



The M.Eng. in Materials Science Prelims Programme
Course Handbook 2016-17



Department of Materials



The M.Eng. in Materials Science Prelims Programme

Handbook 2016-17, Version 1 (09/10/16)

This handbook applies to students starting the degree programme in Michaelmas term 2016. The information in this handbook may be different for students starting in other years.

The Examination Regulations relating to this course are available at <http://www.admin.ox.ac.uk/examregs/2016-17/peinmatescie/studentview/> . If there is a conflict between information in this handbook and the Examination Regulations then you should follow the Examination Regulations. If you have any concerns in the first instance please contact Philippa Moss (philippa.moss@materials.ox.ac.uk).

The information in this handbook is accurate as at 1st October 2016, however it may be necessary for changes to be made in certain circumstances, as explained at www.ox.ac.uk/coursechanges . If such changes are made the Department will publish a new version of this handbook together with a list of the changes and students will be informed.

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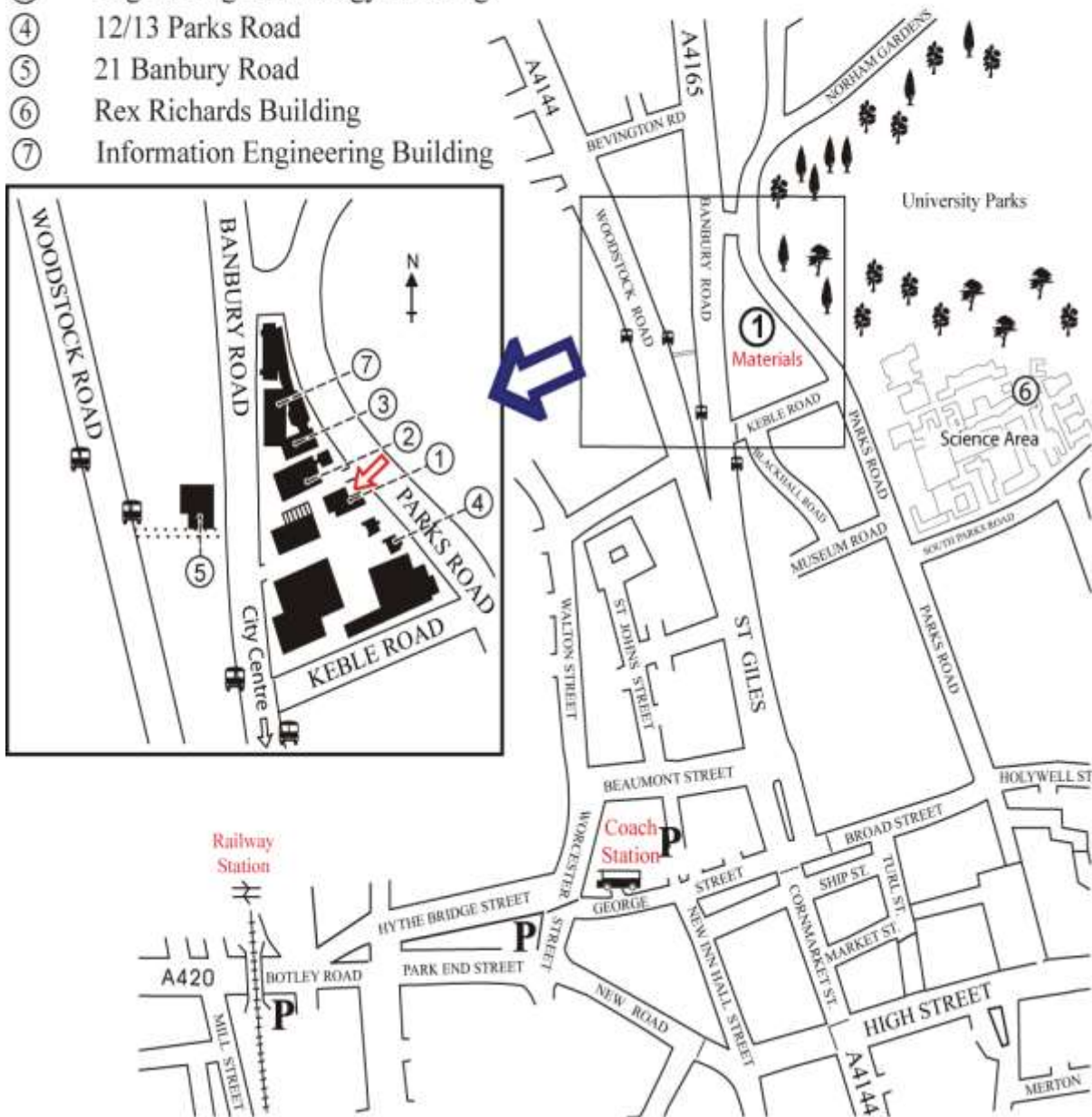
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Department of Materials - Map of Central Site

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- ⑦ Information Engineering Building



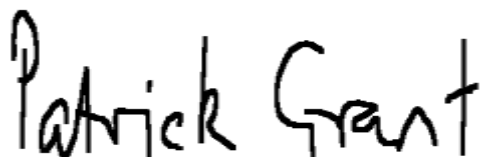
Welcome

A very warm welcome to the Oxford University Department of Materials. We aspire to be one of the best Departments of Materials Science in the world, and the undergraduate students are an important component of our past and future success.

The purpose of this handbook is to outline for the First Year the teaching and other arrangements for undergraduates studying within the Department. Tutorials will be organised separately by your College tutor. We offer a single undergraduate programme, The M.Eng in Materials Science (MS), and the handbook briefly describes the structure of lectures, practicals, tutorials and examinations for this, together with library, computing, career guidance, safety, counselling and other support facilities.

Our aim is to provide you with education and training that will enable you to develop the knowledge, skills and understanding that will help you to obtain employment at a professional level in industry or government, to pursue subsequent graduate studies, or to start your own high-tech business! The 4-year programme offers graduates an accredited M.Eng. honours degree, covering the science and engineering of materials within the context of a well-rounded general education. The programme is designed to balance the coverage of different elements of materials science. The coverage of materials includes metals, ceramics, polymers and composites. The coverage of disciplines includes physics, chemistry, engineering and mathematics and the coverage of properties includes mechanical, thermal, electronic and optical. We also encourage you to investigate the relationship between Materials Science and Society; wealth creation, employment generation and new scientific and technological developments.

Everyone in the Department is committed to achieving our aims, and all believe that the Department should be a friendly and exciting place for study and work. We look forward to your contribution and we hope that you will find your time here both stimulating and enjoyable.

A handwritten signature in black ink that reads "Patrick Grant". The signature is written in a cursive, slightly slanted style.

Professor Patrick Grant
Head of Department

Important dates and deadlines

Michaelmas Term:

- **Week 1 Wednesday** deadline for registration with Language Centre for Foreign Language course.
- **Week 2 Monday** deadline for submission of application for the Foreign Language course, once registration has been confirmed by the Language Centre. **Departmentally co-ordinated.**

Hilary Term:

- **Week 7 Friday Noon** deadline for receiving entries for Prelims. **College co-ordinated.**

Trinity Term:

- **Week 6 Friday 10.00 am** Submission of Practical Books and complete set of Practical Reports.

Trinity Term:

- **Week 7 Monday** Prelims written exam papers begin (provisional).
- **Week 8 Friday** Deadline for submission of application for Foreign Language Option in Year 2. **Departmentally co-ordinated.**

Long vacation:

- **July 2016** deadline for receiving entries for Prelims resits. **College co-ordinated.**
- **September 2016:** Prelims resits begin.

How to use this handbook

This handbook is a guide and reference for you throughout the first year of your Materials course at Oxford. It is your responsibility to read the handbook and familiarise yourself with the requirements of your course. It provides you with information to help you understand the processes and procedures of the Department and other facilities such as libraries and computers to which you have access. Additionally, it will give you details of how you will be assessed, what skills you should develop and how to get the most out of your first year. A new handbook will be issued to you at the start of your second year which is the reference for Part I of your Final Honours School, and in your fourth year as the guide to Part II of your Final Honours School. You will also need to refer to the lecture synopses that are available on the Department of Materials website:

www.materials.ox.ac.uk. The synopses reflect the intended content of the corresponding lecture courses, although the lecturer may include material which enhances the syllabus but which does not form part of the syllabus for the examinations. You should note that, as part of the lecture synopses, supporting readings lists are issued.

The full lecture programme is captured in a document called the “General Scheme of Teaching”. This describes how the programme fits together, setting out the structure, the contact hours and the terms in which each lecture course is delivered. The termly lecture lists provide the detail of the actual schedule. Used together, these provide you with a detailed outline of the entire programme.

The General Scheme of Teaching and each term’s lecture list will be published online on the Department’s website at: www.materials.ox.ac.uk/teaching/lecturelists.html. Lecture lists are subject to change. Lecture lists are usually not published till 2-3 weeks before term starts.

Any changes to the published lecture lists will be communicated to you via email; this is our primary method of disseminating information and you must ensure that you check your email regularly (see Section 16.3 for further details).

YOUR COURSE HANDBOOK SHOULD BE YOUR FIRST PORT OF CALL FOR ANY MINOR QUERIES CONCERNING THE COURSE. For other concerns or if you genuinely cannot find the correct information then your College tutor and the Academic Administration team are happy to help.

Course handbooks, together with supplementary information, are also published on the Department of Materials website (www.materials.ox.ac.uk/teaching) in searchable form.

Other sources of information

You should also receive:

- further information about your particular college's regulations and requirements,
- The Oxford Students' website and Student Handbook incorporating the Proctors' and Assessor's Memorandum (also available electronically at <http://www.admin.ox.ac.uk/proctors/info/pam/>). This includes general information about health and welfare matters; the Student Union; accommodation; sport and recreation; transport; personal safety and security. It provides a source of information about the University's academic support services including the University Language Centre and Careers Services. The booklet also gives the University's formal, statutory rules and requirements in relation to Conduct of Examinations, Harassment, Freedom of Speech, etc.

Further details may be found via the student portal of the University intraweb (<http://www.ox.ac.uk/students/>).

General

Comments or suggestions for matters which might be amended or which might usefully be covered in future editions of this handbook would be welcome. They should be sent to the Deputy Administrator (Academic) in the Department of Materials, or emailed to philippa.moss@materials.ox.ac.uk.

If you require this handbook in a different format, please contact the Deputy Administrator (Academic): philippa.moss@materials.ox.ac.uk or 73750.

Useful websites

Materials Department website

www.materials.ox.ac.uk

Undergraduate teaching page

www.materials.ox.ac.uk/teaching.html

WebLearn

<https://weblearn.ox.ac.uk/portal>

MPLS Online Bridging Programme

<http://mplsbridging.conted.ox.ac.uk/>

Oxford University information for students

www.ox.ac.uk/students/

Oxford Exam Papers Online

<https://weblearn.ox.ac.uk/portal/hierarchy/oxam>

Examination Regulations

<http://www.admin.ox.ac.uk/examregs/>

Electronic resources available through the University libraries

www.bodleian.ox.ac.uk/eresources

Radcliffe Science Library

www.bodleian.ox.ac.uk/rsl

Careers Service

www.careers.ox.ac.uk

Language Centre

www.lang.ox.ac.uk

Institute of Materials, Minerals and Mining

www.iom3.org

Oxford Materials Society

www.oxfordmatsoc.com

Materials Society (Undergraduate)

www.matsoc.com/

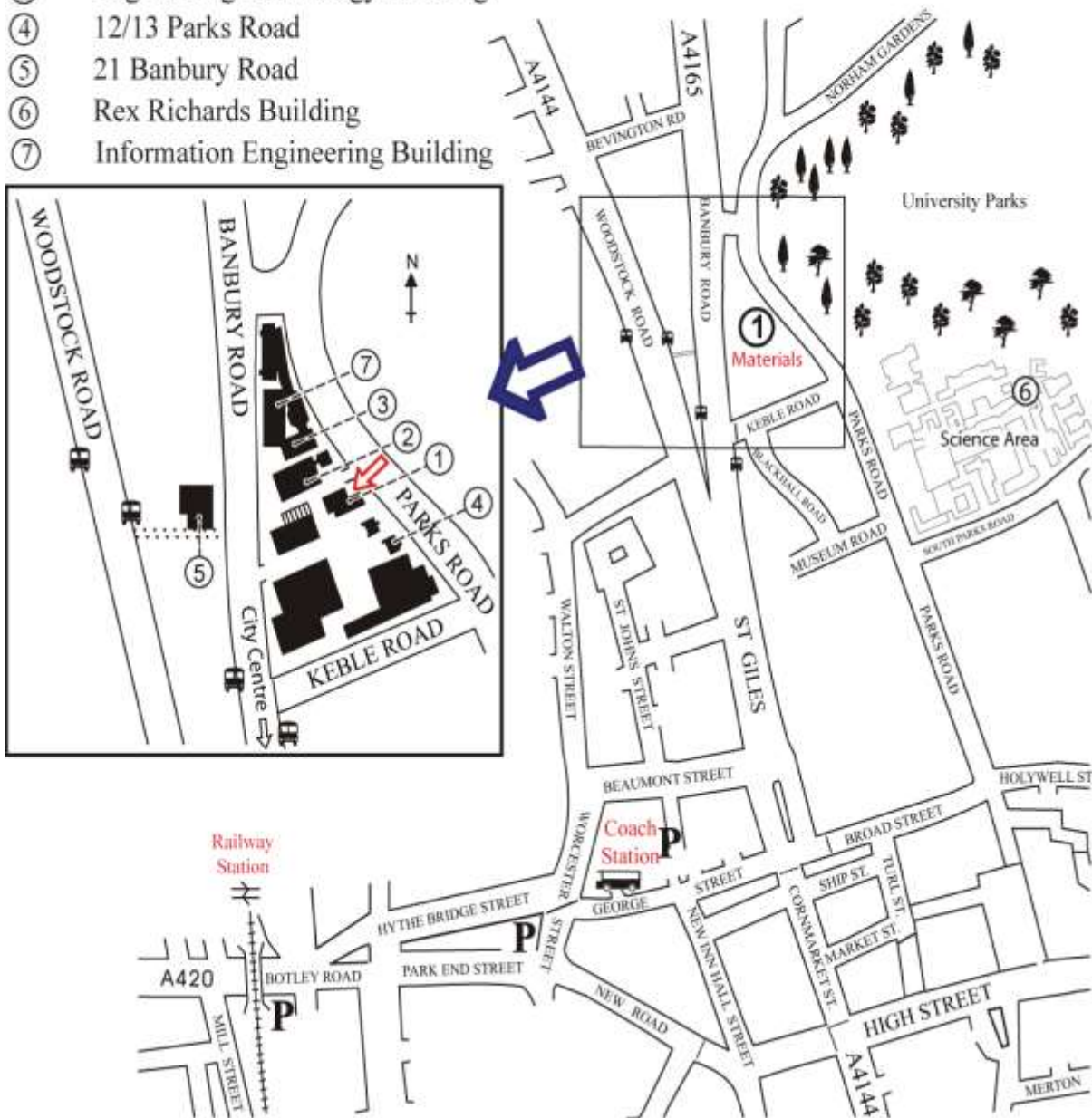
Freshers' Induction Programme

1.15 - 4.30 pm Friday 0th Week Michaelmas Term 2015 (9th October)

- 1.15 p.m. Arrival and sign in
Ms Philippa Moss, Academic Administrator
Coffee & Tea
- 1.35 p.m. Brief tour of the Department
JCCU representatives
- 2.00 p.m. Introduction to the Department
Professor Patrick Grant, Head of Department
- 2.15 p.m. MS Course Structure
Dr Adrian Taylor, Director of Studies and Chair of Department of
Materials Academic Committee
- 2.40 p.m. Departmental Library & Overview of WebLearn
Dr Adrian Taylor and Ms P Moss
- 2.50 p.m. Health and Safety
Professor Andrew Watt, Departmental Safety Officer
- 2.55 p.m. Harassment Advisors
Ms Paula Topping, Harassment Advisor
- 3.00 p.m. Maths Provision
Professor Simon Benjamin, Maths Lecturer
- 3.05 p.m. Practical Classes
Professor Keyna O'Reilly, Practical Class Organiser
- 3.15 p.m. Crystallography Classes
Dr Aurélien Trichet & Dr Dmitry Isakov, Crystallography Class
Senior Demonstrators
- 3.30 p.m. Materials Society
Society Member
- 3.40 p.m. Introduction to the JCCU & Election of 1st year representatives
JCCU representatives
- 4.05 p.m. Undergraduate Questionnaires & Photographs
Dr Adrian Taylor, Ms P Moss & Mr Chris Akinola, Dept. IT
Support
- 4.20 p.m. Photos, Tea and Biscuits
Freshers and Teaching Staff

Department of Materials - Map of Central Site

- ➔ Reception
- ① Hume-Rothery Building
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- ④ 12/13 Parks Road
- ⑤ 21 Banbury Road
- ⑥ Rex Richards Building
- ⑦ Information Engineering Building



1 Where to find places in the Department

The map of the Science Area shows the location of various buildings of interest to Materials undergraduates. The location of some places of note within the various buildings is listed below.

Entry to the Hume-Rothery Building, 21 Banbury Road and 12/13 Parks Road is controlled by means of a swipe card access system. All people wishing to enter these buildings must carry their University card and use this to swipe themselves in. All undergraduates should have been entered automatically into the system; this will give you entry between 8 am – 6 pm, Monday - Friday. If you have any problems with your swipe card, please see the General Office.

1.1 Hume-Rothery Building (HR)

The Lecture Theatre is on the ground floor.

The General Office and the Reception Area are on the ground floor.

The Director of Studies' office is room 30.19 on the second floor.

The Deputy Administrator (Academic)'s office is room 30.05 on the second floor.

The Academic Administrative Assistant's office is room 30.07 on the second floor.

The Deputy Administrator (Finance) and the Finance Officer are located on the ground floor in the General Office.

The Departmental Library is in room 20.19 on the first floor.

The main photocopier is in the document room in the General Office on the ground floor.

The Head of Department's office is room 30.16 on the second floor.

The Head of Administration & Finance's office is room 30.14 on the second floor.

The Administrative Secretary's office is room 30.13 on the second floor.

Stores are in room 10.17 on the ground floor.

The Main Workshops and the Students' Workshop are in the basement.

1.2 Holder Building (HB) (includes Common Room (Café))

The Teaching Laboratory and the Computer Room (room 316) are on level 3.

The Common Room, which is a shared facility with the Department of Engineering Science, is on level 2. Undergraduates are welcome to use the Common Room, where you can buy coffee, tea, lunches and snacks.

