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Course Handbook for the PhD Degree and MPhil in Engineering 2015/2016

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You should also consult the Code of Practice:
http://www.admin.cam.ac.uk/students/studentregistry/current/graduate/policy/quality/cop/

Graduate Studies Office:

Location
Room BEO 24, Office Floor, Baker Building, Trumpington Street

Admissions Enquiries:
01223 7 48233

Current Students and Degree Committee:
01223 7 48230

e-mail: graduate-studies@eng.cam.ac.uk

Staff:

Mrs Lorraine Baker
Office Manager

Mr Peter Brown
Administrator – Admissions & EPSRC Studentships

Mr Ronald Collinson
Administrator – Taught Courses and Modules

Mrs Sue Roffe
Administrator – Current Students

Secretary of the Degree Committee
Dr Stephan Hofmann

Deputy Head of Department (Graduate Studies)
Professor Holger Babinsky

Graduate Student Mediator
Mr Allan McRobie

Information about the Department and facilities can be found on the Intranet:
http://intranet.eng.cam.ac.uk/
and on the Graduate Studies web pages:
http://www.eng.cam.ac.uk/graduates/graduates-overview
General information on Graduate Studies can be found on the Student Registry Web Pages: http://www.cambridgestudents.cam.ac.uk/

Course Requirements

If you are a PhD Student you will not be registered from the outset for this degree. Instead, your admission is for a probationary year during which your registration status will usually be *PhD (probationary)*. At the end of the first year, if your progress has been satisfactory, you can expect to be registered retrospectively for the PhD degree from the date of your admission to the Department.

After registration you continue with your research for a further two years for the PhD degree. Occasionally, a student's performance in the first year indicates that he or she is unsuited to research at the doctoral level in the Department. In this case the student would not be registered for the PhD, but would leave the course at that point or be offered the opportunity to register for a different degree.

All students registered for the MPhil in Engineering and Probationary PhD students, follow a similarly structured first year. You will spend most of your time on your research project, which you write up as a first-year report (if you are a probationary PhD student) or thesis/dissertation (if you are registered for the research MPhil).

Students starting in October are required to take at least two 16-lecture modules chosen in consultation with your Supervisor from the list of approved modules. Each module lasts for one term and has an associated workload of about 40 hours. The module timetable and syllabuses can be found on the web pages. Students who have previously studied at Cambridge may be granted exemption from taking one module.

Students who start in January are required to attend at least one module in their first term (Lent Term) which will be formally assessed by the time of the first-year review meeting. The second module may be waived on application to the Graduate Studies Office. Students who start in April are required to attend at least one module in the Michaelmas Term.

For students who are taking more than one module, a single module may be replaced by a 'reading club'. A reading club comprises a group of students led by a member of staff who meet for about 2 hours per week for one term to work through a book or collection of papers. Students who are taking only one module may not replace it with a reading club.

The acquisition of Research skills (that is, skills not specifically associated with your own research topic, which are more widely applicable) forms an important part of your development during your research. All first-year research students are required to attend regular sessions of a Research and Communication Club (RCC), and your Supervisor will provide details of the club you should join. Typical activities within the RCC include reviewing the literature, preparation and delivery of presentations and posters, and development of writing skills.

Progress Examinations

You should enter your selection of Modules/Reading Clubs, and the RCC you will be taking, on your Module Entry Form. The form lists the exams you will take; you will also be expected to enter your module choices on an online system (instructions will be emailed to you). **If you believe that you are eligible for a module exemption, you must ask your supervisor to email the Graduate Studies Office in support of this exemption.**

If your supervisor recommends that you take modules in other Departments you need to get permission from the Graduate Studies Office in advance. Your supervisor is responsible for making arrangements for you to take the examination.

