

## **Guidelines for new supervisors of engineering undergraduates**

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Supervisions vary widely depending on the subject, the level, and the individual characteristics of the supervisor and supervisees. This document sets out some general points for supervision of undergraduates reading Engineering (including MET).

There is a web-based 'Supervisor Marketplace' for supervisors to request work and Directors of Studies and module leaders to offer supervisions. You can find it at

<http://www.eng.cam.ac.uk/teaching/apps/supervisormarket/>

Please use it!

First and second year Engineering courses are organised by Directors of Studies in the different Colleges. You should state which subjects you would be interested in supervising, how many hours a week you would be able to do, plus a little about your background.

Supervisions for a third year Engineering or MET modules are organised by Module Leaders. Contact details and syllabuses for current modules are available from the undergraduate teaching website.

#### **Training Courses for New Supervisors**

All new supervisors are required to attend a training course before starting supervising. Courses are run by both the Engineering Department and the University near the beginning of the Michaelmas and Lent terms. To attend an Engineering course (the recommended route), email the Teaching Office, stating which papers or modules you are supervising.

Courses in the Michaelmas term will run on 10 and 15 October 2014, in the afternoon. Priority will be given to those who intend to supervise this term. Further courses will be arranged at the start of next term.

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## **FAQs for supervisors of engineering undergraduate courses**

The notes below answer the main questions and issues raised by new supervisors.

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**What is supervision?**

Large group lectures in the Department of Engineering are supplemented by supervisions ('tutorials' in other universities) of small groups of students (usually 2, but sometimes 1, 3 or more) paid for by the students' Colleges. Each undergraduate will usually have on average two or three supervisions a week during term, each lasting one hour. Supervisors may be academic or research staff, or graduate students.

Lecturers issue sheets of problems, known as 'Examples Papers', for undergraduates to work through in their own time, to develop and test their understanding of the lecture material. Most supervision time is usually devoted to discussion of these Examples Papers. Supervisors also encourage students to supplement the examples papers by attempting past examination questions (Tripos questions).

Department policy is to provide solutions to examples papers (cribs) to supervisors in advance of supervisions, and to make these available to students only after supervisions have taken place. Supervisors and students should expect to work through problems without using the cribs, and to use them only for checking answers and methods. Students take a very dim view of supervisors who 'supervise from the crib'.

**What are the aims of the engineering supervisor?**

Important aims of the supervisor include:

- to *support* students in improving their understanding of the lecture material: this may involve *helping* students to resolve their own difficulties with questions from Examples Papers and past examination papers, *explaining* difficult parts of the lecture course, and *illustrating* the wider applications of the lecture material.
- to help students to prepare for examinations.
- to encourage students to develop study and communication skills.
- to give students feedback on their progress, and to help identify particular weaknesses or gaps in knowledge.
- to report progress to the College each term, or immediately if there is serious cause for concern.

**Who appoints the supervisors?**

For first and second year courses (Part IA and IB respectively), Directors of Studies in each College appoint supervisors for their own students. For the specialist third-year courses (Part IIA Engineering and MET IIA), Module Leaders arrange supervisions for the students taking their module. **There are no supervisions for fourth-year modules** (Part IIB Engineering and MET IIB).

Prospective supervisors should use the web-based [Supervisor Marketplace](#) to look for supervision opportunities or to advertise their availability.

**How much supervising can I do?**

Preparation for supervising a new course involves significant effort so new graduate students are usually advised not to undertake supervision in their first year: their first priority should be establishing their own research programme. In the first year of supervising it is advisable to concentrate on one course only and to limit supervision to 2 or 3 hours per week. Supervisors should master all the relevant material and be able to answer Examples Papers questions without relying on the 'cribs'. Six hours per week is regarded as the usual maximum; this is often dictated by College regulations and by the normal conditions for graduate students receiving research grants. Graduate students should discuss their intended teaching load with their research supervisors in advance.

### Where do supervisions take place?

Space in the Engineering Department is very restricted: **no meeting or lecture rooms may be booked for supervisions**. Whenever possible, please use a supervision room in a College. Some Divisions have made spaces available for supervisions: ask your Divisional Administrator.

There are various open access spaces within Trumpington Street which cannot be booked but which are regularly used for supervisions when not required for large taught laboratory sessions.

LR3A is designated as a 'free-for-all' supervision area when it is not used for class teaching.

Other spaces include:

DPO

Structures Mezzanine

South Wing Mechanics Lab

Some other labs which are locked after about 5.30pm such as the EIETL and the Structures Teaching Lab may also be used during the day.

Some staff may be willing to allow certain named supervisors to use their rooms for supervisions from time to time.