The Electron Microscope Suite is on level 1.

1.3 Engineering and Technology Building (ETB)

The ETB is also known as the Wolfson Building.

The Wolfson Meeting Room is room 20.30.

1.4 21 Banbury Road (BR)

The Lecture Room is room 00.19 on the ground floor.

The Conference Room is room 10.04 on the first floor.

1.5 12/13 Parks Road (PR) – QIP-IRC Building

The Meeting Room is on the first floor.

1.6 Thom Building (Department of Engineering Science)

Lecture Rooms 1, 2 and 3 are on level 1.

Lecture Rooms 4, 5 and 6 are on level 8.

1.7 Information Engineering Building (Department of Engineering Science)

The IEB is most easily accessed through the ETB Building.

Lecture Room 7 is on the ground floor.

Lecture Room 8 is on the ground floor.

2 Staff of the Department of Materials

2.1 Professors

Professor Simon Benjamin, Professor of Materials, Senior Fellow in Quantum Materials, Fellow of Wolfson College

Professor Andrew Briggs, Professor of Nanomaterials, Director of Quantum Information Processing Interdisciplinary Research Collaboration, Professorial Fellow of St Anne's College

Professor Peter Bruce FRS, Wolfson Chair in Metallurgy, Professorial Fellow of St Edmund Hall

Professor Sir Richard Brook OBE, FREng, on leave of absence as Director of the Leverhulme Trust, Honorary Fellow of St Cross College

Professor Martin Castell, Professor of Materials, Fellow of Linacre College

Professor Ralf Drautz, Visiting Professor of Materials

Professor Colin English, Visiting Professor of Materials

Professor Feliciano Giustino, Professor of Materials, Fellow of Wolfson College

Professor Patrick Grant FREng FIMMM, Head of Department, Vesuvius Professor of Materials, Director of Faraday Partnership in Automotive and Aerospace Materials, Fellow of St Catherine's College

Professor Nicole Grobert, Professor of Materials, Fellow of Corpus Christi College

Professor Chris Grovenor, Professor of Materials, Fellow of St Anne's College

Professor Sir Peter Hirsch FRS, Emeritus Professor, Emeritus Fellow of St Edmund Hall

Professor Angus Kirkland, Professor of Materials, Fellow of Linacre College
Professor Sergio Lozano-Perez, George Kelley Professor of Materials
Professor James Marrow, James Martin Chair in Energy Materials, Fellow of Mansfield College
Professor Peter Nellist, Professor of Materials, Fellow and Tutor of Corpus Christi College
Professor John Pethica FRS, Visiting Professor of Materials, Fellow of St Cross College
Professor David Pettifor CBE FRS, Emeritus Professor, Emeritus Fellow of St Edmund Hall
Professor Roger Reed, Professorial Research Fellow in Materials and Solid Mechanics, Fellow of
St Anne's College
Professor Steve Roberts, Professor of Materials, Fellow of St Edmund Hall
Professor George Smith FRS, Emeritus Professor, Emeritus Fellow of Trinity College
Professor John Sykes, Emeritus Professor, Emeritus Fellow of Mansfield College
Professor Richard Todd, Professor of Materials, Goldsmiths Fellow and Tutor of St Catherine's
College
Professor Jamie Warner, Professor of Materials, Fellow of Balliol College
Professor Michael Whelan FRS, Emeritus Professor, Emeritus Fellow of Linacre College
Professor Angus Wilkinson, Professor of Materials, Fellow of St Cross College
Professor Peter Wilshaw, Professor of Materials, Fellow and Tutor of St Anne's College

2.2 Associate Professors and Lecturers

Professor Hazel Assender, Fellow of Linacre College
Professor Harish Bhaskaran, Research Lecturer in Materials
Professor Jan Czernuszka, Harassment Advisor, Fellow and Tutor of Trinity College
Professor Marina Galano, Maths Class Coordinator, Fellow and Tutor of Mansfield College
Professor Michael Moody, Fellow and Tutor of Trinity College
Professor Keyna O'Reilly, Fellow and Tutor of The Queen's College, Part II Project Organiser,
Practical Class Organiser
Professor Mauro Pasta, Fellow and Tutor of St Edmund Hall
Professor Kyriakos Porfyrakis, Associate Professor of Materials
Professor Jason Smith, Fellow and Tutor of Mansfield College
Professor Susie Speller, Research Lecturer in Materials
Professor Andrew Watt, Academic Fellow, Safety Officer, Fellow of St Cross College
Professor Jonathan Yates, Chair of Tutors' Committee, Fellow and Tutor of St Edmund Hall,
Associate Professor in Materials Modelling

2.3 Senior Research Fellows and others involved in undergraduate teaching

Dr Chris Allen, Research Fellow
Dr Natalia Ares, Research Fellow
Dr David Armstrong, RAE Research Fellow
Dr Jenny Barnes, Academic Visitor
Dr Sebastian Bonilla, Research Fellow
Dr Konstantin Borisenko, Senior Research Fellow
Dr David Collins, Research Fellow
Dr Panos Dallas, Research Fellow
Dr Marina Filip, Research Fellow
Dr Barbara Gabrys, Academic Visitor
Dr Daniel Haley, Research Fellow
Dr Ann Huang, Research Fellow
Dr Dmitry Isakov, Research Fellow and Crystallography Class Organiser
Dr Mike Jenkins, Fellow and Tutor of Trinity College
Dr Lewys Jones, Industrial Visits Academic Organiser
Dr Emanuela Liberti, Research Fellow
Dr Jan Mol, RAE Research Fellow
Dr Rebecca Nicholls, EPSRC Fellow in Materials for Energy Applications
Dr Christiane Nörenberg, Academic Visitor
Dr Kumar Sundaram, Research Fellow
Dr Ed Tarleton, EPSRC Fellow in Dislocation Modelling
Dr Mark Telling, Academic Visitor
Professor John Titchmarsh, Senior Visiting Research Fellow
Dr Aurelien Trichet, Research Fellow and Crystallography Class Organiser
Dr Stuart Wilkinson, Business Plan Tutor
Dr Neil Young, Senior EM Research Scientist
Dr Eugene Zayachuk, Research Fellow

2.4 Support staff

Mr Chris Akinola, IT Officer
Mrs Marion Beckett, PA to the Director of Studies and Graduate Studies Secretary
Mrs Suzie Engela, Academic Administrative Assistant
Miss Jane Foxall, Finance Assistant
Mrs Alison Jewitt, Administrative Secretary
Ms Lorraine Laird, Secretary to the Head of Department

Mr Tim McAree, Deputy Administrator (Finance)
 Ms Philippa Moss, Deputy Administrator (Academic), Disability Contact
 Dr Jo Roberts, Deputy Administrator (Research & Finance)
 Mr Rob Saunders, IT Officer
 Dr Mimi Nguyen, Teaching Class and Chemical Safety Technician
 Mrs Grace Sewell, Librarian
 Mrs Jayne Shaw, Schools Liaison Officer
 Dr Charlotte Sweeney, Head of Administration and Finance
 Dr Adrian Taylor, Director of Studies, Chairman of Faculty, Chairman of Teaching Committee,
 Team Design Project Organiser, Summer Placements Advisor, Admissions Coordinator
 Mrs Paula Topping, Teaching Laboratory Technician, Harassment Advisor
 Ms Debbie Townsend, Finance Officer
 Dr Paul Warren, Senior IT Officer

2.5 Where to find members of staff

Table 1 lists the locations, telephone numbers and email addresses of members of staff. Note that all email addresses end with @materials.ox.ac.uk. The full names and locations of buildings can be found in Section 1. You can find telephone numbers and email addresses of members of the University on the www at the URL: www.ox.ac.uk/contact.

Also <http://www.materials.ox.ac.uk/contacts/roles.html> gives access to the full business card details.

Table 1: Offices, telephone numbers and email addresses of staff members.

Name	Building	Room	Phone	First part of email
Prof. H.E. Assender	BR	10.18	73781	hazel.assender
Prof. S.C. Benjamin	PR	40.02	73732	simon.benjamin
Prof. G.A.D. Briggs	PR	30.05	73725	andrew.briggs
Prof. M.R. Castell	ETB	40.24	73786	martin.castell
Prof. J.T. Czernuszka	BR	10.15	73771	jan.czernuszka
Mrs S. Engela	HR	30.07	73706	suzanne.engela
Miss J.M.E. Foxall	HR	10.12	73680	jane.foxall
Prof. M.L. Galano	BR	20.07	73776	marina.galano
Prof. F. Giustino	RR	40.27	12790	feliciano.giustino
Prof. P.S. Grant	HR	30.16	73761	patrick.grant
Prof. N. Grobert	HB	30.13	73762	nicole.grobert
Prof. C.R.M. Grovenor	ETB	50.12	73751	chris.grovenor
Dr D.V. Isakov	BB	10.02	83707	dmitry.isakov

Name	Building	Room	Phone	First part of email
Mrs A.J. Jewitt	HR	30.13	73666	alison.jewitt
Prof. A.I. Kirkland	HB	30.07	73662	angus.kirkland
Ms L.I. Laird	HR	30.17	73737	lorraine.laird
Prof. S. Lozano-Perez	HB	30.23	73707	sergio.lozano-perez
Prof. T.J. Marrow	BR	10.12	73938	james.marrow
Prof. M.P. Moody	HR	30.21	73693	michael.moody
Ms P.J. Moss	HR	30.05	73750	philippa.moss
Prof. P.D. Nellist	HB	30.04	73656	peter.nellist
Dr C. Nörenberg	BR	10.20	83782	christiane.norenberg
Prof. K.A.Q. O'Reilly	BR	10.02	73743	keyna.oreilly
Prof. M. Pasta	HB	40.22	83324	mauro.pasta
Mrs G. Sewell	HR	20.19	73697	library / grace.sewell
Prof. J.M. Smith	PR	30.10	73780	jason.smith
Dr C.A. Sweeney	HR	30.14	73747	charlotte.sweeney
Dr A.O. Taylor	HR	30.19	83227	adrian.taylor
Prof. R.I. Todd	ETB	40.23	73718	richard.todd
Mrs P. Topping	HB	30.20	73658	paula.topping
Ms D. Townsend	HR	10.12	73702	debbie.townsend
Prof. J.H. Warner	PR	20.03	73790	jamie.warner
Dr P.J. Warren	HR	30.06	73727	paul.warren
Prof. A.A.R. Watt	PR	20.03	73790	andrew.watt
Prof. A.J. Wilkinson	BR	20.04	73792	angus.wilkinson
Prof. P.R. Wilshaw	ETB	50.15	73736	peter.wilshaw
Prof. J.R. Yates	RR	40.17	12797	jonathan.yates

3 General Safety and Security

3.1 Fire

You should familiarise yourself with the general procedures involved if a fire breaks out. These are described below.

If a fire breaks out:

The main consideration is to get everyone out safely.

Sound the fire alarm (break glass alarm points are situated at all exits) and dial 999 from any phone.

Follow the evacuation procedure:

Familiarise yourself with escape routes.

- **Do Not** wedge open or obstruct fire doors.
- **Do Not** use lifts.

If there is time, close windows and doors, and switch off electrical appliances.

Go to the assembly point.

3.2 Security

Please do not leave personal belongings around. Thefts do occur with depressing regularity! You must use your university card to gain access to the Hume-Rothery Building (outside the General Reception area only), 21 Banbury Road and 12/13 Parks Road. If you leave a Departmental building, please ensure that the door closes securely after you.

3.3 University Policy Statements

For further information on University Policy Statements and full statements of Safety Organisation, please visit the University Web Site at: www.admin.ox.ac.uk/safety/.

Further information on safety in the Teaching Laboratory is found in Section 9.1.

4 Who to ask for information about the course

If you have any queries about the running and scheduling of your course, i.e. deadlines for coursework, timetable issues, the titles of coursework, when the exams are going to start, etc. then you should consult the Deputy Administrator (Academic) and her assistant as your first port of call. If they cannot help, they will refer your question to the appropriate member of staff.

Exceptions are:

- a) matters concerning voluntary industrial placements, the industrial tour and team design projects, for which your first port of call should be the Director of Studies, and
- b) matters concerning Part II projects, which are looked after by the Part II Project Organiser, assisted by the Academic Administrative Assistant.

Table 2 lists the staff members, both academic and non-academic, who are involved with the administration of the course. Please note though, if you have worries about your academic work (for example, maybe you feel overwhelmed or confused about certain topics) **then you should obviously first consult your College Tutor.**

Table 2: Administration of the course

Dr Adrian Taylor	Director of Studies & Chair of the Academic Committee, Chair of the Faculty of Materials
Ms Philippa Moss	Deputy Administrator (Academic), Disability Contact
Mrs Suzie Engela	Academic Administrative Assistant
Prof. Keyna O'Reilly	Part II Project Organiser, Practical Class Organiser
Dr Lewys Jones	Industrial Visits Organiser
Prof. Marina Galano	Maths Class Coordinator
Prof. Jonathan Yates	Chair of the Tutors' Committee
Mrs Paula Topping	Practical Class Technician
Mrs Marion Beckett	PA to the Director of Studies, Graduate Studies Secretary
Ms Debbie Townsend	Finance Officer
Miss Jane Foxall	General Office
Prof. Andrew Watt	Departmental Safety Officer, Chair of the Safety Committee
Dr Dmitry Isakov and Dr Aurelian Trichet	Crystallography Class Organisers

5 Consultation, Feedback from you to us, on our teaching provision and feedback from us to you on your work and progress

5.1 The Joint Consultative Committee for Undergraduates (JCCU), Feedback from students to the Department, and other Student Representation

The JCCU constitution states:

‘The committee shall consider and make recommendations upon teaching arrangements, lectures, seminars, the practical course, syllabuses, examinations, libraries and welfare of junior members’.

In other words, the JCCU provides a direct opportunity for you to constructively criticise, praise and complain about the course, and also to suggest improvements. Information about the JCCU, including the current student representatives, and previous minutes can be found at:

<http://www.materials.ox.ac.uk/teaching/jccu.html>.

The Committee consists of, normally, three students from each year group, as well as members of academic staff. We meet once a term over a light lunch. The Chair is always an undergraduate (currently Nils Behling (nils.behling@queens.ox.ac.uk)), and the Secretary is currently the Deputy Administrator (Academic), who is also an ex officio member of the Committee. Other ex officio members of the Committee are the Director of Studies, Dr Adrian Taylor, the Practical Class Organiser and Part II Project Organiser, Prof Keyna O’Reilly, and the Industrial Visits Organiser, Dr Lewys Jones. In addition, one member of academic staff from the Faculty of Materials is an elected member (Prof Michael Moody).

Probably the most obvious indication to undergraduates of the JCCU’s existence is the lecture and coursework feedback questionnaires that are considered by the Committee each term. This is the third year in which we are trialling the use of electronic questionnaires and the online surveys will be available towards the end of each course or piece of coursework. The questionnaires are analysed and summarized by the Deputy Administrator (Academic).

Positive comments are encouraged as well as negative ones. Please do take the time to complete these. All comments are carefully considered by the Academic Committee and both major and minor changes are continually made to courses in the light of student feedback. In addition, a summary of the completed questionnaires is available to the Head of Department, for use in lecturers’ annual appraisals, and cases for promotion and references. If you have any issues regarding the course, from lectures, to practicals, to maths classes, you should raise these with your year representative who in turn will raise them at the following JCCU meeting.

Another role of the JCCU is to arrange social functions (such as the annual drinks party) and overseas industrial tours (usually annually). Recent successes were the industrial tours to: California Easter 2011, Milan Easter 2012, Beijing Easter 2013, Krakow in Poland Easter 2014, Ontario in Canada Easter 2015 and Sweden Easter 2016. The Worshipful Company of Armourers and Brasiers, The Worshipful Company of Ironmongers, The IOM3 and industrial sponsors supported these trips.

The three JCCU members from your year are normally elected on **Friday, 0th Week of Michaelmas term** - please consider standing for membership of this important committee of the Department. If you have any queries about the JCCU or the course in general, please do not hesitate to contact any member of the JCCU, or the Chair of the Academic Committee.

The Mathematics, Physical and Life Sciences (MPLS) Division has a similar forum, the Undergraduate Joint Consultative Forum (UJCF), with a broader agenda, on which the Department of Materials has student representation. Further information may be found at www.mpls.ox.ac.uk/study/applicants/student-representation. Student representatives sitting on the Divisional Board are selected through a process organised by the Oxford University Student Union (OUSU). Details can be found on the OUSU website along with information about student representation at the University level.

Students on full-time and part-time matriculated courses are surveyed once per year on all aspects of their course (learning, living, pastoral support, college) through the Student Barometer.

Previous results can be viewed by students, staff and the general public at:

<https://www.ox.ac.uk/students/life/student-engagement>.

Final year undergraduate students are surveyed instead through the National Student Survey.

Results from previous NSS can be found at www.unistats.com. The results of these surveys are considered by various committees, namely the JCCU and the Departmental Academic Committee.

5.2 Feedback to our Students

There are many mechanisms by which you gain feedback from us on the quality of your work and receive guidance on how to improve. Your primary resource for feedback and guidance is your college tutor, who will be pleased to talk to you about how to best make use of the feedback we provide.

The following list summarises many of the ways in which we provide you with feedback:

- Discussion in weekly tutorials and/or written comments on returned tutorial work.
- Reports on OxCORT.
- Discussion in oral marking sessions and/or written comments on your lab reports, and the mark you receive for each lab report.
- Feedback on your answers to college collections (mock exams).
- Exam marks.
- Discussion of work submitted for revision tutorials.
- Your scores in the Y1 on-line maths quizzes.
- Discussion of work submitted for Y1 and Y2 Maths classes.
- Comments from Junior Demonstrators on your use of your laboratory notebook.
- Marks and comments on your Y1 Crystallography classwork.
- Comments and peer review on your Y2 Business Plan talks.
- Comments and Peer review on your Y2 Materials Selection poster.
- Comments on your Part II (Y4) Research Project talks.
- Comments on your progress by your team design project supervisor, by Senior Demonstrators for the modelling and characterisation modules and by your Part II project supervisor.

In addition, more generic feedback is found in the detailed reports of the Examiners, which are available to you via our UG Weblearn site, and in the two Y3 workshops “Answering finals exam questions” and “Answering GP3 Exam Questions”.

6 Overview of the Course

6.1 General Structure of the Materials Science Programme

The overall structure of the MS programme is shown below. More details of the courses taken each year and the options available are discussed in the following sections.

