Getting the most out of supervisions

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I describe my approach to undergraduate Engineering supervisions, and offer some suggestions for you, the student, to get the most benefit from them. Supervisions are not a test, but instead an opportunity to develop your understanding of the course material. I am here to help, but preparation on your part makes this much more efficient.

Preparation is key

During a supervision, my first priorities are to:

- Assist with stumbling blocks in solutions to Examples Papers; and
- Clarify difficult concepts from the lecture notes.

Correspondingly, the student should:

- Read through the lecture notes and identify any gaps in their understanding;
- Attempt all Examples Paper questions covered so far in lectures; and
- Make a list of issues arising from the above to be covered.

This enables the best use of supervision time — by the end of the session you can expect that we will have discussed and hopefully sorted out all of your problems. If we get to the bottom of your list, or you don't bring any specific queries, I will:

- Ask you to justify your workings;
- Quiz you on important material covered in lectures;
- Talk about extensions of the material and its practical applications;
- Go through fundamental derivations or an unseen problem.

It is in your interest to lay out your solutions to the Examples Sheets clearly. Show intermediate lines in algebraic manipulations. Annotate your work with the mathematical technique, physical principle or assumption used at each step. Highlight final answers. You will find it easy to remember what you were doing, and your Tripos examiner will be thankful.

Clear expression of mathematics is an important skill for any professional Engineer, just like spoken or written communication. Your manager will need convincing that there no risk of the bridge you have just designed falling down.

Cribs are hazardous

You will learn more by making a persistent but unsuccessful attempt at a problem than by copying from a crib. It is absolutely fine to come to the supervision without all the answers — In fact that is almost the point of the whole exercise!

For difficult examples papers, I provide hints to help guide you towards the answers and reduce the temptation to crib. If you are still stuck, try these steps:

- Reread the question to confirm what information is given;
- List the physical principles or definitions you think might be relevant;
- Check that your equations are dimensionally consistent;
- Carefully verify algebraic manipulations, expansions or simplifications;
- Write down in words the methods that you have tried so far, and why you think your approach has not worked yet.

Once you have done all the above, there is really no point looking at a crib, and you might as well wait until the supervision to discuss the problem with me.