



The M.Eng. Materials Science and  
M.Eng. Materials, Economics & Management  
Prelims Course Handbook 2013-14



Department of Materials



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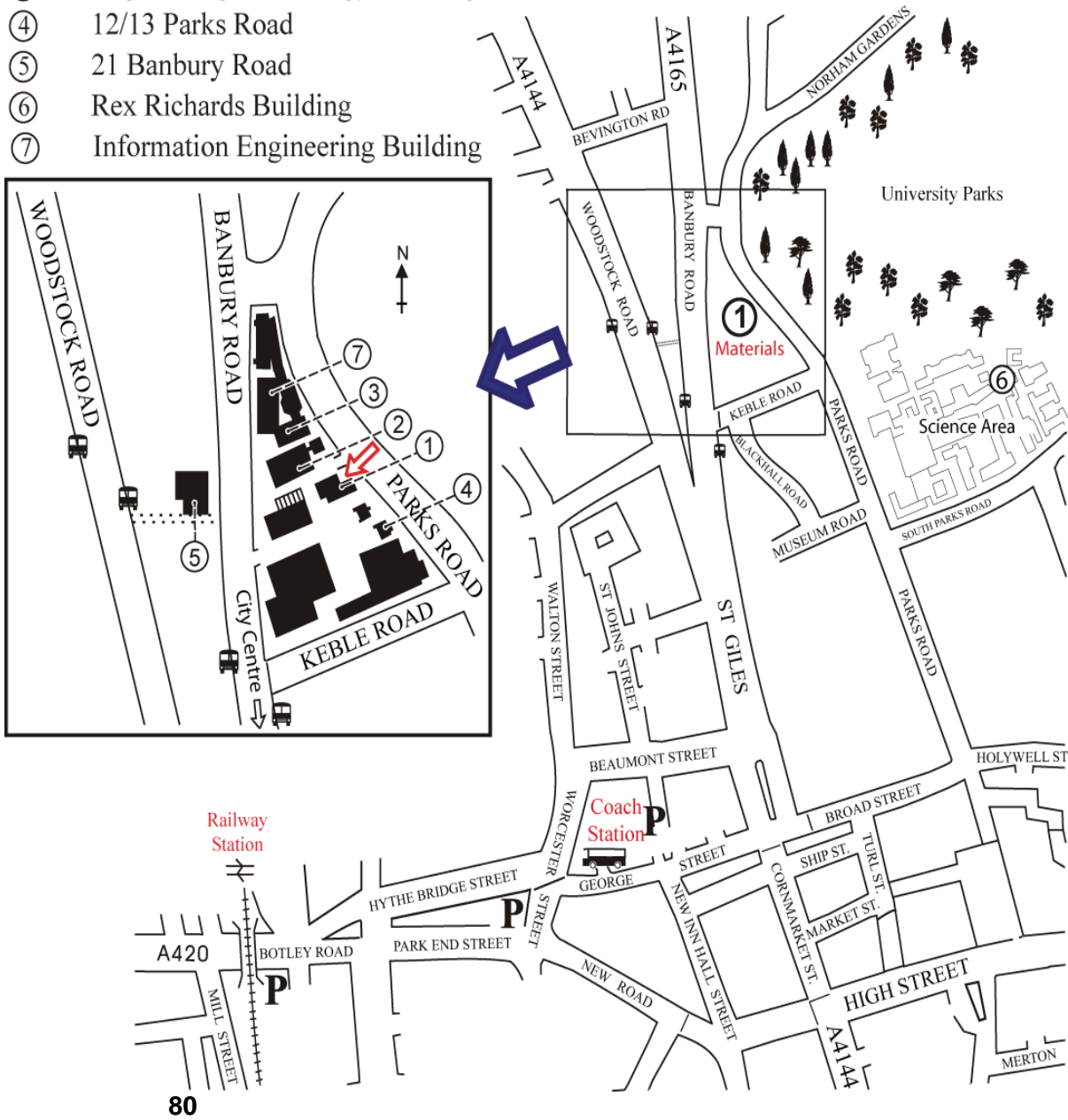
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# Department of Materials - Map of Central Site