Attendance at Examinations is compulsory, if you have a disability or a specific learning difficulty your college tutor can apply for you to be allowed extra time for the exam. In case of illness you should complete the Allowance for Illness form on our Modules web page: http://www.eng.cam.ac.uk/graduates/current-graduate-students/first-year-assessment/modules

Modules are generally assessed by coursework, written examinations, or a combination of both. Coursework submission deadlines are set by the course lecturer. All written examinations of modules are held early in the Easter Term. Each written examination paper normally has a duration of one and a half hours plus an initial 10 minutes reading time. Past examination papers for modules can be found on the Teaching Office web pages. Standard data books for use in examinations are available from the Graduate Studies Office. Please consult the Module Leader or your Supervisor about the relevant data books that will be provided in the examination rooms for a particular module. Students whose first language is not English should note that dictionaries may not be taken into the examination rooms. Only certain models of calculator are approved for use in University examinations. Further information on examinations can be found on the Teaching Office web pages:
http://teaching.eng.cam.ac.uk/information/all/part-iib/root

First-Year Report

Graduate Students not at first registered for a degree or certificate are required to submit two soft-bound copies of a 10,000-15,000 word report on their work. The report, the title of which will have been agreed previously with your Supervisor, is to be submitted to your Head of Division's office by the published deadline. Earlier submission is encouraged. The Degree Committee attach importance to submission by the due date, and the Secretary of the Degree Committee is required to inform them of the name of any student who fails to submit by the prescribed time.

Your report should indicate that you have done a good deal of reading and obtained a thorough grasp of the problem. It should contain an informed survey of the relevant literature, a clear statement of the objectives of the research, a description of the methods to be used and a carefully thought out programme for the research which includes realistic estimates of timings and dates.

The aim should be to complete the Research by the end of the eighth term of residence, leaving six months for the satisfactory completion and examination of the dissertation. Although the regulations for the PhD degree allow up to twelve terms before permission for an extension need be sought, it is expected that the course leading to the PhD should be completed in three years, full financial support for longer than this is rarely possible.

If you have any questions concerning the content and format of your report, you should raise these with your Supervisor who will explain what is required.
Extensions to the deadline for the First Year Report will not usually be granted except in case of illness or other grave cause. Your supervisor or College Tutor should contact the Graduate Studies Office requesting an extension which will be considered by the Secretary of the Degree Committee.

MPhil in Engineering

A pre-meeting will be held with your Supervisor and Adviser 2 – 3 months before your submission date, at this meeting you should present an outline of your dissertation for discussion. Before submission your supervisor will expect you to give him or her drafts of the dissertation for comment. The Degree Committee will appoint two examiners for you who will be experts in your field of study, one of whom will be from outside the University.

Examination Procedure

Two soft bound copies of the final version of your thesis must be submitted to the Graduate Studies Office. The typical length of an MPhil thesis is 10,000-15,000 words. The Degree Committee cannot give permission to exceed the word limit of 15,000 words. The examiners of your thesis will want to satisfy themselves that **it is clearly written, that it takes account of previously published work on the subject and that it represents a contribution to learning**. The regulations for the MPhil in Engineering also require that the thesis **provides evidence that you can design and carry out investigations, assess and interpret the results obtained and place the work in the wider perspective of the subject.**

You will be required to attend an oral examination on your thesis and on the general field of knowledge within which it falls. The oral examination is normally held in the Department within eight weeks of the submission date. One-year students planning to leave the country at the end of their course may need to be examined early and should aim to submit his or her thesis well before the last possible date.

Registration for the PhD Degree:

To be registered for the PhD Degree you must pass the following steps:

1. Pass two modules (unless you have been granted an exemption), the pass mark for all modules is 50%. A list of approved modules can be found on the Graduate Studies web pages. If you are taking two modules one module can be replaced with a Reading Club, if one is available in your Research Area.
2. Attendance at a Research and Communications Club (RCC). Your supervisor will advise you which RCC you should attend.
3. First Year Report – the First Year Report must be submitted by the due date to your Divisional Administrator.
4. First Year Assessment – this assessment is in three parts
    a) Preliminary Meeting with your Supervisor and Adviser
    b) Technical Meeting with your Supervisor and an Assessor
    c) Formal Meeting with the Head of Division (or Deputy) and Assessor (in some cases an additional assessor will be appointed)

The most important element of your first year assessment is your first year report and your defence of it in the technical and formal meetings. At the formal meeting your performance in the Modules and your attendance at the RCC will also be considered. A marginal fail in one module can be compensated by an exceptional First Year Report. At the end of the Formal Meeting the Head of Division will send a recommendation to the Graduate Studies Office. After a successful first year review this recommendation will be for registration for the PhD degree. If you are not successful there are a range of possible outcomes.