The Department is responsible for the provision shown in the outline below and your College is responsible for the associated tutorials, tutorial classes (although these are co-ordinated by the Department), and pastoral care. Naturally, the Department also plays a pastoral role even though this responsibility lies primarily with your College. If you have any concerns over the Department's teaching please raise these as soon as possible so that they can be addressed promptly. Details of who to contact are provided in 21.3Appendix A (Complaints and Appeals).

An Outline of the Programme Content, Assessment and Key Progression Criteria for the M.Eng in Materials Science

(Please note that this outline is for illustrative purposes and that details may change from time to time.)

THE **CURRENT** OXFORD M.ENG DEGREE PROGRAMME IN MATERIALS SCIENCE IS ACCREDITED BY THE INSTITUTE OF MATERIALS, MINERALS AND MINING (IOM3), ON BEHALF OF THE UK ENGINEERING COUNCIL, TOWARDS THE ACHIEVEMENT OF **CHARTERED ENGINEER STATUS**.

1st year (“Prelims”)

Courses

Directly examined

- Structure of materials
- Properties of materials
- Transforming materials
- Mathematics for materials science

Continual assessment

- Practical work
- Crystallography classes

Additional elements

- Engineering drawing and CAD classes
- IT skills
- Industrial visits (optional)
- Career planning
- Foreign language (optional)
- Introduction to errors in measurement

Assessment

First University examination (‘Prelims’): Four written papers; continual assessment components equivalent to a fifth paper. Resit for written papers available in September.

Progression

Normally, students are required to achieve an overall mark of at least 40% in the first year examination in order to progress to Year 2.

(The ‘prelims’ mark does not contribute to the final degree classification upon graduation.)

2nd year & 3rd Year ('Part I Final Honours School')

2nd year

Courses

Directly examined

- Structure and transformation of materials
- Electronic properties of materials
- Mechanical properties
- Engineering application of materials
- Foreign language (optional)
- Supplementary subject (optional)

Continual assessment

- Practical work
- Industrial visits
- Entrepreneurship course

Additional elements

- Mathematics
- Industrials talks
- Communication skills

3rd Year

Courses

Directly examined

Options courses in Materials. For further information about the options courses we offer at present please see our [Lecture Course Synopses](#)

Continual assessment

- Team design project, assessed by written report and oral presentation
- Characterisation of Materials or Materials Modelling module, assessed by written report
- Industrial visits

(At the start of Year 3 it is possible to transfer to a 3-year BA degree in Materials Science, graduating at the end of Year 3. A student opting to do this takes a smaller set of materials option lecture courses and carries out a literature-based research module. The BA degree is not accredited by the IOM3/UK Engineering Council. This option is intended for the occasional student who may change their mind about their career path while following our M.Eng programme.)

Assessment

Final University examination, Part I: Six written papers; continual assessment components equivalent to a further two papers. Resit available one year later.

Progression

Normally, students are required to achieve an overall mark of at least 50% in the Part I assessment in order to progress to Part II).

4th year (extended terms) Part II Final Honours School')

Courses

Research project (full-time). **See the Materials website for examples of [previous projects](#).**

Additional elements

- Presentation skills
- Project management skills
- Industrial visits
- Careers events
- Information skills & Reference Management
- Writing skills and IPR
- Foreign language option
- Technology transfer
- Workshop skills
- Lab VIEW

Assessment

Final University examination, Part II (equivalent to 4 papers): Part II dissertation submitted and assessed; Oral examination of project dissertation. No resit.

6.2 The First Year

During the first year, you will study four different course units, called papers, and attend various general lectures/courses (see Table 3). The outline syllabuses for these units are given below and they are described in detail in the Prelims Lecture Course Synopses Booklet, which can be found on-line at www.materials.ox.ac.uk/teaching/ug/uglectures.html. In addition, you must carry out practical work in Materials and Crystallography to a satisfactory standard (see Section 11).

Lectures are an important part of the teaching in science subjects, and whilst attendance at lectures is not compulsory in Oxford, we strongly advise you to attend them. In many cases the material that is taught in lectures is not available in books. Tutorials are likely to be based on the lectures so attendance at lectures ensures you will get the most from your tutorials. Lecturers are free to give out lecture handouts for their courses and many do. **However, the Departmental policy on this practice allows to the lecturers' discretion as to whether they provide notes or not, and as to how detailed those notes may be.**

Note that the use of electronic media (e.g. smart phones) to record material from lectures (visual and audible) is not permitted unless express permission is granted. This includes taking photos of projected slides, not least because of copyright law (the copyright is owned by the lecturer!).

Table 3: The First Year Courses and General Lectures

Subject	Lecture Content
	Hours per course
General Lectures	
Induction course	3
Introduction to the Prelims Programme	1
Teaching, Study Skills & Learning Development	1
The IOM3 – Benefits of Student Membership	1
Engineering Drawing & CAD Classes	6
Introduction to Errors in Measurement	2 + 1 class
Looking to the Future - Career planning	1
Year 2 Options Briefing	1
Practical Class Meetings	3
Introduction to Computing	3
Industrial Placements Briefing	1

Subject	Lecture Content	Hours per course
Materials Science 1: Structure of Materials		
Introduction		2
Crystallography & Diffraction		14
Crystallography Classes		36
Metals & Alloys		4
Ceramics & Semiconductors		4
Defects in Crystals		6
Polymers & Composites		4
Elementary Quantum Theory & Bonding		6
Materials Science 2: Properties of Materials		
Introduction		1
Elasticity & Structures		8
Electrical & Magnetic Properties		8
Mechanical Properties		10
Classes in Mechanical Properties		3
Kinetic Theory of Gases		4
Materials Science 3: Transforming Materials		
Introduction to Processing		4
Thermodynamics		10
Kinetics		4
Electrochemistry		4
Polymer Synthesis		4
Microstructure of Materials		12
Mathematics for Materials		
Vectors, Matrices & Determinants		11
Ordinary & Partial Differentiation		7
Indefinite & Definite Integrals		4
Taylor & MacLaurin Series		2
Complex Numbers		4
Ordinary Differential Equations		6
Revision Lectures		8

6.2.1 Thinking ahead to the second year

The following sets out some options for the second year that you may wish to consider. There will be a briefing session providing further information about these in Trinity Term. If you are interested in pursuing any of these options, you should discuss these with your Tutor.

Foreign Language Option:

You have the opportunity to study a foreign language in the first year of your course. You may continue this study in your second year - please see Section 8.2 for details.

Supplementary Subject:

There is also an opportunity for you to substitute the second year "Entrepreneurship and New Ventures" module with a Supplementary Subject.

The Supplementary Subjects are advertised each year and are currently:

- Quantum Chemistry: <http://course.chem.ox.ac.uk/quantum-chemistry-mt.aspx>
- History and Philosophy of Science: <http://course.chem.ox.ac.uk/history-and-philosophy-of-science-mt.aspx>

(Note that these resources may only be accessed from within the Oxford network)

Each course is taught via a programme of lectures and classes, held throughout Michaelmas Term and Hilary Term, normally examined by a 3-hour written examination paper sat at the end of Hilary Term.

6.3 The Second and Third Years

In the second year, you will study core courses, which are divided into four main subject areas: Structure and Transformation of Materials; Electronic Properties of Materials; Mechanical Properties; and Engineering Applications of Materials. Laboratory work continues in the second year (see Section 9). You can also carry out a team-based Entrepreneurship and New Ventures module.

The third year Materials lectures are offered as option courses with lectures taking place in Michaelmas and Hilary terms. Students who are following the M.Eng programme study the courses in both terms. Students normally choose 3 courses per term. The courses currently available are as follows: Advanced Engineering Alloys & Composites: Design & Application; Advanced Manufacture with Metals & Alloys: Processing, Joining and Shaping; Strength & Failure of Metals & Alloys; Nanomaterials; Devices; Materials & Devices for Optics & Optoelectronics; Biomaterials and Natural Materials; Engineering Ceramics: Synthesis & Properties; Advanced Polymers; Prediction of Materials' Properties; and Materials for Energy Production, Distribution & Storage.

At the beginning of the third year it is possible to opt to transfer to a 3 year BA (Hons) degree. A student opting to do this takes a smaller set of materials option lecture courses and carries out a literature-based research module. Further information regarding this and the structure of the second and subsequent years of the course are provided in the FHS Course Handbook and the associated lecture synopses. This option is intended for the rare case when a student may not wish to pursue the study of Materials Science for a further fourth year.

A copy of the FHS Course Handbook pertinent to your year of matriculation will be provided in your 2nd year.

In addition, you will carry out a Team Design Project in the first two weeks of Michaelmas Term and take one of two options modules, Advanced Characterisation or Materials Modelling, in the first two weeks of Hilary Term. It is possible that in 2017/18 both modules will be a compulsory part of the FHS programme.

6.4 The Fourth Year (M.Eng)

The fourth year consists of a research project, examined by a thesis and viva. .

6.5 Coursework

The assessed coursework in your first year comprises Crystallography class work and Practical reports. Please read the extract below taken from the Examination Regulations on the Materials Science Preliminary Examination:

“In the assessment of the Materials coursework, the Moderators shall take into consideration the requirement for a candidate to complete the coursework to a satisfactory level as defined from time to time by the Faculty of Materials and published in the Course Handbook.

Materials Science Coursework shall comprise practical work and work carried out in crystallography classes, as described in the Course Handbook, and it shall be assessed under the following provisions:

- (a) Candidates will be required to submit the Materials Practical Class reports to the Chair of the Moderators in the Preliminary Examination in Materials Science, c/o the Deputy Administrator (Academic) in the Department of Materials, not later than 10am on Friday of the sixth week of Trinity Full Term.
- (b) The Chair of Faculty, or deputy, shall make available to the Moderators, not later than the end of the first week of Trinity Full Term, evidence showing the extent to which each candidate has completed the Crystallography coursework normally pursued during the first two terms preceding the examination.

(c) **Failure of the coursework will normally constitute failure of the Preliminary Examination.** Materials Coursework cannot normally be retaken. Exceptionally a candidate who has failed the coursework may be permitted jointly by the Moderators and the candidate's college to retake the entire academic year."

Students continue with coursework throughout their degree (see Table 3). More details on levels of satisfactory performance may be found in Section 11.

6.6 The Lecture Timetable

The timetable of lectures each term and the general scheme of lectures for the whole year are available at www.materials.ox.ac.uk/teaching. Changes are notified to students by e-mail and on the website.

7 Teaching and Learning throughout your Degree

The 4-year Materials Science M.Eng programme is accredited by the Engineering Council at M.Eng level for the educational requirements of Chartered Engineer status. The programme comes under the auspices of the Materials Subject Benchmark Statement (QAA). It is an FHEQ level 7 qualification. The aims of the programme are shown below in Table 4.

Table 4: Educational aims of the programme

Materials Science

- to provide a course of high academic quality in Materials Science in a challenging and supportive learning environment that attracts some of the best students from the UK and elsewhere;
- to provide students with a broad, balanced knowledge of Materials Science, supported by the necessary background science;
- to develop transferable skills related to problem solving, communication, practical experimentation, and computing;
- to bring students to a position on graduation that allows them to choose confidently from many careers, whether within Materials Science or not, and enables them to contribute rapidly to their chosen employment. This includes bringing them to a position to start graduate study for a research degree at a leading university either in the UK or overseas.

7.1 Bridging Programme

You were all strongly encouraged, during the summer before you joined us, to engage with the MPLS Division's online bridging programme (<http://mplsbridging.conted.ox.ac.uk/>). This material is still available to you should you wish to refer back to it. At present it includes a Maths module, a Physics module, a Chemistry module and study skills modules.

7.2 Learning Development, Study Skills and Tutorials

As undergraduate students you are responsible for your own academic progress, and **Learning Development** is the gradual process by which our students become increasingly competent, independent and sophisticated in their approach to their studies. This comes from a combination of increasing experience of being responsible for your own learning, picking up ideas from fellow students, both your peers and those more senior to you, and by guidance from your college tutor. Partly the increasing sophistication is driven by the structure and content of your 4-year MEng degree programme. For example, in year 1 you begin to develop basic laboratory skills, normally in groups of three, by following straightforward 6h practicals according to written instruction sheets; in the third year you carry out a two-week full time open-ended team design project where your team is devoting 600 person hours to a task defined only in outline in a couple of hundred words; then, in your final year you carry out a six or eight month full-time individual research project and write this up in a thesis of about ten to twelve thousand words (100 pages).

Early in Michaelmas Term, the Director of Studies and a College Tutor will run a short workshop on "Teaching, Study Skills and Learning Development in the Context of the Materials Degree Programme".

The process of learning development is broad, ranging from the acquisition of basic study skills and knowledge to the development of high levels of academic rigour and critical ability – from the generic to the subject specific.

Your course has been designed with this in mind and will provide opportunities for you to develop a wide range of skills. Further information about these skills, together with an outline of how they are assessed, can be found in Appendix E where you will also find a summary of the intended learning outcomes for the programme.

Of all the **Study Skills** that you will develop, that of organizing your time (both apportioning it and using it efficiently) is one of the most important.

Initially this might be as simple as getting to a lecture on time, but very quickly, early in your first term, means thinking ahead over a period of two or more weeks to make sure that as well as attending scheduled lectures, tutorials and classes, you give appropriate time to preparation in advance of and submission of written work for: tutorials, maths classes, crystallography classes, and practical classes plus the associated lab reports. Your social life and other interests need to be factored in too. In Trinity term you will need to organize your revision for the written examination.

In your second and third year the pace and volume of all this quickens and there will be longer term objectives to factor in such as arrangements for a voluntary summer placement, writing joint reports on extended pieces of team-based coursework (and submitting them by the deadlines). Then in the final year you will apply simple project management techniques to help you make best use of the approximately fifteen hundred hours that you will devote full-time to your Part II research project.

Thus you begin simply needing to get to the next day's lecture on time, and three years later you will start your 4th year project by mapping out what you will do over the subsequent eight months!

The on-line bridging programme includes a study skills module on time management which you may find helpful. [It is intended to add more study skills modules in the future.]

Tutorials are a key part of your programme and are compulsory. They are the responsibility of your college and you will receive guidance from your college tutor on how to make best use of this resource. Many of the tutorials are given by senior members of the Faculty of Materials but some will be given by younger staff and by research students. In small groups, typically of two or at most three students, you will discuss topics on which you have submitted written work in advance. The written work is based on question sheets issued by the course lecturers and typically you will spend 6 to 8 hours on the written work for a one-hour tutorial. Your tutors will also discuss additional topics as they judge appropriate and of course you may raise specific topics yourself. Thus the tutorial is a key resource to help you to develop an in-depth understanding of and ability to apply the material you are introduced to in lectures. The feedback you will gain during tutorials should help you to judge your progress and to identify areas of strength and weakness in your understanding. Your tutor will offer guidance on how you might improve your understanding of and insight into our subject.

The University's Education Committee summarises the purpose of tutorials as follows:
"To develop an individual student's capacity to think in depth about a subject area, and to operate with growing confidence within its techniques and methodologies, with the expectation that the process will promote increased understanding of the discipline for both tutor and student".

This Committee also notes that "feedback should be seen as a key characteristic of tutorial teaching and a routine expectation".

7.3 Research-Teaching Nexus

The Department of Materials has an international reputation for its research profile and this University believes that there are many benefits to the teaching of its courses that are a consequence of this high level of research activity. The tutors and lecturers with whom you will interact during this course are not only employed to teach you, but are also (in nearly all cases) actively engaged in the direction of, or participation in, one or more of the wide range of research projects that contribute to the Department's research reputation. Many of the individual academic staff in this department are recognised internationally as leaders in their own field of specialisation.

The impact of research on teaching in this department may take many forms: tutors and lecturers including their own data or ideas from research in their teaching; the regular updating of reading lists and curricula to reflect research developments; the development of research skills and research-based approaches to study through your participation in research projects (particularly in the 4th year of your degree); special topics provided as options in year 3; the use of research equipment in practical classes; access to research seminars in the latter years of your course; opportunities to visit academic and research facilities outside Oxford; the many opportunities to meet with research students and members of the faculty, particularly at the research project stage; experience of preparing research reports including papers for external publication in some cases. In general, you will be encouraged to develop the ability to interpret and critically appraise new data, to critically appraise research literature, and to build the sense that scientific knowledge is contestable and that its interpretation may be continually revisited.

8 Foreign Language Study

We recognise that many students are keen to develop their language skills while reading for their Materials degree. MS students may do this through three routes:

- i) **Additional study in the first year - foreign language.** This option does not count towards your Prelims Examination, but successful completion leads to a Certificate of Achievement.
- ii) **2nd year foreign language option.** [For this option normally language study is through your first **and** second years, but, providing you have studied a foreign language to GCSE or A-level (or equivalent), could be taken in the second year only.] This option substitutes for the Entrepreneurship coursework and as such counts a small amount towards your final degree result.
- iii) **Additional study in the fourth year - foreign language.** This option does not count towards your Finals Examination, but successful completion leads to a Certificate of Achievement.

8.1 Additional Study in the First Year - Foreign Language

The Language Centre (www.lang.ox.ac.uk) offers a range of courses in Arabic, Chinese, French, German, Italian, Japanese, Russian and Spanish as evening classes (**OPAL** courses). The Department may fund the cost for, normally, up to 10 students to attend evening courses. These courses are fast paced and are intended for those who are highly motivated, can commit to regular attendance (80% minimum requirement), are prepared to spend a substantial amount of time each week on follow-up and preparatory work, and are confident that they will not encounter workload problems later in the year. The courses consist of classes for 2 hours per week with 2 hours of independent study in Michaelmas Term and Hilary Term, with a project-based component in Trinity Term. The course does not contribute towards your degree but you will be awarded a Certificate of Achievement upon successful completion of this course.

It is recommended that students who wish to take the Foreign Language Option in the second year, particularly those wishing to study a language that is new to them, take an OPAL course in their first year. This will provide a firm foundation in the language study and assist in understanding the level of commitment required to study a language for when the assessment contributes to the degree. Please understand that studying a language is not a soft option, but for those willing to make the commitment it can be enormously worthwhile.

The Language Centre also offers a further selection of languages as daytime courses, consisting of 2 hours per week (**LASR** courses). However timetabling conflicts with scheduled Materials events mean that the daytime courses are unsuitable for Materials students except for 4th years.

If you wish to study a language, you need to discuss this with your College Tutor. The courses start in week 2 of Michaelmas Term so you need to register with the **Language Centre by Wednesday of week 1**. For the evening courses, you must pay the fees yourself but may apply for reimbursement of these costs at the end of the language course. At the time of writing this handbook, your College will reimburse half the cost and the Department the other half – you should check with your College Office in case they require you to register your intentions with them also. Reimbursement will be subject to successful completion; you are required to submit a copy of the Certificate of Achievement issued by the Language Centre together with proof of payment, so ensure you retain your receipt.