- ➔ 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
- 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. There are two undergraduate courses, Materials Science (MS) and Materials Economics and Management (MEM), and the handbook briefly describes the structure of lectures, practicals, tutorials and examinations for these, 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 obtain employment at a professional level in industry or government, to pursue subsequent graduate studies, or to start your own high-tech business! Each of the two courses 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 courses are 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, appearing to read 'Chris Grovenor', with a long horizontal line extending from the end of the signature.

Professor Chris Grovenor  
Head of Department

## Important dates and deadlines

### Michaelmas Term:

- **Week 1 Wednesday** deadline for registration with Language Centre for Foreign Language course.
- **Week 1 Friday** deadline for submission of application for the Foreign Language Option. **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 Notebooks.

### Trinity Term:

- **Week 7 Monday** Prelims begin (provisional).
- **Week 8 Friday** Deadline for submission of application to transfer from MS to MEM / confirmation of continuation with MEM. (Transfers are dependent on College approval). **Departmentally co-ordinated.**
- **Week 8 Friday** Deadline for submission of application for Foreign Language Option in Year 2. **Departmentally co-ordinated.**

### Long vacation:

- **July 2014** deadline for receiving entries for Prelims resits. **College co-ordinated.**
- **September 2014:** 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](http://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](http://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.

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.

## Other sources of information

You should also receive:

- further information about your particular college’s regulations and requirements,
- Essential Information for Students (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/>).

The general and specific regulations describing the examination structure of the University and your course are published by the University in the Examination Regulations, sometimes called the "Grey Book", which is the authority on matters concerning University examinations and their conduct. A searchable electronic version of these can be found at:

[www.admin.ox.ac.uk/examregs/10-29s\\_P\\_E\\_in\\_Materials\\_Science.shtml](http://www.admin.ox.ac.uk/examregs/10-29s_P_E_in_Materials_Science.shtml). Amendments to the syllabus and course structure are carefully regulated by the University. If changes are made which affect you then you will be informed. In general, your examination regulations will not be changed to your disadvantage once you have started studying for the examination concerned, providing that you take your examinations at the normal time.

The term's lecture list will be published online on the Department's website at:

[www.materials.ox.ac.uk/teaching/lecturelists.html](http://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.

## **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](mailto: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](mailto:philippa.moss@materials.ox.ac.uk) or 73750.

## Useful websites

Materials Department website

[www.materials.ox.ac.uk](http://www.materials.ox.ac.uk)

Undergraduate teaching page

[www.materials.ox.ac.uk/teaching.html](http://www.materials.ox.ac.uk/teaching.html)

Department of Economics

[www.economics.ox.ac.uk](http://www.economics.ox.ac.uk)

Saïd Business School

[www.sbs.ox.ac.uk](http://www.sbs.ox.ac.uk)

Oxford University information for students

[www.ox.ac.uk/students/](http://www.ox.ac.uk/students/)

Weblearn

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

Oxford Exam Papers Online

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

Electronic resources available through the University libraries

[www.bodleian.ox.ac.uk/eresources](http://www.bodleian.ox.ac.uk/eresources)

Radcliffe Science Library

[www.bodleian.ox.ac.uk/rsl](http://www.bodleian.ox.ac.uk/rsl)

Careers Service

[www.careers.ox.ac.uk](http://www.careers.ox.ac.uk)

Language Centre

[www.lang.ox.ac.uk](http://www.lang.ox.ac.uk)

Institute of Materials, Minerals and Mining

[www.iom3.org](http://www.iom3.org)

Oxford Materials Society

[www.oxfordmatsoc.com](http://www.oxfordmatsoc.com)