Second Year Review

Towards the end of your second year of research there will be a second progress review meeting with your Supervisor and Adviser to discuss and assess your work over the first two years and to agree a programme leading to the submission of your PhD dissertation no later than the end of your tenth term.

At this stage it is likely that you will have written a journal paper or conference paper that could be considered at the meeting. Failing that, your Supervisor may require you to produce an outline of your PhD dissertation for consideration. At the meeting you will formally agree a programme for the completion of your PhD dissertation which, after amendment, if necessary, will be signed by your Supervisor, your Adviser and yourself.

Also by the end of your second year of research, you should have demonstrated that your oral and written presentation skills have reached a satisfactory level.

Supervision

The number of regular one-on-one meetings with your supervisor varies considerably between students and throughout the course of your study. Normally, it is expected that you see your supervisor at least twice a term to review your progress. At the start of your course you should agree with your supervisor how often you meet, who initiates meetings and how you are expected to prepare. In addition to your Supervisor, you will have an Adviser appointed by your Head of Division. Your Adviser will take an interest in your research and from time to time with others he or she will formally review your progress. If you are in difficulty in relation to your course, you should discuss the problem with your Supervisor or course Adviser.

In addition to your Supervisor there are other members of staff in the Department who by virtue of their position may be able to offer assistance or advice. These include, the Graduate Student Mediator (Allan McRobie), your Head of Group or Head of Division, the Secretary of the Degree Committee and the Deputy Head of Department (Graduate Studies). If your difficulties are not specifically related to your course you may find that your College Tutor can help or advise you.

If you wish to make a formal complaint you should arrange a meeting with the Secretary of the Degree Committee.

Sick Leave

If you are ill and cannot attend the Department for any reason you should let your supervisor know, in some Divisions you may be asked to inform the administrator or laboratory manager. If you are not able to work for a long period of time or have to leave Cambridge for several weeks you may have to apply to intermit your studies. Your College Tutor should be able to advise you on this and any personal problems you may have.

If you are not able to attend an examination or need an extension to deadlines for module coursework you should contact the Graduate Studies Office as soon as possible.

Working Hours and Holiday Entitlement

As a Graduate Student you are expected to work 40 hours per week. Working hours should generally conform to the Department working hours between 8.00 and 18.00, many of you will find that you will also be working in the evenings, especially towards the end of your course. Holiday arrangements should be made in consultation with your supervisor. A nominal allowance of 33 days holidays (including bank holidays) will usually be permitted.

Working while you study

It is a requirement of the University that all full time postgraduate students have their funding fully in place before they start their course. Under no circumstances will the need to earn money be accepted as a valid reason for failing to complete a course or an assignment on time. Students on one year courses are not normally allowed to undertake any type of paid work during their period of study, although on a few courses, permission may be given for students to give undergraduate supervisions. These regulations do not apply to part-time students.

The University does not allow students to undertake paid work outside the University or a college while they are studying full-time, and you should not expect to accrue additional income in this way. However, academic-related work, especially teaching undergraduates, can provide postgraduate students with valuable transferable skills, and a limited amount of this type of work is encouraged, provided it does not interfere with your studies. If you are a research student, with the approval of both your supervisor and your college tutor, you may be able to undertake a small amount of academic work, such as supervising undergraduates, invigilating examinations, working in a university/college library, or demonstrating in a laboratory. However, you should not rely on such work to generate essential income for your studies. The University stipulates that no more than ten hours a week may be spent in such activities; please note that some grant awarding bodies only allow a maximum of six hours per week. If you an overseas student, your visa may state that you can work up to 20 hours a week. However, to work more than ten hours a week is a breach of university regulations.

For more information: http://www.cambridgestudents.cam.ac.uk/your-course/graduate-study/your-student-status/working-while-you-study

Leave to Work Away

Leave to work away is granted on a termly basis. It you plan to be away from Cambridge to undertake research or field work you are required to apply via your CamSIS self-service page. A risk assessment must be attached to the application.

Students in their first year are not usually given leave to work away.