If you wish to study a foreign language in your first year, you need to complete the proforma at Appendix B. This form, countersigned by your Tutor, must be handed in to the Deputy Administrator (Academic) by Monday of week 2 in Michaelmas Term, once your registration on the course has been confirmed by the Language Centre.

8.2 Foreign Language Option in the Second Year

It is possible to study a language as the Foreign Language Option and drop the course on “Entrepreneurship and New Ventures” (taken in the second year). If you have taken a language course in your first year, you may progress the language as the Foreign Language Option, taking the next level course in your second year. You will attend the course throughout Michaelmas and Hilary terms and have a formal assessment by the Language Centre in Trinity term, the marks from which will contribute to Part I. You will not be required to continue with the project phase of the OPAL course throughout Trinity term, although you may do so on a voluntary basis which will lead to a Certificate of Achievement.

It is also possible for students to take the 2nd year Foreign Language Option without having studied this language in the first year, normally providing you have previously studied the language to GCSE or A Level (or equivalent). In this case, you will follow the entire OPAL course, including the project phase. The marks from the formal assessment in Trinity term will contribute to Part I of your degree, and you will also receive a Certificate of Achievement from the Language Centre.

If you wish to apply for permission to transfer to the Foreign Language Option in the second year, you must complete the proforma at Appendix C. Once countersigned by your Tutor, this must be handed in to the **Deputy Administrator (Academic) by the end of week 8 in Trinity Term of your first year.**

8.3 Additional study in the Fourth Year - Foreign Language

At the time of writing, if your tutor and your Part II project supervisor give their approval, it is possible to take a voluntary foreign language course in your 4th year. This option does not count towards your Finals Examination, but successful completion leads to a Certificate of Achievement.

For the OPAL evening courses the arrangements are the same as those described in Section 8.1 above, but alternatively you may be able to take advantage of the LASR daytime courses described below.

The Language Centre offers a further selection of languages as daytime courses, consisting of 2 hours per week (**LASR** courses). These courses are not certified and there is no formal assessment. For LASR courses the Department will reimburse your fee provided you attend the whole course.

9 Practicals

Set experiments are conducted in the Teaching Laboratory in the first two years. The experiments are carried out by students in small teams (normally teams of three or pairs). The first two terms sees several teams working on the same experiment in parallel, using separate sets of apparatus, with all teams completing that experiment over a two-week cycle. In the first year, these practicals run on Thursday and Friday afternoons. Some experiments run in Trinity term use equipment, such as electron microscopes, that is too costly to duplicate and will be carried out by the teams in series throughout weeks 1-4 of that term.

The current Practical Class Organiser (PCO) is Prof. Keyna O'Reilly; she has overall responsibility for the smooth running of the practicals and for applying any penalties such as those incurred for late submission of a report. The Teaching Laboratory is open only in the afternoons.

At the start of each practical the Senior Demonstrator (SD) for that practical, who is normally a member of staff or a postdoctoral researcher, will give a briefing on the theory and practice of each experiment, safety issues, what is required in the report and the arrangements for marking. The Practical Class Technician (PCT) and a Junior Demonstrator (JD) who is a specialist in the experiment will be present throughout the course of the practical. The SD will be present for periods throughout each experiment.

The requirements for the reports will differ a little from one experiment to another, as will the emphasis on particular requirements. Do make sure that by a combination of the briefing and the instruction sheets you understand what is required for each specific experiment.

The method by which you receive your marks and feedback varies from one experiment to another, for example in many cases an oral marking session will be held at which you will receive verbal feedback, while in others your marked report will be returned to you annotated with written feedback. For some experiments the mark you receive may not be finalised until after the Senior Demonstrator has engaged in discussion with you and hence learned more about your understanding of the work you have carried out.

To help you understand what you should expect in terms of marking methods for each practical, how you should prepare and the form that the feedback from the Senior Demonstrator will take, see Table 5 below which details all the practicals that are running this year.

The instruction sheets for these practicals can be found on the Departmental website at www.materials.ox.ac.uk/teaching/ug/ugpracticals.html.

Table 5: Marking methods that apply to individual lab practicals in 2016/17

Practical No	Practical Name	Senior Demonstrator	Marking Method
1P1a	Introduction to Computing	Dr P.J. Warren	Not Assessed
1P1b	Introduction to Microscopy	Prof. K.A.Q O'Reilly	Not Assessed
1P2	Young's Modulus & Stress Analysis	Prof. J.M. Smith	<p>Report read in advance. Fairly detailed, focussed written comments, and the final mark, are given on each script and a 15 to 20 minute feedback session, at which the annotated scripts are provided, is held with each group of three students.</p> <p>[In addition to developing your understanding of Young's Modulus and Stress Analysis this practical is one of those that develops your understanding of 'errors in measurement' and discussion of this aspect is included in the HT workshop given on this topic by the SD Prof Smith]</p>
1P3	Electrode Potentials	Prof. K. Porfyrakis	<p>Report read in advance. A 30- to 45-minute face-to-face marking session is held for each group of three students.</p> <p>The final mark being awarded only at the end of this session, taking into account the students' responses during the session as well as the content of their written reports.</p>
1P4	Energy Levels and Band Gaps	Prof. P.R. Wilshaw	<p>A full written report is submitted in the usual way, but in this case the marker does <u>not</u> read the report in advance of the individual 15-minute oral marking session that is held for each student. Instead the student speaks to their report and discusses it with the SD at this mini-tutorial style marking session. Most students would be unable to do this well if they had not prepared thoroughly by writing the report. The final mark is based primarily on this discussion.</p> <p>[When carrying out this practical the assistance you receive from the demonstrators is more 'light-touch' than most year one practicals. The purpose is to start to develop your confidence in your ability to follow and apply experimental descriptions you might find in the literature. Complementing this is the marking session where you gain marks from your ability to communicate verbally the key content of your written report.]</p>

Practical No	Practical Name	Senior Demonstrator	Marking Method
1P5	Bubble Raft	Prof. S.C. Benjamin	<p>Report read in advance. A 30- to 45-minute face-to-face marking session is held for each group of three students.</p> <p>The final mark being awarded only at the end of this session, taking into account the students' responses during the session as well as the content of their written reports.</p>
1P6	Thermal Analysis	Dr E. Liotti	<p>Reports with written comments are returned to the students via DAA's office.</p> <p>The reports are marked and annotated both with feedback and with the final mark (or a separate comments sheet is attached). There is no face-to-face feedback session.</p>
1P7	Fabrication and Testing	Prof. J.T. Czernuszka	<p>Report read in advance. A 30- to 45-minute face-to-face marking session is held for each group of three students.</p> <p>The final mark is given at the start of the session, the 30-45 minute period being used to provide formative oral feedback only.</p>
1P8	Metallography	Dr E. Zayachuk	<p>Report read in advance. A 30- to 45-minute face-to-face marking session is held for each group of three students.</p> <p>The final mark is given at the start of the session, the 30-45 minute period being used to provide formative oral feedback only.</p>
1P9	Polymers – Molecular Weight Effects	Prof. A.A.R. Watt	<p>Report read in advance. A 20-minute face-to-face marking session is held for each individual student.</p> <p>The final mark being awarded only at the end of this session, taking into account the student's responses during the session as well as the content of their written report. Extra time is allowed for in the marking session as you are also given generic feedback on your use of a lab notebook.</p>

Practical No	Practical Name	Senior Demonstrator	Marking Method
1P10	Matlab and LabVIEW	Prof. A.A.R. Watt and Dr L.B. Jones	<p>Report read in advance. A 20-minute face-to-face marking session is held for each individual student.</p> <p>The final mark being awarded only at the end of this session, taking into account the student's responses during the session as well as the content of their written report. Extra time is allowed for in the marking session as you are also given generic feedback on your use of a lab notebook.</p> <p>THIS MARKING SESSION IS FOR FORMATIVE PURPOSES ONLY – IT DOES NOT CONTRIBUTE TO THE PRELIMS EXAMINATION.</p>

You have been provided with hardback practical notebooks (hereafter referred to as the “practical book”) which you **must** use whenever you are in the lab to record your data, observations, results of any analysis, etc. Following good practice in research and industrial labs, all entries should be legible, written in pen and, if you make a mistake, just draw a line through the entry. There are some really good housekeeping tips on keeping lab books at <http://colinpurrington.com/tips/lab-notebooks>.

The Armourers and Brasiers’ Company / TATA Steel Prize is awarded annually for the best performance in first year practicals. The prize is worth £500.

Please note that the Department has recently undertaken a full review of the practical labs and some proposals for revisions are pending approval. As a result, there may be some changes to the content of this section during the year; these changes will be clearly communicated by the PCO at the start of each term, and also confirmed via email.

9.1 Safety in the Teaching Laboratory

Every effort has been made to make the laboratory a safe place in which to work. However, you also have an obligation to help. Below is a list of 'do-s and don't-s' that you should follow.

DO pay attention to the teaching class technician and the demonstrators.

DO read and follow the safety instructions.

DO familiarise yourself with fire escape routes.

DO keep fire doors closed and escape routes clear.

DO NOT eat, drink or put on make-up in the laboratory.

DO NOT use your mobile phone.

DO NOT mouth-pipette or lick things.

DO NOT smoke in the laboratory.

DO wear appropriate eye and hand protection.

DO wash hands after working with chemicals.

DO work in the fume cupboard with etchants and solvents.

DO use minimum quantities of flammable liquids.

DO keep the laboratory clean.

At the briefing given before each experiment the SD and/or PCT will cover safety issues specific to that experiment.

Note: it is important that the only language spoken in the Teaching Labs is English - whether that be student-to-student or demonstrator-to-student - such that if incorrect (and potentially unsafe) instructions are given, there is a better chance someone overhearing them will realise and be able to act.

9.2 First Year Practicals

First year practicals take two afternoons each to complete and are carried out on Thursday and Friday afternoons, with the exception of the Trinity Term experiments which require special timetabling. There is an introductory meeting on Monday of first week each term where groups are arranged and details of the timetable explained.

9.3 Absence from practical labs

If you miss a scheduled session in the teaching laboratory your tutor will be informed. Any student who misses a scheduled practical class must inform the PCT of the reason as soon as possible. It is a requirement for every student to sign-in on each day of the practical that they attend and it is **your responsibility** to ensure you have signed-in each day. If the whole practical is missed then the DAA must be informed. The student must provide appropriate written evidence of a valid reason for either missing the practical session or for failing to submit a report on time. Appropriate evidence includes a medical certificate to cover illness (details of the illness need not be specified by the doctor but he or she must state that in their opinion you are/were unfit to attend the practical class / write-up the report by the deadline) or a signed letter from a College Tutor to cover other circumstances. Normally no later than one week after the missed session or missed report deadline you should provide one copy of this evidence to the DAA (Philippa Moss) and one copy to the PCT (Paula Topping). The latter copy will be passed to the PCO (Prof. O'Reilly). Subsequently your College will need to present this evidence in any case they might make to the Proctors in respect of missing examinable coursework.

9.4 Reports for Practicals

For each experiment a report must be handwritten in ink on loose-leaf sheets of paper; computer-drawn graphs and tables, and photographs may be affixed with glue but the text must not be typed or word-processed (unless you have been granted express permission to do so). Marking is carried out by the SD, usually with the student present for oral discussion at a scheduled time, normally within two weeks of submission of the report. Your marked report will be returned to you, normally at the point when you submit the report for the next practical. You must retain these reports as you are required to submit these to the examiners, together with your practical book, in week 6 of Trinity Term.

Whilst practicals are performed in pairs / threes in the laboratory, all write-ups should be completed, as far as possible, individually. You are referred to Section 12 on Plagiarism.

All work must be completed and handed in for marking before the end of term, except for students timetabled to start an experiment in 8th week of each term for whom special arrangements are made for this last experiment of the term. The practical books are the property of the Department and are kept here over vacations – you are required to submit these, together with your wallet files containing your marked reports before the end of each term. These are made available to the Examiners.

Completion of all introductory sessions and all eight full practicals is a requirement for the Preliminary Examination, and the marks contribute to the Preliminary Examination in Materials Science. For this reason, candidates will be required to submit the Materials Practical Class reports to the Chair of the Moderators in the Preliminary Examination in Materials Science, c/o The Deputy Administrator (Academic), in the Department of Materials, not later than 10.00 am on Friday of the sixth week of Trinity Full Term. First-year practical reports are available for return to students early in Michaelmas Term of the second year. Your attention is drawn to the strict Examination Regulations on completing the Practicals and other coursework to a satisfactory level, as explained in Section 11 of the present Handbook.

9.5 Submission of reports and marking arrangements

The practical report must be written on loose-leaf pages within ~7 days of the starting date of the experiment. Each page of the report must give the page number and the total number of pages in the report, i.e. page 3 of 4. You must submit the report, **together with a photocopy of the original report**, with your practical book, to the Academic Administrative Assistant (AAA), for date stamping. The AAA will retain the reports to pass on to the SD for marking. The AAA will be available in her office to receive your reports and date-stamp your practical books normally between 11.00 am – 1.00 pm on Fridays throughout term. The PCO will confirm this time slot at the start of each term. Do NOT expect the AAA to receive reports and date stamp practical books outside these times. Late submissions without good reason will incur penalties as described in Section 9.6 and your tutor will be informed.

Special arrangements are made for students whose experiments start in 8th week and details will be sent by email before the end of term. You are required to post your reports to the Deputy Administrator (Academic) by the stated deadline, retaining proof of postage. There have been instances where reports have gone astray/been lost in the post, therefore it is recommended that you take and retain a further photocopy before sending it. You are required to submit your practical book and wallet file containing your marked reports to the AAA before you leave at the end of term, having taken a photocopy of the data and notes in your practical book to use in writing the report.

The way in which each practical will be marked this year is described fully above, in table 5. For those practicals to be marked with face-to-face sessions with the SD, normally these will be arranged for you within 2 weeks of submission. You will need to sign-up for your marking session, ensuring that the time chosen from those on offer fits in with your other commitments such as tutorials. The SD will provide feedback, grade your report and give it a mark out of 10. Non-attendance at marking sessions for which you have signed-up, or if you fail to sign-up for one of the sessions offered, will incur penalties as described in Section 9.6 and your tutor will be informed.

N.B. You must not start an experiment without permission. In practice, this means you must not begin the experimental work before the PCT has date stamped your book. This requirement arises in order for the Department to comply with the Health and Safety regulations; this date stamping will take place immediately after the SD's briefing, during which s/he and the PCT will have covered the relevant safety issues and highlighted any particular hazards. It is **your responsibility** to ensure that your book is stamped at this time. Any student starting an experiment without permission will be penalised (see Section 9.6) and will be liable to disciplinary action.

9.6 Penalties

The writing of reports and marking arrangements are simple and straightforward. Unfortunately, without a sanction, a small minority of students will choose not to comply. To assist the smooth running of the Class and in fairness to other students, there is a system of penalty marks.

1. Cheating is a Proctorial Offence. Your practical reports are part of the University's examination system; any student caught copying another student's work will be reported to the Proctors who have wide-ranging powers including the power to reduce the class of your degree. For more information on the seriousness of plagiarism, see Section 12.

2. Other penalties are imposed by recommending that the Moderators in Prelims deduct marks from those awarded by the SD, as listed below:

- a) **Starting an experiment without permission:**
4 penalty marks.
- b) **Late submission of report in the absence of illness or other legitimate mitigating circumstances:**

If the report and practical book are submitted late for completion date stamping (i.e. later than 1.00 pm on the Friday of the week after the starting date):- 1 penalty mark for each week or part of a week the report is late.

If within 4 weeks of the scheduled starting date a practical is not carried out, or within 4 weeks of the actual starting date the report and practical book are not submitted and completion date stamped, then a default mark of zero will be awarded and no feedback will be provided.

c) **Failure to turn up for an oral marking session:**

If a student fails to turn up for their oral marking session for any reason other than illness or other legitimate mitigating circumstances then they will have forfeited the opportunity for an oral marking session. Providing the report is submitted for this purpose to the DAA no later than four weeks after the start of the practical in question, one final opportunity for marking, without the benefit of oral feedback, will be offered. A practical marked in this way will be given 2 penalty marks unless it was scheduled to start in 7th week or later. If a student fails to book an available oral marking session from those initially offered by the SD then this will be treated as though an arranged marking session had been missed.

d) **A practical marked without a completion date stamp:**

1 penalty mark. (An exception will be a practical marked within 7 days of the starting date and where the SD has dated the marking as proof.)

e) **Failure to hand in a practical book and wallet file at the end of term:**

4 penalty marks. (N.B. Students must hand in their practical books and wallet files to the DAA at the end of term for safekeeping.)

f) **Loss of a practical book and wallet file:**

It is the responsibility of the student to look after the practical book and marked reports in their wallet files during term. If a student loses these then they should inform the DAA as soon as possible. Any outstanding experiments must still be written up and marked. The penalty for a lost wallet file and/or practical book will be determined by the Moderators after consultation with the Proctors.

10 Crystallography Classes

Crystallography classes are from 2.00 to 5.00 pm on Tuesdays of weeks 3-8 in both Michaelmas and Hilary Terms. **Attendance at these classes is compulsory and will be recorded.** In each class, you are required to complete a piece of work as specified by the Senior Demonstrators. The first piece of work will be marked and you will receive feedback, but this will be for formative purposes only and will not contribute to the Preliminary Examination in Materials Science. Work

from all other classes will also be marked but these marks will contribute directly to the Preliminary Examination in Materials Science. More detailed guidance is given in Appendix J.

11 Satisfactory Performance in Coursework

To pass the coursework 'paper' candidates must normally demonstrate a satisfactory performance in both the Practical Work and the Crystallography Classes.

For their practical coursework to be judged as satisfactory candidates must have achieved **at least 40% overall on this practical coursework and have submitted a report for marking on each practical listed in the course handbook.**

For their crystallography coursework to be judged as satisfactory candidates must have achieved **at least 40% overall on this crystallography coursework, and have submitted a report on each of the crystallography classes.**

As indicated in the Examination Regulations for the Preliminary Examination in Materials Science (clause 2c), coursework cannot normally be retaken and failure of coursework will normally constitute failure of the Preliminary Examination. In exceptional circumstances, a student who has failed the coursework might be permitted jointly by the Moderators of the Preliminary Examination and the candidate's college to repeat all five papers of the Preliminary Examination in a subsequent year.

12 Plagiarism

Information from the University's Proctors and Assessor on plagiarism is provided in Appendix D. This information can be applied to all aspects of assessment during the course.