Materials Society (Undergraduate)

[www.matsoc.com/](http://www.matsoc.com/)

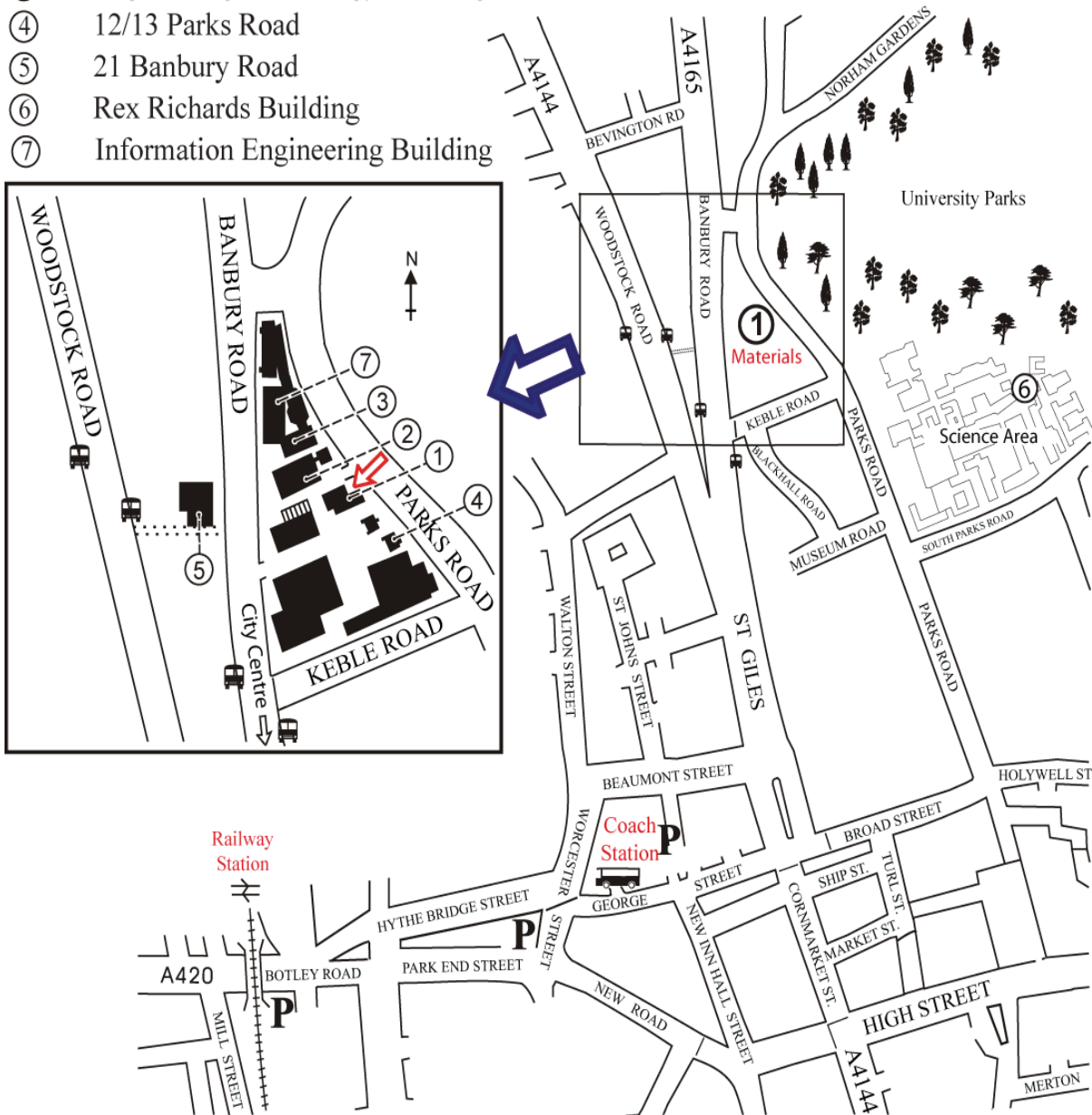
## **Freshers' Induction Programme**

**1.30 - 4.30 pm Friday 0th Week Michaelmas Term 2013 (11<sup>th</sup> October)**

- 1.30 p.m.      Arrival and sign in
- Ms Philippa Moss, Deputy Administrator (Academic)  
Mrs Nicola Carlin, Assistant to Deputy Administrator
- 1.35 p.m.      Brief tour of the Department
- JCCU representatives
- 1.50 p.m.      Coffee & Tea
- 2.00 p.m.      Introduction to the Department
- Professor Chris Grovenor, Head of Department
- 2.15 p.m.      MS and MEM Course Structures
- Dr Adrian Taylor, Director of Studies and Chair of Department  
of Materials Academic Committee
- 2.45 p.m.      Departmental Library
- Dr Adrian Taylor and Ms P Moss
- 2.55 p.m.      Harassment Advisors
- Ms Paula Topping, Harassment Advisor
- 3.00 p.m.      Health and Safety
- Dr Andrew Watt, Departmental Safety Officer
- 3.05 p.m.      Materials Society
- Nicolas Jennison  
Society Member
- 3.15 p.m.      Introduction to the JCCU & Election of 1<sup>st</sup> year representatives
- Adrian Matthew  
2<sup>nd</sup> year JCCU representative
- 3.40 p.m.      Practical Class Organiser
- Dr Keyna O'Reilly, Practical Lab Organiser
- 3.55 p.m.      Undergraduate Questionnaires & Photographs
- Dr Adrian Taylor, Ms Philippa Moss & Mr Chris Akinola, Dept. IT  
Support
- 4.15 p.m.      Photos, Tea and Biscuits
- Freshers and Teaching Staff

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# **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 Assistant to Deputy Administrator (Academic)'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 Administrator'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)**

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

