

Survival 101 for Engineering

Session 2 – Study Habits

Ron & Jane Graham School of Professional Development
College of Engineering

Presented by: Sean Maw, PhD, P.Eng.

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Series Objectives

- Enhance your chances of getting to 2nd year and beyond
- Make your life better ...

Series Topics

- Oct 7 is Writing Tests and Exams
- Oct 14 is Effective Study Habits and Test Preparations
- Oct 21 is Managing Your Personal Finances
- Oct 28 is ??

Today's Objective

- Improve your overall performance in your courses
- Reduce your stress



Build Your Abilities like a Structure

- Building a tower, you start with the foundation and then move up
- For you, this means:
 - metacognition e.g. simple is limited
 - tactics & strategies e.g. design
 - skills e.g. problem solving, labs, etc.
 - facts and concepts

Build Your Abilities like a Structure

- How do we use this model to enhance your academic success?
 - a) Invest in reading, lectures, knowing facts and concepts
 - b) Invest in practice of skills, and start with easy problems and work up to harder problems
 - c) Invest time in looking for patterns of types of problems
 - d) Invest in thinking about how you think about the subject

Think Deep

- When reading texts or listening to lectures ...
 - a) Don't let it wash over you like a breeze
 - b) Engage with the material and question it, think of implications, think of exceptions, manipulate it, **deeply** understand it
 - c) That engagement will make for deeper and longer lasting learning

Be Efficient

- If you are reading, spend more time reading the harder material
- If you are practicing problems, once you have a type of problem figured out and have done a few, move on
- If you are studying, well before the test/exam spend more time on harder problems/materials and just before the test/exam, review the easy stuff (to build confidence)
- If you have an assignment, do it **TWO** days before, so that you can review/catch errors the day before

Be Efficient

- If you study with a group of friends BE CAREFUL
- If you start from scratch with them, it's NOT time well spent; instead read first, then do some problems, THEN meet with your friends (to discuss concepts that weren't clear, and to go over problems that were hard)
- Don't spend huge amounts of time on one problem when doing problem solving e.g. statics
- Go to other problems, and then return (your brain will "work on it" while you're away from it)

Keep Up

- NEVER let yourself get behind by more than a week in a course
- It will be virtually impossible to recover, in most (engineering) courses
- Your learning and your work has inertia ... if you lose it, it takes a lot more effort to recover it

Be Consistent and Measured

- Make a weekly schedule and try to respect it
- Make room for extended work on each course at least two times a week (beyond attending lectures; 2 + the number of lectures missed, otherwise)
- Pace yourself
 - a) Build some recreation into your schedule
 - b) Make sure you get a good amount of regular sleep
 - c) Make sure you eat well
 - d) Guard your health with preventative measures
 - e) Reward yourself each day/week (if you did good work)

Preparing for Tests/Exams

- Want to build confidence and competence
- Be organized ahead of time (a week or more) so you know what to anticipate and how to prepare:
 - a) What will the test cover?
 - b) What types of questions?
 - c) How will they be marked?
- Get your stuff together
 - a) Assemble all your notes for the material being covered
 - b) Identify the areas in the text (esp. sections of problems)
 - c) Make “study notes”

Study Notes & the Toolbox Approach

- In taking courses, you gather/learn tools that you can put in your virtual toolbox
- When faced with a problem (test/exam), the first issue is “what kind of a problem is this?”
- The second issue is “how do I solve it?”
- You must get the first question right in order to be successful with the second question (which gives you the marks you seek)
- Read a question; what tool do I need to use?

Study Notes & the Toolbox Approach

- We spend a lot of time using tools i.e. working on ways of problem solving
- We spend less time in teaching and learning on identifying types of problems
- You must do this first task (knowing what tool to use) if the second task (using the tool) is to be of any value
- So invest time in this with your study notes
 - a) Identify all the types of problems that might arise on the test
 - b) For each type, note the way(s) to solve it
 - c) After making your study notes, make sure you know HOW to do each of these “ways of solving” i.e. practice using tools

Formula Sheet Tips

- Formula Sheets
 - a) Arrange by major topic/chapter
 - b) Make them neat/well organized/clear
 - c) Annotate them as needed
 - d) As well as formulas, note types of problems, and ways to solve them (when allowed to do so)



Thinking Dispositions

- Recent Harvard study on the thinking dispositions of the “best” thinkers (http://www.pz.gse.harvard.edu/patterns_of_thinking.php)
- There are seven, and they all pertain to your studying:
 - i. Be broad and adventurous: be open-minded, explore, think of different options
 - ii. Be intellectually curious: wonder, probe, look for patterns and anomalies, ask questions
 - iii. Clarify and seek understanding: seek connections and clarity, build conceptualizations
 - iv. Be planful and strategic: set goals, make plans and schedules, know your direction

Thinking Dispositions

- v. Be intellectually careful: the devil is in the details so be mindful of them, be thorough and precise
- vi. Seek and evaluate reasons: question the given, demand justifications, need evidence, weigh evidence
- vii. Be metacognitive: understand your own thinking patterns (strengths and weaknesses), be reflective, control yourself

Last Word

Excellence is a habit

“We are what we repeatedly do. Excellence, therefore, is not an act, but a habit.”

Aristotle

... but so is lack of excellence

Make excellence **YOUR** habit

Feedback on this Session

- Don't forget to sign the attendance sheet
- Will you be back next week?
- Any topic you want covered in two weeks time?

Q&A