Department of Engineering

Departmental Organisation

Head of Department Professor D Cardwell

Deputy Head of Department (Graduate Studies) Professor H Babinsky

Deputy Head of Department (Teaching) Dr C Y Barlow

Operating Divisions the Department is divided by academic subject, into six divisions:

Division	Subject Area	Head of Division	Divisional Administrator
A	Energy, Fluid Mechanics & Turbomachinery	Professor R S Cant	Mrs Katia Babayan
B	Electrical Engineering	Professor J Robertson	Mrs Ann Martin
C	Mechanics, Materials & Design	Professor R S Langley	Ms Helen Gardner
D	Civil Engineering	Professor R J Mair	Mrs Lorna Everett-Walters
E	Manufacturing and Management	Prof A D Neely	Mrs Maggie Harriss
F	Information Engineering	Professor W Byrne	Ms Diane Hazell (*acting Divisional Administrator*)

Secretary of the Degree Committee Dr S Hofmann

Director of Research Mr P Guildford

Secretary of the Department Mrs S Collins-Taylor

Finance Manager Dr J Tran

The Graduate Student Mediator Mr F A McRobie

Contact details for all staff and students are available on the Intranet

Department Facilities:

Catering: On the Main Site in Trumpington Street the North Common Room, on the second floor is open from 07.30 to 16.15. Tea is available free of charge from 9.30. A range of sandwiches, snacks and cakes are available all day. Payment should be made by your University Card which you can top-up on-line http://epos.eng.cam.ac.uk/ or you can top-up with cash in the Common Room when it is not busy.

Satellite sites at West Cambridge have alternative local arrangements.

Telephones are available only for business in connection with your work. The Fax, which is available in the Enquiry Office, is also for business use but private messages, which are paid for, may be sent.

Useful Links:

Computing facilities http://www.eng.cam.ac.uk/itservices/
Department of Engineering Library http://www-lib.eng.cam.ac.uk/
Health and Safety http://www.eng.cam.ac.uk/safety/

Access to the Department

For reasons of safety and security the buildings and laboratories of the main site of the Department are protected by Closed Circuit Television (CCTV) and an Access Control System using proximity cards. The Institute for Manufacturing, CAPE Building and Whittle Laboratory have their own arrangements. All staff and students of the Department are issued with a university card which should be worn at all times and afford access to the Department out of hours.

Buildings: Baker and Inglis buildings have no access restrictions between 08.00 and 17.15 hours Monday to Friday. Outside those hours access to both buildings is available by proximity card. Normal access rights for Graduate Students are defined as 07.00 to 22.00 hours seven days a week. Anyone requiring access outside these hours should ask their Supervisor to write to the Security Office.

Rooms: Once inside the building, access to rooms and the Library is allowed until 22.00 hours but not thereafter unless special arrangements are made.

Laboratories: Normal hours are 08.00 to 17.00 hours. Certain Laboratories have access controlled by proximity card, all of which become active out of hours. Persons wishing to work after 17.00 hours may continue up to 22.00 hours provided another person is present. Permission to work after 22.00 hours must be obtained from your Supervisor. Working alone in a laboratory is an increased risk to your safety and requires a Risk Assessment (cleared by the Safety Office, room BNO-41) and deemed to be appropriate by your supervisor.

Working 'after hours': Special permission to enter the Department after 22.00 hours may be requested through a Late Work Permit Form, available from the Security Office. The form requires authorisation from your Supervisor and Head of Division. The security team have instructions to challenge anyone not wearing a university card and to escort from the building anyone unable to produce one.

Holiday shutdowns are notified in the Weekly Bulletin in advance for the Christmas period, Easter and the Late Summer Bank Holiday. Since permission to work in the Department during these periods will normally be denied, you should arrange your work programme so as to avoid the shut down periods.

Car parking is not available on the Main Site for research students during weekdays and offending vehicles are likely to be wheel clamped. Students have permission to park cars on the Main Site during the evenings and at weekends and access through the vehicle barrier is by proximity card.

Engineering Buildings on the West Cambridge Site

Whittle Laboratory
1 JJ Thomson Avenue

The Whittle Laboratory houses the Turbomachinery Group – part of Division A.

Electrical Engineering Building
9 JJ Thomson Avenue

The Electrical Engineering Building houses the Electrical Division – Division B.

Schofield Centrifuge Centre

The Schofield Centrifuge Centre is part of the Civil Engineering Division – Part of Division D.