13 Teaching Norms

Please note that these teaching norms are for guidance only. Your college tutor will advise you more specifically on matters such as the amount of time you devote to private study and revision, and may vary the number of tutorials given on a particular lecture course based on his/her judgement of your needs. You should also note that it is an expectation of the Oxford Materials Programme that you engage in private study and/or revision during part of each vacation. Tutorials and Maths & Materials Options Classes are nominally one hour in length although classes may vary from 1-2 hours. Tutors may vary this to suit individual courses or needs.

13.1 Lectures & Laboratory Classes (as detailed in the General Scheme)

Lecture loads, including introductory talks, industrial talks and transferable skills workshops, are as scheduled in the General Scheme of Lectures, which can be viewed on the Oxford Materials website. For the Materials Options you will select three 12h courses per term (MT & HT of the third year). Students who have transferred to the 3 year BA (Hons) degree will take a smaller set.

Laboratory classes are scheduled for two 3h sessions per fortnight for first years (ten practicals in total) and three 3h sessions per fortnight for second year MS Part I students (12 practicals in total).

In the alternate weeks for which you are not scheduled to carry out a practical you will be writing the report on your most recent practical and should expect to spend about 6-8h per report. The face-to-face marking/feedback session will typically take 30 to 45 minutes per practical per group of three students, or 15 minutes if each student is seen individually, although this will vary depending on whether the Senior Demonstrator chooses to mark the report in advance or during the face-to-face session. Some Senior Demonstrators will, instead of an oral marking session, provide written feedback on your report.

The load involved in the Foreign Language Option is described in a separate section of this handbook.

13.2 Tutorials

Tutorials form a very important component of teaching at Oxford. Each college makes provision for its own students. College Fellows and other academic staff carry out most of this teaching themselves, usually with pairs of students but sometimes in singles or groups of three.

In the first year, students have about 3 tutorials per examination paper per term, except in subjects where Departmental classes are provided.

In the second year, tutorials are assigned to different areas of the syllabus at a rate of about 1 per 4 lectures, varied as thought appropriate by individual tutors. Each tutorial requires about 6-8 hours of preparatory work by the students. Thus a typical term's lecture load of 60 hours would require 15 tutorials, involving about 105 hours preparation, or 13 hours per week. In this Department most tutors coordinate their teaching closely with the lecture programme, seeing that students complete appropriate exercises (usually question sheets devised by the course lecturers) as the lectures progress, and that any problems are cleared up promptly.

Each tutor has the flexibility to teach each group in a way to meet the needs of the individual students. There is a Tutors' Committee in the Department, which is a forum to solicit opinions, discuss common problems and coordinate actions on a termly basis. The current Chair of the Tutors' Committee is Professor Jonathan Yates.

13.3 Engineering Drawing & CAD Classes

There are two classes on Engineering Drawing & CAD in Hilary Term; the timing of these classes will be confirmed at a later date. Attendance at all these classes is compulsory, and will be recorded.

13.4 Maths Classes and Materials Options Classes

These classes typically involve groups of 6 to 10 students. First and second year students take Maths Classes (organised by Professor Marina Galano); these are normally at the rate of one class for every two maths lectures, which is an average of about one class per week. Third year students take Materials Options classes (co-ordinated by the office of the Deputy Administrator (Academic)); students attend normally three hours of classes per 12h lecture course.

13.5 Other Coursework and Final Year Projects

- (i) Industrial Visits – typically 3 to 5 hours for each of four visits and 1.5 hours writing per report.
- (ii) Business Plan – typically 20h writing up time for the Business Plan
- (iii) Team Design Project – typically 100h for an MS student including writing the team report.
- (iv) Characterisation of Materials or Introduction to Materials Modelling module – typically 100h, including writing the report(s).
- (v) Literature-based research module (for 3 year BA (Hons) degree) – typically 3, and no more than 4, weeks full-time equivalent effort, including writing the essay.

13.6 Fourth year Part II Projects

Detailed guidance is issued for Materials Science students in the MS Part II Handbook (see Oxford Materials website). For the MS Research Project, typically you will spend 40h per week in the laboratory and should expect to hold regular meetings with your supervisor. These meetings will normally be held at least every two weeks for the duration of the project but significantly more intensive support is usual in the initial and final stages of the project. You are also likely to spend additional time in private study outside of the laboratory.

13.7 Revision

Revision classes are scheduled for some courses, such as the first year Maths Course (8 revision 'lectures'). Revision tutorials are often arranged too, typically at a rate of 3 to 4 tutorials per paper. During the formal revision periods in Trinity Term and in part of the Easter Vacation preceding the Part I Examination it is not unusual to study for 60h per week.

14 Other activities

14.1 The Industrial Tour

As mentioned previously, the JCCU arranges an industrial tour during the Easter vacation. Recent destinations have included Japan, California, The Netherlands, Italy, China, Poland, Canada and the most recent tour was to Sweden. All of these tours were very enjoyable, as well as being extremely valuable in terms of the scientific and technical experience gained. The Department is keen to encourage further such initiatives. Suggestions should be made via the JCCU. Reports and photographs from recent industrial tours can be viewed at www.materials.ox.ac.uk/teaching/tour.html.

14.1 Industrial Visits

One industrial visit to an industrial company or research laboratory related to the materials field is arranged each term by the Industrial Visits Organiser (often, but not exclusively, on Thursday or Friday afternoon of week 4, 5 or 6).

Students are required to attend and write reports on four industrial visits during Part I, but 1st year students may choose to attend these visits for general interest if space is available.

14.2 Summer Vacation Projects in Industry and University

Research Laboratories

In addition to attending departmentally-organised industrial visits in the second and third years, all students are strongly encouraged to undertake a vacation placement in industry during their course. A short report on this (if accompanied by a letter from their line manager confirming they were employed by the particular company in question) can substitute as one of the required 4 industrial visit reports submitted during Part I.

The ideal time to undertake this summer project / placement is during the second long vacation. You should make all the arrangements yourself, usually during the course of your second year. To qualify as an industrial visit report the placement should have substantial materials content.

If you have arranged your project / placement in good time, you can apply for financial assistance from the grants made to us by the Armourers and Brasiers' and Ironmongers' Companies for travel and accommodation. All applications for financial assistance must be made through the Director of Studies; ideally, these should be made no later than the end of Hilary term. Further advice on finding a project / placement can be gained from the Director of Studies who will give a lunchtime briefing on seeking industrial projects early in Hilary Term. You **must** attend this talk if you wish to be considered for placement / project opportunities coordinated by the Department.

14.3 Institute of Materials, Minerals and Mining (IOM3)

IOM3 is the leading professional body for people working in the materials, minerals and mining communities. As a Materials student, you are eligible for student membership for which the Department pays. As part of the degree programme you are strongly encouraged to take up this membership. Benefits of membership include a free members' magazine, online access to premium web content, discounts on IOM3 services, networking opportunities, professional development advice, etc. A representative from the Institute will provide further information in a briefing in Michaelmas Term.

14.4 Oxford Materials Society (OMS)

The OMS is the local regional branch of the IOM3 and organises a series of general interest evening lectures on specified Tuesdays at 6.30 pm. These lectures cover a variety of topics such as Chocolate Manufacture, Car Crash Testing, Nuclear Energy, and Forensic Science; such is the breadth and relevance of Materials Science. The meetings are open to all and they particularly encourage industrialists, researchers and undergraduate students to attend to hear the talks from experts in the field.

14.5 Student Materials Society (MatSoc)

MatSoc is a student-run society, set up in 2007 to help students studying Materials Science at Oxford. Throughout term-time MatSoc hosts a number of events including socials, lectures accompanied by complimentary buffets, and free industrial visits. Recent visits have included TATA Steelworks and the BMW Mini Factory.

15 Libraries

Do not think that a set of lecture notes for a course removes the need to consult textbooks. You will need constant access to books in the course of your studies, for clarifying points made in lectures, doing things in different ways, helping with problems and so on. The reading lists issued as part of the lecture synopses are revised regularly, and contain a range of suggestions, including alternatives and suggestions for further reading.

There are three types of library provision available to undergraduates:

- **College Libraries**, which provide books for members of the College. Most Colleges that accept undergraduates in Materials have good collections of undergraduate textbooks in the subject. If you find that a book you require is not stocked by your College library, please consult your College Tutor or College Librarian. Often the book will then be added to the library.
- **The Radcliffe Science Library (RSL)**, which is a UK Copyright Library, with a large collection of books and journals, and extensive reading rooms. The RSL is both a lending and reference library. You need a University Card to be admitted to the RSL. Students register through their Colleges to use the RSL.
- **The Departmental Library**, where we aim to stock all books recommended for individual lecture courses in Materials. We also have many other textbooks, monographs, conference proceedings, key materials journals and some electronic publications. A lending service is offered to students. Further information about the library can be found on the Departmental website, at www.materials.ox.ac.uk/library/index.html. **For undergraduates this library is considered to be a secondary support system to the other libraries;** its purpose is **not** to stock multiple copies of all course books. Many of the books are kept for use in the library only so students can study in between lectures / practicals etc. The “reserve copies” of key course textbooks are kept in the Librarian’s office. THE DEPARTMENTAL LIBRARY ALSO PROVIDES A STUDY AREA AND IS EQUIPPED FOR WIRELESS INTERNET ACCESS.

16 Computing

16.1 Facilities available

The use of computers forms an important element in our degree courses. The Teaching Laboratory contains a suite of networked, PC-compatible computers and peripherals with a wide range of software, including teaching software for materials science. Most colleges provide computing facilities for undergraduates, and computing facilities are also provided centrally at IT Services (ITS).

Students are expected to access the internet frequently for communicating by email and for searching for information on the web. There is lots of useful information on the Department's website at: www.materials.ox.ac.uk and of course on WebLearn <https://weblearn.ox.ac.uk/portal>

The teaching of computing is part of the undergraduate courses. An introduction is available in the first year. Some practicals have a computing element either in carrying out the experiment or in processing the results.

The Departmental Library has facilities for online searching of the library catalogues within the University. There is also online access to databases of papers on materials science topics published in scientific journals, which are updated regularly. Papers on topics of interest can be found either in the Departmental Library or in the Radcliffe Science Library. Many journals are also available online from any computer on the University network. (www.materials.ox.ac.uk/library)

The Department also has a Materials Modelling Laboratory with several linux HPC clusters (see <http://mml.materials.ox.ac.uk/>) and the University also provides larger facilities for Advanced Research Computing (see <http://www.arc.ox.ac.uk>).

16.2 Use of the internet facilities

Access to the internet is encouraged by the university provided it is solely for legitimate academic purposes. All users of networked services should read the regulations that further define permissible use and access, which are given in full in Appendix G. Please remember that because of abuses in the past the levels of logging and auditing are now so high on most service providers that your every keystroke and action can be traced with millisecond accuracy. The penalties that are being imposed can range from fines, suspension of accounts, rustication (in the Oxford sense) to prison sentences and a criminal record. If you are the victim or target of unacceptable behaviour, contact the Senior IT Officer and prompt action will be taken to resolve the problem.

16.3 Email

All undergraduates are provided with an email address by ITS but arranged through their colleges. Every student is allocated an oxford username consisting of 8 characters. The first four are an abbreviation of the College name, and the last four are a four digit number. The email address for the account will be easier to remember, and is usually of the form firstname.lastname@college.ox.ac.uk

The Department uses email to communicate with undergraduates about many important matters, such as industrial visits, changes in lecture venues, etc. It is therefore very important that you check your email regularly; if you don't, you might miss useful messages. In addition, if you have too many unread messages, your disk quota will be exceeded, and eventually (after 7 days) messages sent to you will bounce back. You can also use email to contact members of staff quickly (see Table 1).

17 Important dates and deadlines

A list of important dates and deadlines is provided at the front of this handbook. The information is based on the current regulations, and details may vary. The start dates for examinations are provisional.

18 Examinations (for students embarking on the “Prelims” programme in October 2016)

Your attention is drawn to the statement on plagiarism in Appendix D.

Information on (a) the standards of conduct expected in examinations and (b) what to do if you would like examiners to be aware of any factors that may have affected your performance before or during an examination (such as illness, accident or bereavement) are available on the Oxford Students website (www.ox.ac.uk/students/academic/exams/guidance).

During your four-year course, there are 3 sets of examinations. The Preliminary Examinations ('Prelims') are at the end of the first year and the Final Examinations are in two parts: Part I at the end of the third year and Part II at the end of the fourth year. You must pass Prelims before you can start the second year, but the result does not count towards your degree classification.

Candidates who get particularly good results in Prelims are awarded a distinction. Normally, you must achieve an overall mark at Part I of at least 50% if you are to progress to Part II. The degree classification is based on the combined results of Part I and Part II. The Examination Conventions for Prelims 2015-16 can be found in Appendix H. The Examination Conventions for 2016-17 will be based on these documents but may not be identical. They will be issued to you in Hilary Term and provide the framework under which the examiners or moderators act. Examination conventions are the formal record of the specific assessment standards for the course or courses to which they apply. They set out how your examined work will be marked and how the resulting marks will be used to arrive at a final result. They include information on: marking scales, marking and classification criteria, scaling of marks, progression, resits, use of viva voce examinations, penalties for late submission, and penalties for over-length of work. Part reports of the examiners can be found at the Department's undergraduate Weblearn site.

18.1 Preliminary Examination

The Prelims examination comprises four written examination papers, and continuously assessed work for the first year practicals and crystallography classes. The continually assessed work counts as the equivalent of a fifth paper with the crystallography and practical class elements weighted equally. The five papers are weighted equally. The four written examination papers are Materials Science 1-3 and Mathematics for Materials.

All four written examination papers must be passed, but candidates who fail one or more written papers may retake them at the end of the summer. Prelims examination marks conform to the University's standardised expression of agreed marks for Preliminary examinations.

The pass mark is normally 40%, with the possibility that failure in one of the four written papers by a small margin can be compensated if the overall performance merits it. Failure of the fifth paper (continually assessed coursework) normally will constitute failure of the Prelims examination. Materials coursework normally cannot be retaken. Exceptionally a candidate who has failed the coursework may be permitted jointly by the Moderators and the candidate's college to retake the entire academic year. Coursework must be passed to a satisfactory level (see Section 11).

Distinctions are awarded at the discretion of the moderators for excellent performance (this is normally for a mark equivalent roughly to a First Class but the moderators determine the requirement for an award of distinction each year and the parameters will be communicated by your tutor with the results).

You will be able to access your own results via the Student Self Service portal approximately 2-3 weeks after the end of Trinity Full Term (subject to change). The Academic and Assessment Results page within Self Service details all your assessment results (examination papers and/or submissions) and the result of the year (if applicable). You will need your Single Sign-On ID and password to access Student Self Service. Your tutor will also be provided with your results and your ranking position within the year group; if you do NOT wish to be given your rank, you must inform your tutor before the release of the results.

18.2 Calculators and SMP tables in examinations

In Prelims, and Part I, the only types of calculators that may be used in examinations are from the following series:

CASIO fx-83

CASIO fx-85

SHARP EL-531

Candidates are not permitted calculators in the Mathematics for Materials examination. SMP tables are provided in all Preliminary examinations.

18.3 Examiners

The examiners for Prelims (known as Moderators) are appointed on an annual basis and are distinct from those that examine Parts I and II in the Final Honours School. The Moderators in the Department of Materials for 2016-17 are as follows:

Professor Susie Speller (Chair), Professor Andrew Watt (Deputy Chair); Professor Harish Bhaskaran; Professor Kyriakos Porfyrakis.

It must be stressed that in order to preserve the independence of the moderators, you are not allowed to make contact directly about matters relating to the content of the exams or the marking of papers. Any communication must be via the Senior Tutor of your college, who will, if he or she deems the matter of importance, contact the Proctors. The Proctors in turn communicate with the Chairman of Moderators. If you have any queries about the Examinations or anything related to the Examinations, for example, illness, personal issues, please don't hesitate to seek further advice from your College tutor, or one of the Department's academic support staff.

18.4 Entry for University examinations and examination dates

Instructions for entering for University examinations and examination timetables can be found via <http://www.ox.ac.uk/students/exams/>.

18.5 Preparing for examinations

It is quite normal for students to feel anxious in the run-up to examinations. Developing a strategic approach can help you to take and maintain control of your preparation. The Oxford University Student Union (OUSU) provides some helpful advice on their website at <http://ousu.org/advice/academic/exams/> and the Department provides you with a guidance pamphlet entitled "[Preparing for Examinations](#)" (available on the Materials website at <http://www.materials.ox.ac.uk/uploads/file/Preparingforexaminations2015-16.pdf>). Your College Tutor will be able to offer advice specifically suited to you based on their knowledge of your strengths and weaknesses. Past exam papers are available online through WebLearn at <https://weblearn.ox.ac.uk/portal/hierarchy/oxam> (you will need to sign in using your Single Sign-On).

18.6 Collections

Collections are examinations sat in Colleges during 0th week at the start of term. The Department of Materials uses centrally set Collections, so that all students in the same year sit the same paper. Collections questions are often drawn from past Prelims exam papers and your own reflection on your performance in 'Collections' together with the feedback from your tutor on this performance should help you to understand what is required for a first-class answer to an exam question.

19 Student prizes

The Department has a large number and variety of prizes available to students in all years of their degree.

Johnson–Matthey Prize for best overall performance in Prelims - £1,000

Armourers and Brasiers' Company / Rolls Royce prize for outstanding overall performance in Prelims (awarded to the students with the 2nd and 3rd highest marks) - total prize **£400**

Armourers' and Brasiers' Company / TATA Steel Prize for the best overall performance in Prelims practicals - **£500**

TATA Steel Prize for best overall performance in Part I practicals - **£250**

Armourers' and Brasiers' Company / TATA Steel Prize for the best Team Design Project - **£1,000**

Gibbs Prize for best overall performance in MS Part I - **£190**

Worshipful Company of Ironmongers Prize for best MS Part II presentation - **£400 and a medal**

Armourers' and Brasiers' Prize and Armourers' Medal for the best MS Part II project - **£250 and a medal**

Institute of Materials, Minerals and Mining Prize for best overall performance in Parts I and II - **£100**

Department of Materials' Annual Prize for the most significant improvement between Part I and Part II - **£100**

20 Vacation jobs and careers

The careers taken up by our graduates are of almost bewildering variety! Three broad groupings can be identified: approximately one third go directly into scientific or technology-related employment in industry; another third go on to some form of further postgraduate education or training either in the UK or abroad; and the final third pursue careers which have less direct links to Materials Science (although a number of people in this last group discover that their knowledge of materials science is useful, e.g. in technical finance and investment, patent law, and accountancy in industry).