A good supervision room should be quiet and well-lit, with seating arranged around a table so that you may sit alongside or face two or three students, keeping them all involved. Supervisors and supervisees will be sketching figures or writing down analysis, so make sure that everyone can see everything clearly.

### When do supervisions take place?

First and second year students have lectures and labs from 9am to 1pm (occasionally 2pm) from Monday to Friday, and may have some afternoon commitments from 2.00–4.30 pm. Lecture timetables and lab rotas are available on-line. Third-year students have more varied timetables and may have some free slots in the mornings. Many College and University sports fixtures take place in the afternoons.

The Director of Studies or Module Leader will give you the names, emails and (for Part I students) lab group numbers for your supervisees. For **first and second year students**, Directors of Studies will consult supervisors about when they wish to supervise, and will issue a complete schedule for the term. For **third-year students**, it is up to you to contact the students to arrange suitable supervision times etc. You may put a booking sheet on your office door, or email the students to arrange times, or use a Web-based booking system, as convenient. It is helpful to confirm the next session at the end of each supervision.

### How many supervisions per group?

For Part I, the Director of Studies will let you know how many supervisions to give, and will normally schedule them to fit with the examples paper schedule. The norm is approximately one supervision per examples paper. Increasingly, Colleges may put on classes (mini-lecture or examples class) for the whole College year-group on specific topics. Such classes allow experienced supervisors to go through material once rather than individually for each supervision group, and can be a cost-effective and efficient use of resources.

For Part IIA the standard number of hours of supervision in third year modules is **three**, plus one further hour for revision (which may be the following term). Note that modules may have more than three examples papers so you need to **cover more than one examples paper** in each supervision. Any additional supervision *must* be approved in advance by the relevant Directors of Studies.

### How do I obtain examples papers?

For **Part I**, Directors of Studies notify the Teaching Office of their proposed supervisors. Papers and cribs are e-mailed to you according to the schedule on the teaching webpages. Notify the Teaching Office if you do not receive the papers expected. **Third year** examples papers and cribs are issued to supervisors directly by the relevant module lecturers.

### What other teaching materials are available ?

You are expected to be thoroughly familiar with the material **as taught in the Engineering Department** for the course you are supervising, and to teach in a way which is compatible with this. Do not assume that approaches, terminology, symbols or sign conventions are necessarily the same as those used in courses from elsewhere.

- **Syllabuses, booklists, lecture timetables and links to online teaching resources** – see the CUED website.
- The **lectures** themselves: you are welcome to attend lectures in any course you are supervising. This is an excellent way of making sure you are teaching the right material at an appropriate level.
- **Completed lecture handouts** – check the Teaching Web index for online links (e.g. to Moodle or CamTools), or request directly from the lecturer (for all years).
- **Data books** – a standard set of booklets is issued to all students, and these are available in every examination. You may collect databooks for your supervisions from Teaching Office. Some third-year modules issue their own additional datasheets – these will be provided by the Module Leader or lecturer.
- **Past examination ('Tripos') papers and cribs** – available via the CUED website. Staff can access additional papers and cribs via a Raven login – notify the Teaching Office if you require this access.

### Quality control and feedback

**Part I:** Colleges monitor the effectiveness of supervisions using questionnaires. The Directors of Studies that employ you should be able to pass on feedback to help you to improve the quality of your supervisions.

**Third year:** feedback is obtained via the web-based Fast Feedback facility and is passed on to the relevant module leaders for action.

Feedback **from supervisors** is very helpful to lecturers in improving their courses. Please contact lecturers directly if you spot errors in lecture notes or on examples papers, or if you have any other comments.

### Reporting on supervisions

Your assessment of students' ability, effort and progress provides essential feedback to students as well as to the College. Supervision reports must be submitted each term for each student supervised, preferably a week before the end of term to allow them to be reviewed by the students' Directors of Studies and Tutors and discussed with the students.

[CamCORS](#) ('Cambridge Colleges On-line Reporting System for Supervisions') is the online system used for submitting supervision reports and payment claims. To use it you require a CamCORS supervisor account. Colleges should register you for Part I supervisions; for Part IIA, this will be done by the Teaching Office once you have attended a Supervisors' Training Course.

You can use CamCORS to email a student's Director of Studies and Tutor. You should use this facility **immediately** if any aspect of a student's performance is giving you serious cause for concern.

Students can normally see their reports on CamCORS once they have been approved by the Director of Studies.

### How much will I get paid?

All Colleges pay the same rate for supervision; it varies according to the number of students in the class. You can find out the current hourly rate from the Tutorial Office of any College that you supervise for.