The Alan Reece Building
Charles Babbage Road

The Alan Reece Building is home to the Institute for Manufacturing (IfM) – Division E.

Interactive Map of West Cambridge: http://map.cam.ac.uk/West+Cambridge+Site

Intellectual Property Rights

Extract from Ordinances, Chapter 13, Section 2
http://www.admin.cam.ac.uk/univ/so/2014/chapter13-section2.html

14. The entitlement to intellectual property rights in material created by a student shall rest with the student, with the following exceptions:

(a) Where a student is sponsored by a third party, a condition of sponsorship may be that the sponsor may own any intellectual property developed during the period of sponsorship. Sponsored students are, therefore, advised to check the terms of their sponsorship agreement.

(b) Where a student is working on a sponsored project as part of his or her course-work or research, the sponsor may own any intellectual property that the student develops. This will be specified in the research contract and the supervisor or Department should inform students if this is the case as early as possible in the admissions process and in any case prior to the start of their research.

(c) Where a student is working in collaboration with others in a manner that gives rise to joint creation of intellectual property, or interdependent intellectual property, the student may be required to assign intellectual property to the University or place the results in the public domain without restriction. He or she will be treated in the same way as University staff under these regulations. If this case is likely to arise, students should be so informed at the offer of admission where practical, and in any case prior to the start of their research.

A student who believes that clause (*c*) above has been inappropriately applied may make an application to the University Technology Referee under Regulation 15.

A sponsorship agreement may also place a requirement on the student and his or her examiners to undertake to keep results confidential while steps are being taken to protect intellectual property or to establish exploitation arrangements. The student may also be required to submit the dissertation to the sponsor for scrutiny before submitting it for examination. Any confidentiality agreement whose purpose is to delay public disclosure for the purpose of protection should usually not have effect for longer than three months from the time the sponsor is notified of intent to publish. When the University obtains an assignment of student-created intellectual property, it undertakes to provide the student with a share in such financial returns from the exploitation as there may be on the same basis as that applying to University staff by virtue of Regulation 25.

15. Where a dispute occurs between the University and a University staff member, a person referred to in Regulation 12 or a student, or between staff members, a person referred to in Regulation 12 and/or a student, as to the application of these regulations or the terms of the agreement on which they should enter, or on which they have already agreed to proceed, concerning the commercial exploitation of any intellectual property rights, or the subject matter to which such rights relate, the dispute shall, at the request of either, be referred to a University Technology Referee in accordance with Regulations 32–39.

Plagiarism

Don't be a copy cat!

The confidence which a reader has in the contents of a report, paper or dissertation is based on trusting the author. An important contribution to building that trust is through the author demonstrating clearly how they have built on the work of others and giving full credit to previous contributions as well as identifying unambiguously which parts of the overall work are their own, original contribution. That is the role of references in technical writing: to give recognition to other peoples work and to provide an 'audit trail' of links to previous work. Developing a good style of referencing takes some effort: in many cases, facts and ideas are so well known and standard that no reference is needed but if you have doubts about whether the reader might misinterpret the extent of your own contribution you should always refer explicitly to the source of any previous work.

University-wide statement on plagiarism

The General Board, with the agreement of the Board of Examinations and the Board of Graduate Studies, has issued this guidance for the information of candidates, Examiners and Supervisors. It may be supplemented by course-specific guidance from Faculties and Departments.

Plagiarism is defined as submitting as one's own work, irrespective of intent to deceive, that which derives in part or in its entirety from the work of others without due acknowledgement. It is both poor scholarship and a breach of academic integrity.
Examples of plagiarism include **copying** (using another person's language and/or ideas as if they are a candidate's own), by:

- **quoting verbatim** another person's work without due acknowledgement of the source;
- **paraphrasing** another person's work by changing some of the words, or the order of the words, without due acknowledgement of the source;
- **using ideas** taken from someone else without reference to the originator;
- **cutting and pasting** from the Internet to make a pastiche of online sources;
- **submitting someone else's work** as part of a candidate's own without identifying clearly who did the work. For example, buying or commissioning work via professional agencies such as 'essay banks' or 'paper mills', or not attributing research contributed by others to a joint project.