It is a very good idea to work in industry during one or more long vacations, and if possible to obtain industrial sponsorship whilst at University. Employers are becoming increasingly distrustful of the traditional 'milkround' interview approach to recruitment, and are correspondingly more likely to recruit from the ranks of those who have already spent time working for their organisations. The ability to work in a team, to communicate well, to show initiative, and to get a task completed well and on time, are all qualities vital to the employer, and can best be assessed on the basis of experience, rather than under the artificial conditions of an interview.

Advice about vacation placements and jobs for graduates can be obtained from a variety of sources. The University Careers Service (56 Banbury Road, www.careers.ox.ac.uk/) has outstanding resources, and provides an excellent service. Dr Adrian Taylor gives a briefing early in Hilary Term for all students who are interested in vacation placements. Normally, several opportunities are available overseas, including China and the USA. There is also a notice board, just outside the Library in the Hume-Rothery Building, which is used to display current information about job opportunities and vacation attachments. Tutors should also be consulted. They receive a lot of information from potential employers, and may also be in touch with previous graduates who are working in industry. Many of them also have direct links with particular industrial companies, and a personal recommendation always helps!

The [Oxford University Careers Service](http://www.careers.ox.ac.uk/) has a number of programmes and workshops that provide opportunities to develop skills and experience for your career. There is also a Skills Hub available via WebLearn at <https://weblearn.ox.ac.uk/portal/hierarchy/skills>.

21 If you need help

21.1 Asking for assistance

This section could be sub-titled 'What to do if things go wrong'. The first thing to recognise is that it is not unusual for students to experience a difficulty of one kind or another. Some aspect of the course might be horribly difficult to understand; a personal relationship might break down; a health problem might arise; or domestic or financial difficulties might crop up. Such difficulties may give rise to feelings of inadequacy, compounded by the impression that everyone else is coping better. What is the best way to deal with such difficulties?

There are perhaps three main aspects to this:

As far as possible, **be prepared**. Expect the unexpected. From the start of the first term of the first year, work systematically and regularly on your studies, and don't rely on 'last minute panics' to get you out of difficulties. Take the time and effort to cultivate good friends, whom you will be able to turn to in times of trouble. And don't forget the basics of regular meals, some form of physical exercise, and enough sleep. In engineering terms, this amounts to building a margin of safety into your design for living, so that when extra stress is applied at some point, the whole structure does not immediately collapse in a heap!

Be positive. Try to remind yourself that you are not the only person in this position. Learning to cope, and learning how and where to seek help when you need it, is part of the natural preparation for your future, and part of your progress towards personal maturity.

Be proactive in seeking help. Go and talk to somebody. It is very common to feel that nobody can help you with your particular insurmountable difficulty. In fact, the opposite is the case, and there are a lot of people ready to assist you. Every college has their own systems of support for students - please refer to your College handbook or website for more information on who to contact and what support is available through your College. Usually the best advice (but sometimes a difficult step to take) is to go and talk to your Tutor. If you feel that you cannot do that, then at college level, you can go to your College Adviser (if one has been appointed), or to a College Counsellor, or one of your College Officers with particular responsibility for looking after students e.g. the College Doctor, Dean, Chaplain, Senior Tutor or Head of House. At the Departmental level, you can consult any member of staff, and in particular, the Director of Studies, Dr Adrian Taylor; Deputy Administrator (Academic), Philippa Moss; the Head of Department, Professor Patrick Grant; one of the Harassment Advisers (Professor Hazel Assender, Professor Jan Czernuszka and Mrs Paula Topping), or the Head of Administration and Finance, Dr Charlotte Sweeney.

Or you might find it easier to talk to an older student or a postgraduate in your college, who may have experienced similar problems. Your JCR should also have a Welfare Representative who may be able to help.

Further details about support available through the University may be found on the Oxford Students website at <http://www.ox.ac.uk/students/welfare/>. In addition, there are several organisations that exist to help you, including:

- The University Counselling Service, 3 Worcester Street (appointments may be made by telephoning 70300 from within the university or 270300 from outside, or by email: counselling@admin.ox.ac.uk).
- The Oxford Student Mental Health Network (<http://www.osmhn.org.uk/>)
- Nightline - a student-run counselling service (<http://users.ox.ac.uk/~nightln/>, Oxford 270270, 16 Wellington Square, term time, 8 p.m. to 8 a.m.).
- Student Advice Service, a confidential service offered by the Oxford University Student Union. For further details, refer to the OUSU website at <http://ousu.org/advice/student-advice-service/>.
- Oxford Student Alcohol and Drugs Advice: this is a counselling service coordinated by the Student Advice Service (same details as above).
- The Samaritans (0845 790 9090 or Oxford 72212224 hours), who can provide counselling, as well as an emergency service for the suicidal and despairing.
- The Libra Project (Oxford 723500) has been set up by a voluntary organisation to provide free counselling and advice for anyone worried about their drinking, or any drugs they may be taking.
- University Harassment Line (70760 from within the university or 270760 from outside, email: harassment.line@admin.ox.ac.uk).
- University Equality and Diversity Unit (89830 from within the university or 289830 from outside; www.admin.ox.ac.uk/eop/).

21.2 Special Needs

Specialist advice and assistance is available for dyslexic, blind/partially sighted, and other disabled students from the University Disability Office (<http://www.ox.ac.uk/students/welfare/disability> or disability@admin.ox.ac.uk or 01865 (2)80459).

If you experience difficulties with your course because of a disability then you should discuss this with your college tutors. Some colleges have a specific member of staff who assists students with welfare difficulties. Alternatively, contact the Deputy Administrator (Academic), Ms Philippa Moss, who is the Disability Contact for undergraduates within the Department and is well-placed to ensure your requirements for support on the course are met.

21.3 Complaints and Appeals

The University has procedures for students should they believe a formal complaint or appeal is required. The details (in [Appendix A](#)) outline the procedures for this within the Department of Materials. Before embarking on any formal procedure, you are advised to approach a relevant senior figure with your concern and discuss it informally as soon as you think there is a problem.

Appendix A The University's Complaints and Appeals Procedures

Complaints and academic appeals within the Department of Materials

The University, the MPLS Division and the Materials department all hope that provision made for students at all stages of their course of study will make the need for complaints (about that provision) or appeals (against the outcomes of any form of assessment) infrequent.

Nothing in the University's complaints procedure precludes an informal discussion with the person immediately responsible for the issue that you wish to complain about (and who may not be one of the individuals identified below). This is often the simplest way to achieve a satisfactory resolution.

Many sources of advice are available within colleges, within faculties/departments and from bodies like Student Advice Service provided by OUSU or the Counselling Service, which have extensive experience in advising students. You may wish to take advice from one of these sources before pursuing your complaint.

General areas of concern about provision affecting students as a whole should be raised through Joint Consultative Committees or via student representation on the faculty/department's committees.

Complaints

If your concern or complaint relates to teaching or other provision made by the faculty/department, then you should raise it with the chairman of the Teaching Committee, Dr Adrian Taylor. Within the faculty/department the officer concerned will attempt to resolve your concern/complaint informally.

If you are dissatisfied with the outcome, then you may take your concern further by making a formal complaint to the University Proctors. The procedures adopted by the Proctors for the consideration of complaints and appeals are described on the Proctors' webpage (www.admin.ox.ac.uk/proctors/complaints/proceduresforhandlingcomplaints), the Student Handbook (www.admin.ox.ac.uk/proctors/info/pam) and the relevant Council regulations (www.admin.ox.ac.uk/statutes/regulations/247-062.shtml)

If your concern or complaint relates to teaching or other provision made by your college, you should raise it either with your tutor or with one of the college officers, Senior Tutor, Tutor for Graduates (as appropriate). Your college will also be able to explain how to take your complaint further if you are dissatisfied with the outcome of its consideration.

Academic appeals

An academic appeal is defined as a formal questioning of a decision on an academic matter made by the responsible academic body.

For undergraduate or taught graduate courses, a concern which might lead to an appeal should be raised with your college authorities and the individual responsible for overseeing your work. It must not be raised directly with examiners or assessors. If it is not possible to clear up your concern in this way, you may put your concern in writing and submit it to the Proctors via the Senior Tutor of your college.

For the examination of research degrees, or in relation to transfer or confirmation of status, your concern should be raised initially with the Director of Graduate Studies. Where a concern is not satisfactorily settled by that means, then you, your supervisor, or your college may put your appeal directly to the Proctors.

As noted above, the procedures adopted by the Proctors in relation to complaints and appeals are described on the Proctors' webpage

(www.admin.ox.ac.uk/proctors/complaints/proceduresforhandlingcomplaints), the Student Handbook (www.admin.ox.ac.uk/proctors/info/pam) and the relevant Council regulations (www.admin.ox.ac.uk/statutes/regulations/247-062.shtml).

Please remember in connection with all the academic appeals that:

- The Proctors are not empowered to challenge the academic judgement of examiners or academic bodies.
- The Proctors can consider whether the procedures for reaching an academic decision were properly followed; i.e. whether there was a significant procedural administrative error; whether there is evidence of bias or inadequate assessment; whether the examiners failed to take into account special factors affecting a candidate's performance.
- On no account should you contact your examiners or assessors directly.

Appendix B Year 1 Foreign Language Study

To:	Director of Studies
From:	
College:	

I wish to study a Language Option this year:

Language	Level	Online Test score	Previous Qualification in the Language		
			GCSE Grade	AS/A Level Grade	Other qualification

I have enrolled in and paid for the evening (OPAL) course and intend to claim for reimbursement of 50% of the costs from the Department.

I understand that reimbursement is dependent upon meeting an 80% attendance level and submitting proof of payment together with a copy of the Certificate of Achievement that is awarded upon successful completion*.

Signature of student: Date:

I can confirm that the College is agreeable to the above transfer

Countersignature of Tutor: Date:

* Please ensure you retain your receipt as you will need to submit this as proof of payment the Department, together with your Certificate of Achievement.

Your college may also reimburse 50% of the costs, subject to the same documentary evidence – please check with your college office before registering.

This form must be returned to the Deputy Administrator (Academic) by **Monday of week 2, Michaelmas Term.**

Appendix C Application for 2nd year Foreign Language Option

To:	Deputy Administrator (Academic)
From:	
College:	

I wish to take the following language course next year:

Language	Level	Online Test score	Previous Qualification in the Language		
			GCSE Grade	AS/A Level Grade	Other qualification

And wish to be considered for transfer to the Foreign Language Option next year to be taken instead of the course on “Entrepreneurship and New Ventures”.

I can confirm that the College is agreeable to the above transfer:

Signature of Tutor: Date:

Signature of student: Date:

This form must be returned to the Deputy Administrator (Academic) by the end of **week 8, Trinity Term.**

Appendix D Plagiarism

This information can be applied to all aspects of assessment during the course.

In their **Essential Information for Students**, the University's Proctors and Assessor draw attention to two extremely important disciplinary regulations for all students.

“3 No candidate shall cheat or act dishonestly, or attempt to do so, in any way, whether before, during or after an examination, so as to obtain or seek to obtain an unfair advantage in an examination.

4 No candidate shall present for an examination as his or her own work any part or the substance of any part of another person's work.

5 In any written work (whether thesis, dissertation, essay, coursework, or written examinations) passages quoted or closely paraphrased from another person's work must be identified as quotations or paraphrases, and the source of the quoted or paraphrased material must be clearly acknowledged.

All undergraduate and graduate students must carefully read regulations 3, 4 and 5 in the Proctors' Disciplinary Regulations for University Examinations below. These make it clear that you must always indicate to the examiners when you have drawn on the work of others; other people's original ideas and methods should be clearly distinguished from your own, and other people's words, illustrations, diagrams etc. should be clearly indicated regardless of whether they are copied exactly, paraphrased, or adapted. Failure to acknowledge your sources by clear citation and referencing constitutes plagiarism. The University reserves the right to use software applications to screen any individual's submitted work for matches either to published sources or to other submitted work. Any matches might indicate either plagiarism or collusion. Although the use of electronic resources by students in their academic work is encouraged, you should remember that the regulations on plagiarism apply to on-line material and other digital material just as much as to printed material.

...Where plagiarism is proven, it will be dealt with severely: in the most extreme cases, this can result in the student's career at Oxford being ended by expulsion from the University.”

(The University Student Handbook Section 8.8; available at www.ox.ac.uk/students/academic/student-handbook)

The University definition of plagiarism is:

Plagiarism is the copying or paraphrasing of other people's work or ideas into your own work without full acknowledgement. All published and unpublished material, whether in manuscript, printed or electronic form, is covered under this definition.

Collusion is another form of plagiarism involving the unauthorised collaboration of students (or others) in a piece of work.

Cases of suspected plagiarism in assessed work are investigated under the disciplinary regulations concerning conduct in examiners. Intentional or reckless plagiarism may incur severe penalties, including failure of your degree or expulsion from the university.

Some Brief Guidance

Text

Take care when referring to the work of others. Not only are published words subject to plagiarism, but ideas and opinions can be plagiarised too. You should not allow the opinions and conclusions of others to appear to be your own or confused with your own criticism.

An extract from Stone IC & Tsakirooulos P, *Materials Science and Engineering A*, Vol.189 (1994) 285-290:

“The peak-aging time of Al-4wt.%Cu, aged at 463 K, was not altered by the addition of 20 wt.%SiCp. The particle size of the reinforcement and the matrix to reinforcement particle-size ratio did not affect the peak-aging time. This implies that, on a bulk scale, aging is not affected by the spatial distribution of the reinforcement, although it is likely to be affected locally.”

Here is one example of the use of this extract:

Stone and Tsakirooulos studied the aging of metal matrix composites based on Al-4wt%Cu containing 20wt% SiC particles [Stone & Tsakirooulos, 1994]. The peak-aging time of Al-4wt.%Cu, aged at 463 K, was not altered by the addition of 20 wt.%SiCp. The particle size of the reinforcement and the matrix to reinforcement particle-size ratio did not affect the peak-aging time. This implies that, on a bulk scale, aging is not affected by the spatial distribution of the reinforcement, although it is likely to be affected locally.

The first sentence is fine and is properly referenced. However the rest is plagiarised because (i) it is **directly copied** from the original without being identified as a quote and (ii) the author has not attributed the opinion in the fourth sentence to the original authors.

A second example:

Stone and Tsakirooulos studied the aging of metal matrix composites based on Al-4wt%Cu containing 20wt% SiC particles [Stone & Tsakirooulos, 1994]. They showed that the addition of the reinforcing particles had no effect on the time for peak aging of the matrix at 463K. The implication of this is that whilst aging is likely to be affected locally by the dispersion of the particles, it is not affected macroscopically by the spatial distribution of the reinforcement.

This example is an improvement because the second sentence is now attributed to the original authors. The opinion in the final sentence is still plagiarised. This final sentence could be improved by

The authors concluded that the implication of this is that whilst aging is likely to be affected locally by the dispersion of the particles, it is not affected macroscopically by the spatial distribution of the reinforcement. This is a sensible conclusion.

because whilst the new author agrees with the original opinion/conclusion they have not passed it off as their own. A belt and braces approach might be:

The authors concluded, "This implies that, on a bulk scale, aging is not affected by the spatial distribution of the reinforcement, although it is likely to be affected locally" [Stone & Tsakirooulos, 1994]. This is a sensible conclusion.

Quite often you will not be simply referring to a single piece of published work, but comparing & contrasting several reports of relevance to a particular point in your own document and then offering your own considered opinion on this previous work and/or comparing it with your own data and conclusions. The principles illustrated above in respect of Stone & Tsakirooulos of course still apply to this more complicated case and in addition it is necessary to separately identify each contribution, for example:

It has been reported by two groups that the time for peak aging of the matrix at aging temperatures in the range 460-475K is not affected by the addition of reinforcing particles [Stone & Tsakirooulos (1994), Bloggs & Jones (1997)].

Although a more recent study did observe an apparent influence of the reinforcing particles [Smith (2006)], in the present work we have been unable to reproduce this effect, our data being fully consistent with the original work of Stone & Tsakirooulos. It seems likely that the results reported by Smith were an artefact of the analytical method that they adopted, such artefacts having been observed by others in related studies of a series of Al-Cu-Mg alloys [Jones et al (1999)].

Figures

Figures too are a potential source of plagiarism. If you use somebody else's diagram, graph, photograph or other artwork without acknowledging the original source then you are guilty of plagiarism (and possibly also of breach of copyright). If you use a figure from elsewhere then you should cite the original reference in the figure caption and in the associated body text. Even if you redraw a figure then you should still refer to the original source, e.g. [redrawn from Jones et al, 2006]. If you use a collection of data from other works to create a completely new figure (e.g. a graph to show a trend arising from a collection of data from several sources) then you must acknowledge the original data sources.

Why is referencing important?

Quite apart from the need to avoid plagiarism because of the danger that this may invalidate a piece of assessed work and/or lead to some other penalty, there are a number of other good reasons for the internationally accepted practise of using references in a factual document:

- (i) It is a simple professional courtesy to a fellow scientist who has laboured long & hard to generate the work that you are referring to.
- (ii) It enables the reader to verify the statements that you are making, to make his/her own judgements on both the conclusions that you report from the referenced work and the judgements that you make on this work, and of course to learn more about the detail of the original work.
- (iii) Your work is strengthened by its reference to respected authorities in a given field; as scientists we all build our work 'on the shoulders of giants'.
- (iv) It enables the reader to identify very clearly what are your own original contributions to the matters discussed. Since these contributions will undoubtedly be erudite and valuable, you will want the world to know that they are yours and to be able to give you credit for them when your work is referenced in the future!

The two main referencing systems are Harvard (author name, year of publication) and Vancouver (numbered sequentially in order of use). Whichever system you decide to use, good practice dictates that references should include (depending on publication type): authors, title of book or article, title of journal or other work, name of conference, place of publication, date of publication, publisher and page numbers. The conventions for citing internet resources include URL and date accessed. A useful style guide can be found at <http://authorservices.wiley.com>. Your tutor will be able to provide further guidance.

Other useful information on plagiarism can be found on the Study skills and training pages at www.ox.ac.uk/students/academic/guidance/skills

Appendix E Learning Development (Skills and Outcomes)

Skills that the Materials degree programme enables a proactive and fully-engaged student to develop:

Intellectual Skills

1. Appreciation of the underlying principles of Materials Science, supported by an understanding of the necessary basic science required in studying this interdisciplinary subject.
2. An understanding of the processes and principles involved that lead to the appropriate application of materials, the importance of materials to industry and society as well as an awareness of sustainability, environmental issues and safety.
3. An understanding of engineering principles in order to understand the manufacturing methods and service performance of materials.
4. Ability to apply appropriate mathematical or numerical techniques to materials-based phenomena.
5. Ability to conduct a logical discussion and argue a coherent point of view.
6. Ability to solve a range of known problems and tackle unseen and more open-ended ones.
7. Ability to collate, analyse and interpret complex experimental data and infer conclusions where appropriate.
8. Ability to summarise scientific arguments and facts and to give succinct oral and written presentations, using IT-based methods where appropriate.