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## Teaching Strategies for new undergraduate supervisors

### TEACHING STRATEGIES

#### What should I do in the first supervision with new students ?

- Explain the purpose of supervisions, and reporting arrangements.
- Explain that your main role is to help them.
- Emphasise that the onus is on **them** to get the most out of the supervision.
- Emphasise the importance of keeping up to date with all examples papers.
- Explain that they should be attempting past Tripos questions throughout the year, not limited to those that you set.
- Explain that you (and the College) expect full attendance, punctuality, application and courtesy.

Make it clear to the students that they should:

- Attempt all the examples questions that have been covered by lectures, bring them to the supervision and be prepared to discuss them.
- Bring a list of their difficulties, which can form an 'agenda' for the supervision. Encourage students to meet beforehand to help each other, to identify common areas of difficulty, and whenever possible to tell you about these beforehand (giving you time to prepare).
- Go through their lecture notes and bring any queries along to the supervision.

#### ... and in subsequent supervisions?

You should aim to:

- Have a provisional plan for the supervision, but pick up on their leads as far as possible.
- Keep students active by questioning.
- Give students feedback on their progress.
- Set a good example in all aspects, e.g. punctuality, preparation, thoroughness.
- Ensure that one student does not dominate the supervision.
- Ensure that *you* do not dominate the supervision.

#### How do I deal with "Show me how to do question number 5" ?

Help students to work it out for themselves. For example:

- Ask to see their attempts and invite them to explain their approach and thinking, and perceived difficulty.
- Ask which principles they consider are involved, and make sure that they have understood the correct basic principles.
- Use questions to direct their thinking.
- Ask students to explain to one another.

#### How do I deal with "We've no problems this week"?

- Ask to see their Examples Papers solutions, and Tripos question solutions.
- Check the problems which you know cause common misunderstandings.
- Ask students to propose alternative ways of attempting their problems.
- Ask students to prove bookwork (in outline), define terminology, sketch a suitable figure, state and justify approximations and appropriate precision, discuss significance and wider context, etc.
- Go through suitable past examination paper questions with the students on the spot ("OK, if you're

comfortable with this topic, let's have a look at..."). Some lecturers issue 'spare' questions marked "for supervisors eyes only" to assist you. Some supervisors hold 'Tripos classes' for larger groups, to go through practice Tripos questions on the spot.

### Should I set work, and expect it to be handed in before the supervision?

The supervisor has freedom here – it is good practice to occasionally take something in for closer scrutiny than can be achieved in a supervision (selected past paper questions, for example). You should consult the Director of Studies or module leader to check their expected norm, so that there is not an imbalance of workload across the courses. Many supervisors set work for the vacations, e.g. catching up on all outstanding Examples Papers and completing some specified past Tripos questions (*without* immediate reference to the cribs), for discussion at the first supervision of the next term. It is particularly important to consolidate Michaelmas term courses over the Christmas vacation, when the exams can seem very remote.

### Students and 'cribs'

Used properly, cribs can be a valuable learning aid – best practice would be for a student to make a decent attempt at a question, to work through the crib in detail up to the point when they think they can try again, and then to have another go without the crib. But there is a risk, particularly for weaker students under pressure of time, to skim through a first attempt and to more or less copy out the crib. This gives a false sense of security and commonly leads to exam failure.

Official availability of cribs to students is limited, although unofficial copies are widely circulated amongst students.

### Examples paper cribs

- Most Colleges put Part I cribs in the College library, usually about 2-3 weeks after the issue of the Examples Papers to students, or at the end of term (at the discretion of the Director of Studies). All Part I cribs are available in the Engineering Department library in the Easter term.
- Issue of cribs to third-year students is at the discretion of individual module leaders (usually online).
- Supervisors should always refuse requests from undergraduates to distribute copies of the supervisors' cribs, unless specifically authorised to do so by (e.g. by a third year module leader).

### Past examination cribs (for all years)

- Papers and cribs are available at all times for inspection by students in the Engineering Department library and in some College libraries. They are available online via the CUED website (with access to cribs limited to the past 5 years for students).

### What if student attendance, attitude or progress is unsatisfactory?

If a student misses a supervision without warning, is very late, is uncooperative or is ill-prepared, explain that such behaviour is discourteous to you and the supervision partner, is a waste of a valuable opportunity to learn, and is a matter of serious concern to the College. Any recurrence should be reported **immediately** to the Director of Studies (e.g. using CamCORS); don't wait until the end of term, as the student's behaviour may be part of a wider problem (e.g. ill-health, depression, inability to cope etc).

### Where can I get further advice?

Part I courses, most Directors of Studies are experienced supervisors and should be able to answer your queries. For third year courses, you might ask Module Leaders in the first instance. Module leaders are encouraged to arrange a briefing session with all their supervisors before the first supervision.

You can also contact [Dr Claire Barlow](#), the Director of Undergraduate Education, for advice.

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