Plagiarism might also arise from **colluding** with another person, including another candidate, other than as permitted for joint project work (i.e. where collaboration is concealed or has been forbidden). A candidate should include a general acknowledgement where he or she has received substantial help, for example with the language and style of a piece of written work.

Plagiarism can occur in respect to all types of sources and media:

- text, illustrations, musical quotations, mathematical derivations, computer code, etc;
- material downloaded from websites or drawn from manuscripts or other media;
- published and unpublished material, including lecture handouts and other students' work.

Acceptable means of acknowledging the work of others (by referencing, in footnotes, or otherwise) vary according to the subject matter and mode of assessment. Faculties or Departments should issue written guidance on the relevant scholarly conventions for submitted work, and also make it clear to candidates what level of acknowledgement might be expected in written examinations. Candidates are required to familiarize themselves with this guidance, to follow it in all work submitted for assessment, and may be required to sign a declaration to that effect. If a candidate has any outstanding queries, clarification should be sought from her or his Director of Studies, Course Director or Supervisor as appropriate.

Failure to conform to the expected standards of scholarship (e.g. by not referencing sources) in examinations may affect the mark given to the candidate's work. In addition, suspected cases of the use of unfair means (of which plagiarism is one form) will be investigated and may be brought to one of the University's Courts. The Courts have wide powers to discipline those found guilty of using unfair means in an examination, including depriving such persons of membership of the University, and deprivation of a degree.

Timetable of events for First Year Research Students in Engineering

Not at First Registered for any Qualification (Probationary PhD)	**For students starting in October 2015**
Progress Review Meeting	30 June 2016
Submission of First Year Report to Divisional Administrators	4:00 pm, 31 August 2016

MPhil in Engineering (by research)	
Progress Review Meeting	30 June 2016
Submission of Thesis – to Graduate Studies Office	4:00 pm, 31 August 2016

Not at First Registered for any Qualification (Probationary PhD)	**For students starting in January 2016**
Progress Review Meeting	30 September 2016
Submission of First Year Report to Divisional Administrators	4:00 pm, 2 December 2016

Extensions to the First Year Report Deadline are not permitted without prior permission of the Secretary of the Degree Committee.

Appendix A

Engineering Modules for Graduate Students

Modules for 2015–16

	Number and title of module		Term	Mode	Contact	CRSID
Group A: Energy, fluid mechanics, and turbomachinery	4A2	Computational fluid dynamics	M	C	Prof P.G. Tucker	pgt23
	4A3	Turbomachinery I	M	E & C	Dr N.R. Atkins	nra27
	4A4	Aircraft Stability and Control	M	C	Dr W.R. Graham	wrg11
	4A7	Aerodynamics	M	C	Dr J.P. Jarrett	jpj1001
	4A10	Flow instability	L	E	Prof G.R. Hunt	grh20
	4A12	Turbulence and vortex dynamics	L	E	Prof E. Mastorakos	em257
	4A13	Combustion and IC engines	L	E	Prof N. Collings	nc10001
	4A15	Aeroacoustics	M	E	Dr A. Agarwal	aa406
Group B: Electrical engineering	4B2	Power Microelectronics	M	E	Prof F. Udrea	fu10000
	4B5	Nanotechnology	M	E & C	Dr C. Durkan	cd229
	4B6	Solid state devices and chemical/biological sensors	L	E	Prof D. Chu	dpc31
	4B7	VLSI design, technology, and CAD	L	E & C	Dr M. Holburn	dmh14
	4B11	Photonic systems	M	E	Prof T.D. Wilkinson	tdw13
	4B13	Electronic sensors and instrumentation	L	E	Dr P.A. Robertson	par10
	4B14	Solar-electronic power and generational distri	M	E & C	Prof G.A.J. Amaratunga	gaja1
	4B19	Renewable electrical power	M	E	Dr R.A. McMahon	ram1
	4B20	Display technology	L	E	Prof T.D. Wilkinson	tdw13
	4B21	Analogue Integrated Circuit	M	E	Prof A. Nathan	an299
Group C: Mechanics, materials, and design	4C2	Designing with composites	M	E & C	Dr M.P.F. Sutcliffe	mpfs1
	4C3	Electrical and nano materials	M	E	Dr S. Hofmann	sh315
	4C4	Design methods	M	E	Dr J.M. Cullen	jmc99
	4C5	Design case studies	L	C	Dr P.O. Kristensson	pok21
	4C6	Advanced linear vibrations	M	E & C	Prof J. Woodhouse	jw12
	4C7	Random and non-linear vibrations	M	E & C	Prof R.S. Langley	rsl21
	4C8	Applications of dynamics	L	E & C	Dr D.J. Cole	djc13
	4C9	Continuum mechanics	M	E	Prof N.A. Fleck	naf1
	4C16	Advanced machine design	L	E & C	Dr M.P.F. Sutcliffe	mpfs1
Group D: Civil, structural, and environmental engineering	4D4	Construction Engineering	L	C	Prof R.J. Mair	rjm50
	4D5	Foundation engineering	L	E & C	Dr G. Biscontin	gb479
	4D6	Dynamics in civil engineering	L	E & C	Prof S.P.G Madabhushi	mspg1
	4D7	Concrete structures	M	E & C	Prof C.R. Middleton	crm11
	4D8	Pre-stressed concrete	L	E & C	Dr C.J. Burgoyne	cjb19
	4D10	Structural steelwork	M	E & C	Mr F.A. McRobie	fam20
	4D13	Architectural engineering	M	C	Mr F.A. McRobie	fam20
	4D14	Contaminated land and waste containment	M	E & C	Prof A. Al-Tabbaa	aa22
	4D15	Sustainable water engineering	L	C	Dr R.A. Fenner	raf37
	4D17	Plate and shell structures	M	C	Dr K.A. Seffen	kas14
Group E: Management and manufacturing	4E3	Information Systems	M	C	Ms S. Pachidi	sp805
	4E4	Management of technology	M	C	Dr T.H.W. Minshall	thwm100
	4E5	International business economics	L	C	Dr J. Kroezen	jk632
	4E6	Accounting and finance	M	C	Dr O. Cole	oc219
	4E11	Strategic management	L	C	Dr S. Ansari	sma31