Teaching/learning methods and strategies

The course is designed so that lectures, tutorials, industrial visits, coursework, projects, classes, self-study and practicals (both in the classroom and independent projects) complement each other to allow the student to develop the above intellectual skills.

Assessment

Skills 1-6 are assessed through written examinations, written class and tutorial assignments and project work. These skills are also assessed formatively through tutorials, which provide regular feedback on the student's progress. Skills 6-8 are assessed through practicals, project reports and public presentations. For students following the BA in Materials Science programme, 'project work' includes the extended essay.

Practical Skills

1. Aware of the need for safety in practical laboratories, and the importance of good laboratory practice.
2. Ability to use a wide range of experimental techniques to make quantitative measurements, and to be able to draw scientifically rigorous conclusions from these observations.
3. Ability to plan, execute and write up both short and long open ended projects.
4. Aware of the applications of practical Materials Science.
5. Knowledge of safe workshop practice and development of workshop skills.

Teaching/learning methods and strategies

These skills are taught through practicals, undertaken in the 1st and 2nd year of the course in the Departments' teaching laboratories. The teaching laboratory has an academic supervisor (The Practical Class Organiser) and a Practical Class Technician, as well as a team of demonstrators to guide the students through their practicals. The students undertake four industrial visits during the 2nd and 3rd years of the course and both a team design project (TDP) and either a materials characterisation or materials modelling module in the 3rd year of the course. The 4th year consists of a full-time 36-week independent research project, undertaken in the University, overseas or in industry. Practicals are undertaken as a cohort normally in pairs or groups of three, and are scheduled throughout the academic year in order to support the lecture courses. The TDP teams comprise 5-8 students and the final year research projects are individual pieces of work. The mini projects in the characterisation and modelling modules take the form of individually conducted open-ended practical work.

Assessment

The teaching laboratory practicals are continually assessed and contribute to both the Preliminary examination and the Part I examination. All practicals are written up as a report which is marked by the member of academic staff in charge of the practical. Many of the practicals are marked in front of the students in a tutorial style environment. The industrial visit reports are also continually assessed and contribute towards the Part I examination. The 3rd year design project is assessed both by written and oral presentations. The 3rd year characterisation/modelling mini-projects are assessed by means of a written report. Both 3rd year projects contribute towards the Part I examination. Marks for the final year project (Part II) are awarded for the standard of the project based on the evidence of the thesis and discussions in a *viva voce* examination.

Appendix F Intended Learning Outcomes

Students will be enabled to develop a knowledge and understanding of:

- The general theoretical and experimental principles and techniques of physics, chemistry and engineering in a Materials Science context;
- A broad range of Materials Science topics;
- How the subject is applied in an industrial context, and the different problems associated with the business world;
- The application of relevant mathematical techniques;
- Sound experimental protocol, including laboratory safety, data handling and analysis, and practical report writing;
- Independent research skills and project management experience;
- Sustainability and environmental impact;
- Basic IT skills and numerical methods as applied to Materials Science;
- How to work as part of a team.

Related teaching/learning methods and strategies

- Lectures form the principle means by which the core content of the course is delivered to the students. A guided reading list and course handbooks containing synopses of the lectures supplement the lecture course and where appropriate notes and proofs of the lectures are also provided. Problem sheets are issued by the lecturers and assistance with and feedback on the solutions is provided during tutorials.
- Practicals (usually in pairs or threes) supplement and expand the lectures, they allow the students to develop key experimental skills and visibly demonstrate the principles discussed in lectures and tutorials.
- Tutorials (usually in pairs or threes) are used to address the more complex concerns as a means to stretch the more able students and provide focussed help for those students experiencing difficulties.
- Classes (small groups) are used in certain subject areas to discuss and answer problem sets related to the material delivered in lectures.
- Computing techniques are developed from the 1st year and students are taught how they may be applied to Materials Science problems. A wide range of software is used.

- Industrial visits are undertaken once a term to allow the students to see how Materials Science is applied in industry. The visits are designed to complement the formal academic syllabus of the course and form a mandatory part of the course. Students must attend and submit a report on at least four visits. There is also a voluntary industrial tour during the Easter Vacation, although places are restricted to about 20 students.
- Industrial Lectures are organised each year. These are given by employees of companies that make use of Materials Science and aim to reinforce students' awareness of some of the applications of Materials Science and to raise awareness of career opportunities.
- Engineering and Society coursework is used to broaden the student's view of materials engineering within the commercial world. The coursework is currently based round "Entrepreneurship and New Ventures", and involves the students writing a business plan in teams. The teams also give an oral presentation on their business plan.
- Voluntary Industrial/Research Laboratory vacation projects: students are strongly encouraged to undertake vacation replacement in a relevant company/institution. Students are offered guidance on how to find such a placement.
- Team design projects undertaken in the penultimate year of the course are designed to develop the students' design skills, the benefit of good teamwork and other key transferrable skills, including written and oral presentations. The projects require not only design and materials input but also costing and market analysis.
- Open-ended practical work is undertaken in the penultimate year of the programme, in either Materials Modelling or Materials Characterisation. Following a series of lectures and training exercises each student works alone on one or two **mini-projects**. In addition to increasing their knowledge of modelling or characterisation the mini-project also introduces the students to working independently on an open-ended task in advance of the major research project which they undertake the following year.
- Independent research teaches the student how to plan, execute and write up a challenging open-ended 36-week full-time project, under the supervision of a Faculty member. Oral presentation skills are further developed in the delivery of a research talk to the Faculty. Students who opt to transfer to the 3-year BA in Materials Science substitute this research project with literature-based research leading to submission of an extended essay on a topic in Materials Science.

- Private study during term time and vacation is both necessary and expected, as it provides opportunities for consolidation and reading beyond the syllabus.

Assessment

The assessment procedure for Materials Science is divided into two public (University) examinations: the Preliminary and Final Examinations, with the latter being further divided into the Part I and Part II assessments. A wide range of assessment methods, both summative and formative, is employed throughout the degree programme.

- The Preliminary Examination in Materials Science is a pass/fail examination (although distinctions are awarded for excellent performance) consisting of four written papers, and continually assessed work from the first year practicals and crystallography classes, which together count as a fifth paper. It must be passed (a resit is allowed in September) to proceed further on the course. The marks do not count towards the degree classification.
- The Part I of the Final Examination consists of four written general papers and two option papers, taken at the end of the students' 3rd year. Additionally the marks for practicals, industrial visits, the Engineering and Society coursework (currently a business plan), the team design project and the materials modelling or characterisation module contribute the equivalent of a further 2 papers. A foreign language option (initiated in the 1st year) or a supplementary subject (taken in the 2nd year) may be substituted for Engineering and Society paperwork.
- In the 3rd year students may opt to transfer to a 3-year BA in Materials Science.
- The Part II of the Final Examination is a 36-week research project, taken within the University, in industry or overseas and written up as a thesis. Marks in Part II are awarded for the standard of the project based on the evidence of a thesis and discussions in a *viva voce* examination. It contributes the equivalent of 4 papers to the overall degree classification. A minimum overall Part I mark of 50% is required to enter the Part II programme.

Both the Part I and Part II Examinations contribute towards the final degree classification.

During the course, formative assessments are carried out within the college and departmental contexts through tutorials, classes and termly examinations (collections). These enable regular feedback and comment on the individual student's needs thus identifying any possible problem areas as well as highlighting areas of strength. Feedback on practicals is provided during oral marking sessions usually held soon after each practical is completed, thus providing both formative and summative assessment.

*(in some cases the feedback is instead provided by a written commentary).

Appendix G University Rules for Computer Use

Regulations Relating to the use of Information Technology Facilities

Statutes and Regulations

ICTC Regulations 1 of 2002

Made by the ICTC on 6 June 2002

Approved by Council on 24 July 2002

Amended on 2 October 2003, 23 October 2003, 16 February 2006, 1 June 2006, 3 June 2010 and
19 July 2012

1. In these regulations, unless the context requires otherwise, 'college' means any college, society, or Permanent Private Hall or any other institution designated by Council by regulation as being permitted to present candidates for matriculation.
2. University IT and network facilities are provided for use in accordance with the following policy set by Council:
 - (1) The University provides computer facilities and access to its computer networks only for purposes directly connected with the work of the University and the colleges and with the normal academic activities of their members.
 - (2) Individuals have no right to use university facilities for any other purpose.
 - (3) The University reserves the right to exercise control over all activities employing its computer facilities, including examining the content of users' data, such as e-mail, where that is necessary:
 - (a) for the proper regulation of the University's facilities;
 - (b) in connection with properly authorised investigations in relation to breaches or alleged breaches of provisions in the University's statutes and regulations, including these regulations; or
 - (c) to meet legal requirements.
 - (4) Such action will be undertaken only in accordance with these regulations.
3. These regulations govern all use of university IT and network facilities, whether accessed by university property or otherwise.

4. Use is subject at all times to such monitoring as may be necessary for the proper management of the network, or as may be specifically authorised in accordance with these regulations.
5.
 - (1) Persons may make use of university facilities only with proper authorisation.
 - (2) 'Proper authorisation' in this context means prior authorisation by the appropriate officer, who shall be the Chief Information Officer or his or her nominated deputy in the case of services under the supervision of IT Services, or the nominated college or departmental officer in the case of services provided by a college or department.
 - (3) Any authorisation is subject to compliance with the University's statutes and regulations, including these regulations, and will be considered to be terminated by any breach or attempted breach of these regulations.
6.
 - (1) Authorisation will be specific to an individual.
 - (2) Any password, authorisation code, etc. given to a user will be for his or her use only, and must be kept secure and not disclosed to or used by any other person. Exceptions may be made for accounts set up specifically to carry out business functions of the University or a unit within it, but authorisation must be given by the head of the unit.
7. Users are not permitted to use university IT or network facilities for any of the following:
 - (1) any unlawful activity;
 - (2) the creation, transmission, storage, downloading, or display of any offensive, obscene, indecent, or menacing images, data, or other material, or any data capable of being resolved into such images or material, except in the case of the use of the facilities for properly supervised research purposes when that use is lawful and when the user has obtained prior written authority for the particular activity from the head of his or her department or the chairman of his or her faculty board (or, if the user is the head of a department or the chairman of a faculty board, from the head of his or her division);
 - (3) the creation, transmission, or display of material which is designed or likely to harass another person in breach of the University's Code of Practice on Harassment;
 - (4) the creation or transmission of defamatory material about any individual or organisation;
 - (5) the sending of any e-mail that does not correctly identify the sender of that e-mail or attempts to disguise the identity of the computer from which it was sent;

- (6) the sending of any message appearing to originate from another person, or otherwise attempting to impersonate another person;
- (7) the transmission, without proper authorisation, of e-mail to a large number of recipients, unless those recipients have indicated an interest in receiving such e-mail, or the sending or forwarding of e-mail which is intended to encourage the propagation of copies of itself;
- (8) the creation or transmission of or access to material in such a way as to infringe a copyright, moral right, trade mark, or other intellectual property right;
- (9) private profit, except to the extent authorised under the user's conditions of employment or other agreement with the University or a college; or commercial purposes (including advertising commercial services) without specific authorisation;
- (10) gaining or attempting to gain unauthorised access to any facility or service within or outside the University, or making any attempt to disrupt or impair such a service;
- (11) the deliberate or reckless undertaking of activities such as may result in any of the following:
 - (a) the waste of staff effort or network resources, including time on any system accessible via the university network;
 - (b) the corruption or disruption of other users' data;
 - (c) the unauthorised access, transmission or negligent loss of data;
 - (d) the violation of the privacy of other users;
 - (e) the disruption of the work of other users;
 - (f) the introduction or transmission of a virus or other malicious software into the network;
- (12) activities not directly connected with employment, study, or research in the University or the colleges (excluding reasonable and limited use for social and recreational purposes where not in breach of these regulations or otherwise forbidden) without proper authorisation.

8. Software and computer-readable datasets made available on the university network may be used only subject to the relevant licensing conditions, and, where applicable, to the Code of Conduct published by the Combined Higher Education Software Team ('CHEST').
9. Users shall treat as confidential any information which may become available to them through the use of such facilities and which is not clearly intended for unrestricted dissemination; such information shall not be copied, modified, disseminated, or used either in whole or in part without the permission of the person or body entitled to give it.
10.
 - (1) No user may use IT facilities to hold or process data relating to a living individual save in accordance with the provisions of current data protection legislation (which in most cases will require the prior consent of the individual or individuals whose data are to be processed).
 - (2) Any person wishing to use IT facilities for such processing is required to inform the University Data Protection Officer in advance and to comply with any guidance given concerning the manner in which the processing may be carried out.
11. Any person responsible for the administration of any university or college computer or network system, or otherwise having access to data on such a system, shall comply with the provisions of the 'Statement of IT Security and Privacy Policy'.
12. Users shall at all times endeavour to comply with policies and guidance issued from time to time by IT Services to assist with the management and efficient use of the University's IT facilities.
13. Connection of any computer, whether college, departmental, or privately owned, to the university network is subject to the following additional conditions:
 - (1)
 - (a) Computers connected to the university network may use only network identifiers which follow the University's naming convention, and are registered with IT Services.
 - (b) The University's Trade Mark and Domain Name Policy specifies, *inter alia*, that all university activities (other than those within OUP's remit) should be presented within the ox.ac.uk domain. Any exception to this requires authorisation as defined in that Policy.

- (2) (a) Owners and administrators of computers connected to the university network are responsible for ensuring their security against unauthorised access, participation in 'denial of service' attacks, etc. In particular they are responsible for ensuring that anti-virus software is installed and regularly updated, and that rules and guidelines on security and anti-virus policy, as issued from time to time by IT Services, are followed.
- (b) The University may temporarily bar access to any computer or sub-network that appears to pose a danger to the security or integrity of any system or network, either within or outside Oxford, or which, through a security breach, may bring disrepute to the University.
- (3) (a) Providers of any service must take all reasonable steps to ensure that that service does not cause an excessive amount of traffic on the University's internal network or its external network links.
- (b) The University may bar access at any time to computers which appear to cause unreasonable consumption of network resources.
- (4) (a) Hosting Web pages on computers connected to the university network is permitted subject to the knowledge and consent of the department or college responsible for the local resources, but providers of any such Web pages must endeavour to comply with guidelines published by IT Services or other relevant authorities.
- (b) It is not permitted to offer commercial services through Web pages supported through the university network, or to provide 'home-page' facilities for any commercial organisation, except with the permission of the Chief Information Officer (IT Services); this permission may require the payment of a licence fee.
- (5) Use of file-sharing technology and participation in distributed file-sharing networks may be subject to additional regulation and restriction in order to prevent excessive use of university network resources, or the use of those resources for purposes unconnected with the University. If a user has any reason to suppose that an application employs peer-to-peer (p2p) or other file-sharing technology, they should seek the advice of the IT officer responsible for the college or departmental network on which they propose to use the software.

- (6) (a) No computer connected to the university network may be used to give any person who is not a member or employee of the University or its colleges access to any network services outside the department or college where that computer is situated.
 - (b) Certain exceptions may be made, for example, for members of other UK universities, official visitors to a department or college, or those paying a licence fee.
 - (c) Areas of doubt should be discussed with the Head of IT Services.
- (7) Providing external access to University network resources for use as part of any shared activity or project is permitted only if authorised by the IT Committee (ITC), and will be subject to any conditions that it may specify.
- (8) If any computer connected to the network or a sub-network does not comply with the requirements of this section, it may be disconnected immediately by the Network Administrator or any other member of staff duly authorised by the head of the college, section or department concerned.
14. (1) If a user is thought to be in breach of any of the University's statutes or regulations, including these regulations, he or she shall be reported to the appropriate officer who may recommend to the appropriate university or college authority that proceedings be instituted under either or both of university and college disciplinary procedures.
- (2) Access to facilities may be withdrawn under section 42 of Statute XI pending a determination, or may be made subject to such conditions as the Proctors or the Registrar (as the case may be) shall think proper in the circumstances.

Examining Users' Data

15. All staff of an IT facility who are given privileged access to information available through that facility must respect the privacy and security of any information, not clearly intended for unrestricted dissemination, that becomes known to them by any means, deliberate or accidental.

16. (1) System Administrators (i.e. those responsible for the management, operation, or maintenance of computer systems) have the right to access users' files and examine network traffic, but only if necessary in pursuit of their role as System Administrators.
 - (2) They must endeavour to avoid specifically examining the contents of users' files without proper authorisation.

17. (1) If it is necessary for a System Administrator to inspect the contents of a user's files, the procedure set out in paragraphs (2)-(5) below must be followed.
 - (2) Normally, the user's permission should be sought.
 - (3) Should such access be necessary without seeking the user's permission, it should, wherever possible, be approved by an appropriate authority prior to inspection.
 - (4) If it has not been possible to obtain prior permission, any access should be reported to the user or to an appropriate authority as soon as possible.
 - (5) For the purposes of these regulations 'appropriate authority' is defined as follows:
 - (a) in the case of any university-owned system, whether central or departmental: if the files belong to a student member, the Proctors; if the files belong to any member of the University other than a student member, the Registrar or his or her nominee; or, if the files belong to an employee who is not a member of the University, or a visitor to the University, the head of the department, college, or other unit to which the employee or visitor is responsible, or the head's delegated representative;
 - (b) in the case of a departmental system, either those named in (a) above, or, in all circumstances, the head of department or his or her delegated representative;
 - (c) in the case of a college system, the head of the college or his or her delegated representative.

Appendix H Examination Conventions 2015/16

Preliminary Examination in Materials Science

The formal procedures determining the conduct of examinations are established and enforced by the University Proctors. These conventions are a guide to the examiners and candidates but the regulations set out in the Examination Regulations have precedence.

The examiners are nominated by the Nominating Committee* in the Department and those nominations are submitted for approval by the Vice-Chancellor and the Proctors. In Prelims the examiners are called “moderators”. Formally, moderators are independent both of the Department and of those who lecture. The paragraphs below give an indication of the conventions to which the moderators usually adhere, subject to the guidance of other bodies such as the Academic Committee in the Department, the Mathematical, Physical and Life Sciences Division, the Education Committee of the University and the Proctors who may offer advice or make recommendations to the moderators.

