time-consuming.**
- **In general, review notes first, then review homework, then attack any problems provided for a test review (as many instructors provide).**
- **If your review and rewrite initially had any highlighted questions or unclear concepts, make sure you have visited the teacher during office hours and cleared up all such vague areas in order to complete the note information.**

A Few Tricks to Help Master Content

- You can use certain strategies to help remember key content in notes (to prepare for tests, e.g.).
- Acronym example: **HOMES** – names of great lakes: **H**uron, **O**ntario, **M**ichigan, **E**rie, **S**uperior.
- Resistor color code values using a sentence: **B**etter **B**e **R**ight **O**r **Y**our **G**reat **B**ig **V**enture **G**oes **W**est (0-9):
black, brown, red, orange, yellow, green, blue, violet, gray, white
- Make study cards from notes to help knowledge process.
- Work with a friend to “teach” each other and quiz with note cards. Speak answers to reinforce aurally.