- 'M' refers to the Michaelmas (Winter) term; 'L' refers to the Lent (Spring) term.
- 'Mode' refers to mode of examination: either by coursework (C), by written examination (E), or both (E&C).
- The email addresses of contacts consist of that person's CRSID, ending with @cam.ac.uk. eg, if somebody's CRSID is rwdc2, that person's email address is rwdc2@cam.ac.uk.

	Number and title of module		Term	Mode	Contact	CRSID
Group F: Information engineering	4F1	Control system design	M	E & C	Prof M.C. Smith	mcs1000
	4F2	Robust and non-linear systems and control	L	E	Prof R. Sepulchre	rs771
	4F3	Optimal and predictive control	L	E	Prof J.M. Maciejowski	jmm1
	4F5	Advanced communications and coding	M	E	Dr R. Venkataramanan	rv285
	4F7	Digital filters and spectrum estimation	M	E	Prof S.J. Godsill	sjg30
	4F8	Image processing and image coding	L	E	Prof N.G. Kingsbury	ngk10
	4F10	Statistical pattern processing	M	E	Prof M.J.F. Gales	mjfg100
	4F11	Speech and language processing	L	E	Prof P.C. Woodland	pw117
	4F12	Computer vision and robotics	M	E	Prof R. Cipolla	rc10001
	4F13	Machine learning	M	C	Prof Z. Ghahramani	zg201
Group G: Engineering for the Life Sciences	4G1	Mathematical Biology of the Cell	L	C	Dr T.H. Savin	ts573
	4G3	Computational Neuroscience	L	C	Dr M. Lengyel	ml468
	4G4	Biomimetics	L	C	Dr M.L. Oyen	mlo29
	4G5	Molecular Modelling	M	C	Dr G. Csanyi	gc121
	4G6	Cellular and molecular biomechanics	M	E	Prof V.S. Deshpande	vsd20
Group I: Imported Modules	4I10	Nuclear Reactor Engineering	M	E	Dr E. Shwageraus	es607
	4I11	Advanced Fission and Fusion Systems	L	E	Dr E. Shwageraus	es607
Group M: Multidisciplinary modules	4M12	Partial differential equations and variational methods	L	E	Prof P.A. Davidson	pad3
	4M14	Sustainable development	M	C	Dr H.J. Cruickshank	hjc34
	4M15	Sustainable energy	L	c	Dr S.A. Scott	sas37
	4M16	Nuclear power engineering	L	E	Dr G.T. Parks	gtp10
	4M17	Practical Optimisation	M	C	Dr G. Csanyi	gc121
	4M18	Present and future energy systems	M	E	Prof M.J. Kelly	mjk1
	4M19	Advanced building physics	M	C	Dr M. Overend	mo318
	4M20	Robotics	M	C	Dr F. Iida	fi224
Group R: Research modules	5R5	Advanced experimental methods in geomechanics	L	C	Prof S.P.G Madabhushi	mspg1
	5R10	Turbulent reacting flows	M	C	Prof E. Mastorakos	em257
	5R13	Experimental methods in mechanics	M + L	C	Prof J. Woodhouse	jw12
	5R14	Nonlinear solid mechanics	M	C	Dr F. Cirak	fc286
	5R17	Integrated System Design	L	C	Dr P.O. Kristensson	pok21
	5R18	Environmental Fluid Mechanics	M	C	Prof N. Swaminathan	ns341