The Moderators in Trinity 2016 are: Prof Andrew Watt (Chair), Prof. Nicole Grobert, Prof. Susie Speller and Dr Steve Fitzgerald. It must be stressed that to preserve the independence of the Moderators, candidates are not allowed to make contact directly about matters relating to the content or marking of papers. Any communication must be via your college, who will, if the matter is deemed of importance, contact the Proctors. The Proctors in turn communicate with the Chairman of Prelims.

If there are believed to be mitigating circumstances, such as illness, which may have affected the candidate’s progress with coursework or performance in a written exam these should be drawn to the attention of the candidate’s college as soon as practicable. Candidates should complete the form entitled ‘Factors affecting performance in examinations’ and submit this to the college with appropriate supporting material. The Senior Tutor of the college will submit the application to the Registrar for forwarding to the Chairman of Prelims for consideration according to Part 13 of the ‘Regulations for the Conduct of University Examinations’ section of the Examination Regulations 2015/16.

(1) *Setting of papers*

* for the 2015-16 examinations the Nominating Committee comprised Prof Grovenor & Dr Taylor.

Each of the five papers in Prelims, comprising the 3 Materials Science papers (MS1, MS2 & MS3), the Maths for Materials Science paper, and the Coursework Paper, are weighted equally towards the overall total for the Preliminary Examination. The Moderators set the papers, but are advised to consult the course lecturers. The course lecturers are required to provide draft questions and model answers if so requested by the Moderators. There are no external examiners for Prelims. The assessed work for the practicals and the crystallography classes together constitute the Coursework Paper.

(2) *Written Paper Format*

The Materials Science papers 1 - 3 comprise eight questions from which candidates must attempt five. Each question is worth 20 marks. The total marks available for each of these papers are 100.

The Prelims paper on Maths for Materials Science consists of two sections, candidates are required to answer all questions in Part A and 4 from Part B. The total marks available for this paper are 180; the mark achieved then being weighted by a factor of 0.555' such that the paper contributes a maximum of 100 marks to the Preliminary Examination.

(3) *Coursework paper*

The Coursework Paper comprises two elements of coursework: a set of eight reports of practical work as specified in the MS Prelims Handbook (normally each individual report within the set has been marked already as the laboratory course progresses); and a set of reports for crystallography (completed under the class schedule). The Examination Regulations stipulate a specific date for submission of the practical coursework. Rules governing late submission of the practical element of coursework and any consequent penalties are set out in the 'Late submission and non-submission of a thesis or other written exercise' clause of the 'Regulations for the Conduct of University Examinations' section of the Examination Regulations (Part 14, 'Late Submission, Non-submission, Non-appearance and Withdrawal from Examinations' in the 2015/16 Regulations).

Under the provisions permitted by the regulation, late submission of an element of coursework, as defined above, for the Preliminary Examination in Materials Science and Materials, Economics & Management will normally result in one of the following:

- (a) With permission from the Proctors under para 14.7 no penalty.
- (b) With permission from the Proctors under paras 14.9 and 14.10, for the first day or part of the first day that the work is late a penalty of a reduction in the mark for the coursework in question of up to 10% of the maximum mark available for the piece of work, and for each subsequent day or part of a day that the work is late a further penalty of up to 5% of the maximum mark available for the piece of work; the exact penalty to be set by the Examiners with due consideration given to the circumstances and to any advice given in the Proctors' "Notes for the Guidance of Examiners and Chairmen of Examiners". The reduction may not take the mark below 40% of the maximum available for the piece of work.
- (c) Where the candidate is not permitted by the Proctors to remain in the examination, he or she will be deemed to have failed the examination as a whole.
- (d) Where, without the permission of the Proctors under paras 14.9 and 14.10, work is proffered so late that it would be impractical to accept it for assessment a mark of zero shall be recorded and, as per the Special Regulations for the Preliminary Examination in Material Science, normally the candidate will have failed the Examination as a whole.
- (e) Where no work is submitted a mark of zero shall be recorded and, as per the Special Regulations for the Preliminary Examination in Material Science and Materials, Economics & Management, normally the candidate will have failed the Examination as a whole.

Where an element of coursework is not submitted or is proffered so late that it would be impractical to accept it for assessment the Proctors may, exceptionally, under their general authority, and after (i) making due enquiries into the circumstances and (ii) consultation with the Chairman of the Moderators, permit the candidate to remain in the examination. In this case for the *element of coursework in question* (i) the Examiners will award a mark of zero and (ii) dispensation will be granted from the Regulation that requires a minimum mark of 40% if the candidate is not to fail the examination as a whole.

Elements of coursework comprising more than one individual piece of assessed coursework

Penalties for late submission of individual practical reports are set out in the MS Prelims Handbook and are **separate** to the provisions described above.

The consequences of late submission of or failure to submit individual practical reports or individual pieces of Crystallography coursework are set out in the Prelims Handbook (sections 9.6 and 10 of the 2015/16 version) and are **separate** to the provisions described above.

(4) Marking of papers

For prelims double marking is not necessarily double “blind” marking. It is usually considered sufficient for the second marker merely to check the first marker’s marks.

The rubric on each paper indicates a prescribed number of answers required (e.g. "candidates are required to submit answers to no more than five questions"). Candidates will be asked to indicate on their cover sheet which questions, up to the prescribed number, they are submitting for marking. Excepting section A of the Maths paper, for which all questions are compulsory, if the cover slip is not completed then the examiners will mark the questions in numerical order by question number. If the candidate lists more than the prescribed number of questions then questions will be marked in the order listed until the prescribed number has been reached. The examiners will NOT mark questions in excess of the prescribed number. If fewer questions than the prescribed number are attempted, (i) each missing attempt will be assigned a mark of zero, (ii) for those questions that are attempted **no** marks beyond the maximum per question indicated under section 2 above will be awarded and (iii) the mark for the paper will still be calculated out of 100 for MS1, MS2 & MS3 and out of 180 for the Maths for Materials Science paper.

(5) Marking of course practicals and crystallography classes

First year practicals are assessed regularly by senior demonstrators in the teaching laboratory. The work done for crystallography classes is assessed by the Crystallography Class Organiser(s). Satisfactory performance in the practical work and in the crystallography classes is defined in the MS/MEM Prelims Handbook.

(6) Classification

The pass/fail border is at 40%.

The Moderators may award a distinction to recognise especially strong overall performance. Normally (i) at their discretion, the moderators may specify a mark in the range 70% to 79% such that candidates with an overall mark greater than or equal to this specified mark are awarded a distinction and (ii) a distinction will be awarded to all candidates with an overall mark of 80% or greater.

Failure in one or two written papers may be compensated by better performance in other written papers provided the candidate obtains at least 35% on the failed paper. Failure of three papers precludes compensation. Where compensation is permitted, only those marks in excess of 40 on a passed paper may be used towards compensation and normally this shall be at a rate of 3 marks to every deficit mark to be compensated.

For example, if two written papers are passed and marks of 36% and 38% are obtained in the remaining two written papers then the total for the four written papers must be at least 172 marks $\{36 + 38 + 2 \times 40 + 3 \times (4 + 2)\}$ for both failures to be compensated

The Moderators have the authority to use their discretion and consider each case on its merit.

(7) *Failure of one or more Papers*

Failure of the coursework paper will normally constitute failure of the Preliminary Examination. Materials coursework cannot normally be retaken. Exceptionally a candidate who has failed the coursework may be permitted jointly by the Moderators and the candidate's college to retake the entire academic year.

Candidates who pass the coursework paper and fail 1 or 2 written papers will be asked to resit only those written papers.

Candidates who pass the coursework paper and fail more than 2 written papers will be asked to resit all 4 written papers.

The resits usually take place in September. To pass a resit paper the candidate must obtain at least 40%, and normally no compensation is allowed. There is only one opportunity to resit the examination, and failure to pass a resit examination normally results in the candidate being prevented from continuing to Part I. Exceptionally, a college may allow a student to go down for a year and take Prelims a second time the following June.

The Moderators have the authority to use their discretion and consider each case on its merit. In such cases they will take into account a candidate's profile across all elements of assessment together with, subject to guidance from the Proctors where appropriate, any other factors they deem to be relevant.

Appendix I University Policy on Intellectual Property Rights

The University of Oxford has in place arrangements governing the ownership and exploitation of intellectual property generated by students and researchers in the course of , or incidental to, their studies. These arrangements are set out in the University's Statutes 2000 (page 121 refers) under which the University claims ownership of certain forms of intellectual property which students may create. The main provisions in the Statutes are as follows:

Intellectual property (IP) is the result of creativity and innovation, to which legal rights (intellectual property rights) may be associated, such as patents, copyright, trademarks, design and database rights. Oxford was one of the first UK universities to develop an intellectual property policy to govern the ownership and exploitation of IP generated by students and employees in the course of their employment or studies.

Oxford's IP policy is governed by the University's Statutes and Regulations. For ease of reference, an extract from the Statutes and Regulations is contained below. The Statutes and Regulations, as they relate to the University's IP policy, together with regulations for the administration of the IP policy, may be found in full on the University website (<http://www.admin.ox.ac.uk/statutes/regulations/182-052.shtml> and <http://www.admin.ox.ac.uk/statutes/790-121.shtml>).

Essential ingredients of the University's approach are a generous revenue-sharing policy, which brings significant personal benefits to researchers (employees or students), and a hugely successful and well-resourced technology transfer operation, Isis Innovation, which has earned national and international recognition. Isis was established specifically to help researchers in the University commercialise their research. Isis files, on average, one new patent a week, and has helped create more than 50 spin-out companies and many more licence deals. Isis works closely with Research Services, a part of the University's central administration. Research Services' remit includes the management of research grants and contracts to the University, and the assignment of University intellectual property to Isis for exploitation.

University intellectual property policy

(Extract from Statute XVI – Part B)

5. (1) The University claims ownership of all intellectual property specified in section 6 of this statute which is devised, made, or created:

- (a) by persons employed by the University in the course of their employment;
 - (b) by student members in the course of or incidentally to their studies;
 - (c) by other persons engaged in study or research in the University who, as a condition of their being granted access to the University's premises or facilities, have agreed in writing that this Part shall apply to them; and
 - (d) by persons engaged by the University under contracts for services during the course of or incidentally to that engagement.
- (2) The University's rights under sub-section (1) above in relation to any particular piece of intellectual property may be waived or modified by agreement in writing with the person concerned.
6. The intellectual property of which ownership is claimed under section 5 (1) of this statute comprises:
- (1) works generated by computer hardware or software owned or operated by the University;
 - (2) works created with the aid of university facilities including (by way of example only) films, videos, photographs, multimedia works, typographical arrangements, and field and laboratory notebooks;
 - (3) patentable and non-patentable inventions;
 - (4) registered and unregistered designs, plant varieties, and topographies;
 - (5) university-commissioned works not within (1), (2), (3), or (4);
 - (6) databases, computer software, firmware, courseware, and related material not within (1), (2), (3), (4), or (5), but only if they may reasonably be considered to possess commercial potential; and
 - (7) know-how and information associated with the above.
7. The University will not assert any claim to the ownership of copyright in:
- (1) artistic works not listed in subsection (2) of section 6 of this statute, books, articles, plays, lyrics, scores, or lectures, apart from those specifically commissioned by the University;

- (2) audio or visual aids to the giving of lectures;
 - (3) student theses, exercises and answers to tests and examinations save to the extent that they contain intellectual property claimed by the University under subsection (6) of section 6 of this statute; or
 - (4) computer-related works other than those specified in section 6 of this statute.
8. For the purpose of sections 6 and 7 of this statute, 'commissioned works' are works which the University has specifically employed or requested the person concerned to produce, whether in return for special payment or not, but save as may be separately agreed between the University Press and the person concerned, works commissioned by The University Press in the course of its publishing business shall not be regarded as 'works commissioned by the University.'
9. Council may make regulations:
- (1) defining the classes of persons or naming individuals to whom section 5 (1) (c) of this statute shall apply;
 - (2) requiring student members and such other persons as may be specified in regulations to sign any documents necessary in order to give effect to the claim made by the University in this Part and to waive any rights in respect of the subject-matter of the claim which may be conferred on them by Chapter IV of Part 1 of the Copyright, Designs and Patents Act 1988; and
 - (3) generally for the purposes of this Part.
10. This Part shall apply to all intellectual property devised, made, or created on or after 1 October 2000 and is subject to the provisions of the Patents Act 1977.

Appendix J Crystallography Class Procedures

Handing in the work

A form to register attendance will be available for you to sign at the beginning of every class.

All scripts will be stamped after collection on the day of the class. Scripts without the stamp will not be marked. Each script is marked out of 10.

Each page you are handing in must give the page number and the total number of pages in the report, i.e. page 3 of 4, as well as your name.

When you hand in your script a tick will be made by your name on the attendance sheet; it is your responsibility to check that this has been done before you leave the class.

Forgetting to hand in the work

Students who attend a class and have signed the attendance sheet but forget to hand their work in will have their scripts marked at a later date provided they were handed in before the other students received their marked copies back, but the mark recorded will be reduced by a factor of 2. If the work is handed in after this deadline a mark of 0 will be recorded, but will count towards the requirement to submit a script for every crystallography class. All scripts must have been submitted by the end of Hilary term.

NB: This is examinable work; it must be handed to us in person rather than left somewhere to be collected.

Missing one or more classes

Missing one class without a good reason could be enough to fail prelims*. If you do miss a class, you should notify your tutor. The Senior Tutor at your college will then decide whether or not to request the Proctors to consider if your absence is justifiable, for example due to illness. Normally if the absence is ruled to be justified the overall average crystallography mark will be calculated based on those classes that you were able to attend.

***Satisfactory Performance in Coursework**

To pass the coursework 'paper' candidates must normally demonstrate a satisfactory performance in both the Practical Work and the Crystallography Classes.

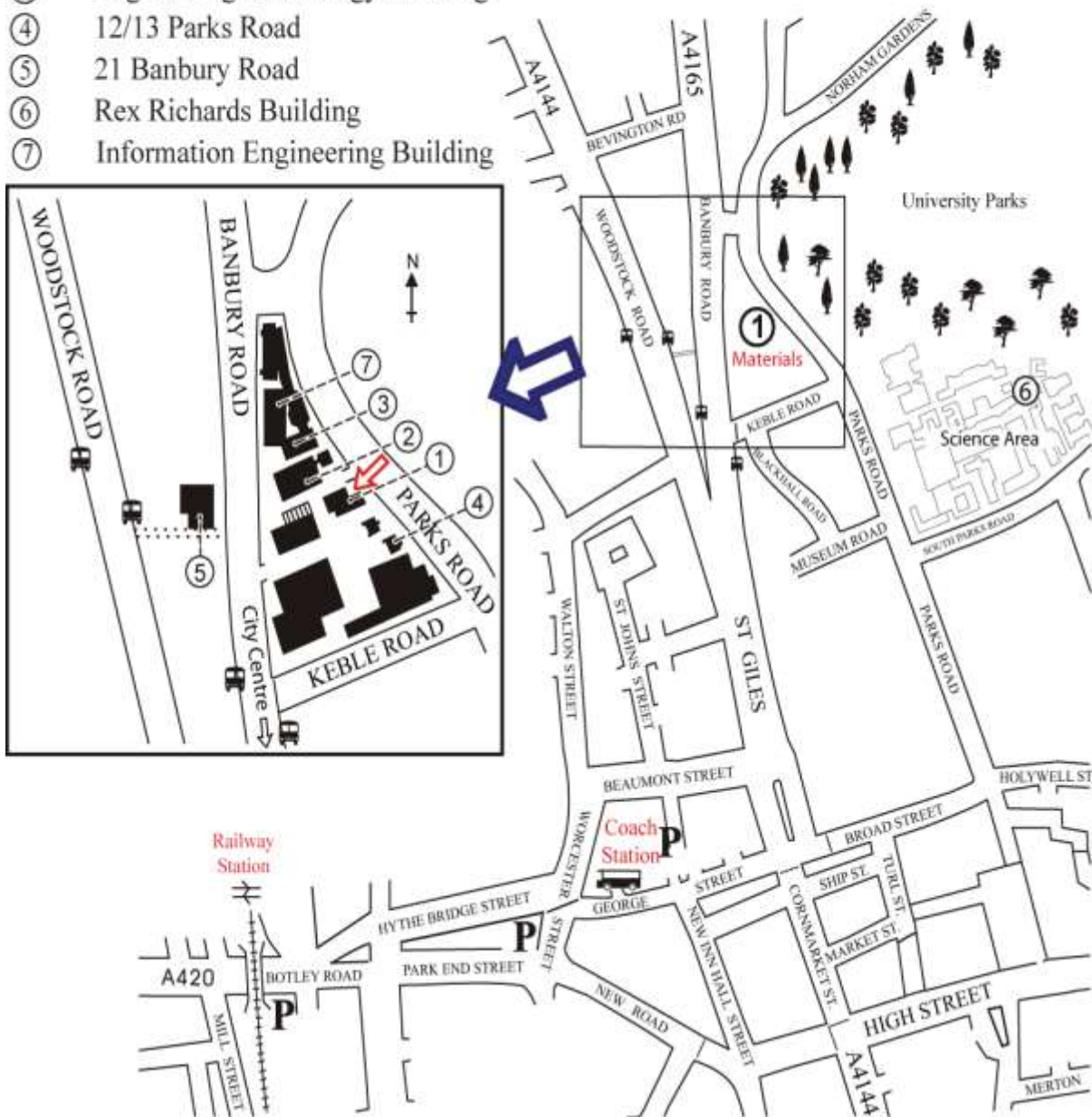
For their practical coursework to be judged as satisfactory candidates must have achieved at least 40% overall on this practical coursework and have submitted a report for marking on each practical listed in the course handbook.

For their crystallography coursework to be judged as satisfactory candidates must have achieved at least 40% overall on this crystallography coursework, and have submitted a report on each of the crystallography classes.

As indicated in the Examination Regulations for the Preliminary Examination in Materials Science (clause 2c), coursework cannot normally be retaken and failure of coursework will normally constitute failure of the Preliminary Examination. In exceptional circumstances a student who has failed the coursework might be permitted jointly by the Moderators of the Preliminary Examination and the candidate's college to repeat all five papers of the Preliminary Examination in a subsequent year.

Department of Materials - Map of Central Site

- ➔ Reception
- ① Hume-Rothery Building
- ② Holder Building
- ③ Engineering Technology Building
- ④ 12/13 Parks Road
- ⑤ 21 Banbury Road
- ⑥ Rex Richards Building
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