Professor Sir Richard Brook OBE, FEng, 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 Patrick Grant FEng FIMMM, Cookson Professor of Materials, Director of Faraday Partnership in Automotive and Aerospace Materials, Fellow of St Catherine's College

Professor Nicole Grobert, Professor of Materials

Professor Chris Grovenor, Head of Department, Fellow of St Anne's College

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

Professor John Hunt FRS, Emeritus Professor, Emeritus Fellow of St Edmund Hall

Professor Angus Kirkland, Professor of Materials, Crystallography Class Organiser, Fellow of Linacre College

Professor James Marrow, James Martin Chair in Energy Materials, Fellow of Mansfield College

Professor Peter Nellist, Chair of Tutors' Committee, 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  
Professor Steve Roberts, Professor of Materials, Tutor and John Harris Memorial Fellow of St Edmund Hall  
Professor George Smith FRS, Emeritus Professor, Emeritus Fellow of Trinity College  
Professor Richard Todd, Professor of Materials, Goldsmiths Fellow and Tutor of St Catherine's 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 Lecturers**

Dr Hazel Assender, Fellow of Linacre College  
Dr Harish Bhaskaran, Research Lecturer in Materials  
Dr Jan Czernuszka, Harassment Advisor, Fellow and Tutor of Trinity College  
Dr Marina Galano, Maths Class Coordinator, Fellow and Tutor of Mansfield College  
Dr Feliciano Giustino, University Lecturer  
Dr Sergio Lozano-Perez, George Kelley Senior Research Fellow, Departmental Lecturer  
Dr Michael Moody, Fellow of Trinity College  
Dr Keyna O'Reilly, Fellow and Tutor of The Queen's College, MEM Coordinator, Part II Project Organiser, Practical Class Organiser  
Dr Jason Smith, Fellow and Tutor of Mansfield College  
Dr Jamie Warner, Research Lecturer in Materials  
Dr Andrew Watt, Academic Fellow, Safety Officer  
Dr Jonathan Yates, Fellow and Tutor of St Edmund Hall