	5R19	Earthquake Engineering	L	C	Dr M.J. DeJong	mjd97
Additional Borrowing Modules made available by other MPhil/MRes courses in the Department and across the University	ESD300	Sustainability Assessment of Large Infrastructure Projects	L	C	Prof P.M. Guthrie	pmg31
	ESD450	Policy, Legislation and Government	L	C	Dr R.A.F. Fenner	raf37
	ESD500	Sustainable Design and Implementation	L	C	Dr R.A.F. Fenner	raf37
	ESD600	Development Engineering	L	C	Dr H.J. Cruickshank	hjc34
	ETB1	Clean Fossil Fuel Technologies	M	C	Prof E. Mastorakos	em257
	ETB2	Renewable Energy 1: Wind, wave, tidal and hydro	L	C	Prof N. Collings	nc10001
	ETB3	Renewable Energy 2: Solar and biofuels	M + L	C	Prof N. Swaminathan	ns341
	GRM1	Technology of graphene, related layered materials, and hybrid systems	L	E	Dr T. Hasan	th270
	GRM2	Science of graphene, relayed layered materials, and hybrid systems	M	E	Prof A. Ferrari	acf26
	NT01	Characterization techniques	M	E	Dr C. Ducati	cd251
	NT04	Nanofabrication techniques	L	E	Dr Z. Barber	zb10
	NT07	Physics at the nanometre-scale	M	E	Dr V. Narayan	vn237
Reading Groups Can replace one module	RC3	Robust control	M + L	C	Prof M.C. Smith	mcs1000
	RC4	Manufacturing management	L	C	Dr C. Velu	cv236
	RC13	Advanced Manufacturing Technologies	M + L	C	Professor W. O'Neill	wo207
	RC15	Engineering design	M	C	Dr W. Kerley	wpk21

- 'M' refers to the Michaelmas (Winter) term; 'L' refers to the Lent (Spring) term.
- 'Mode' refers to mode of examination: either by coursework (C), by written examination (E), or both (E&C).
- The email addresses of contacts consist of that person's CRSID, ending with @cam.ac.uk. eg, if somebody's CRSID is rwdc2, that person's email address is rwdc2@cam.ac.uk.

Appendix B

UNIVERSITY OF CAMBRIDGE

Department of Engineering

Research and Communications Clubs

Division A

5CA2: Energy 1 Leader: Professor S Hochgreb

Moodle Link: https://www.vle.cam.ac.uk/course/view.php?id=67941

5CA3: Energy 2 - Flow Instability and Thermoacoustics, Leader: Professor Matthew Juniper;

5CA4: Fluid Mechanics Leader: Professor H Babinsky

5CA5: Turbomachinery Leader; Dr C A Hall

Division B

5CB1: Electrical Engineering Leader Dr H J Joyce

Division C

5CC1: Mechanics Leader: Dr T Savin

5CC2: Design Leader: Dr D A Ruggeri

Division D

5CD1: Civil Engineering Leader: Professor A Al-Tabbaa

Division E

5CE1 Manufacturing Leaders: Dr T H W Minshall and Dr F Tietze

Division F

5CF3: Information Engineering Leader: Professor R Cipolla