## **2.3 Senior Research Fellows and others involved in teaching**

Dr David Armstrong, RAE Research Fellow  
Dr Paul Bagot, Departmental Lecturer  
Dr Simon Benjamin, Senior Fellow in Quantum Materials  
Dr Konstantin Borisenko  
Dr Victor Burlakov, Research Fellow  
Dr Phil Edmondson, EPSRC Research Fellow  
Dr Steven Fitzgerald, Departmental Lecturer in Materials Modelling  
Dr Barbara Gabrys, Academic Visitor  
Dr Mike Jenkins, Fellow and Tutor of Trinity College  
Dr Judy Kim, Departmental Lecturer, Industrial Visits Organiser

Dr Laura Miranda-Perez, Co-Crystallography Class Teacher  
Dr John Mason  
Dr Rebecca Nicholls, Co-Crystallography Class Teacher  
Dr Christiane Nörenberg  
Dr Peter Northover, Senior Research Fellow  
Dr Kyriakos Porfyraakis, St Anne's College Research Fellow  
Dr Chris Salter  
Dr Susie Speller, RAE Research Fellow  
Dr Ed Tarleton  
Professor John Titchmarsh, Senior Visiting Research Fellow  
Dr Stuart Wilkinson, Business Plan Tutor

## **2.4 Support staff**

Mr Chris Akinola, IT Officer  
Mrs Marion Beckett, PA to the Director of Studies and Graduate Studies Secretary  
Mrs Rebecca Bradford, Administrative Assistant  
Mrs Alana Davies, Administrator  
Mr Barry Fellows, Finance Officer  
Mr Andrew Henderson, Assistant Finance Officer  
Mrs Alison Jewitt, Administrator's 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 Julie Scott, Teaching Class and Chemical Safety Technician  
Mrs Grace Sewell, Librarian  
Mrs Jayne Shaw, Schools Liaison Officer  
Dr Adrian Taylor, Director of Studies, Chairman of Teaching Committee, Team Design Project  
Organiser, Summer Placements Advisor, Admissions Coordinator  
Dr Maria Thompson, Teaching Class and Chemical Safety Technician  
Mrs Paula Topping, Teaching Class Technician, Harassment Advisor  
Ms Debbie Townsend, Administrative Assistant  
Mr Laurie Walton, Workshop Supervisor, Students' Workshop Technician, Harassment Advisor  
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](http://www.ox.ac.uk/contact).

Also [www.materials.ox.ac.uk/infoandnews/peoplecontact.html](http://www.materials.ox.ac.uk/infoandnews/peoplecontact.html) gives access to the full business card details.

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

<b>Name</b>	<b>Building</b>	<b>Room</b>	<b>Phone</b>	<b>First part of email</b>
Dr H.E. Assender	BR	10.18	73781	hazel.assender
Dr P.A.J. Bagot	HR	30.15	73699	paul.bagot
Dr S.C. Benjamin	PR	40.02	73732	simon.benjamin
Prof. G.A.D. Briggs	PR	30.05	73725	andrew.briggs
Mrs R. Bradford	HR	10.12	73777	rebecca.bradford
Mrs N. Carlin	HR	30.07	73703	nicola.carlin
Prof. M.R. Castell	ETB	40.24	73786	martin.castell
Dr J.T. Czernuszka	BR	10.15	73771	jan.czernuszka
Mrs A.P. Davies	HR	30.14	73747	alana.davies
Dr S.P. Fitzgerald	BR	20.09	83218	steve.fitzgerald
Dr M.L. Galano	BR	20.07	73776	marina.galano
Prof. P.S. Grant	ETB	40.22	83324/83703	patrick.grant
Prof. N. Grobert	HB	30.13	73762	nicole.grobert
Prof. C.R.M. Grovenor	HR	30.17	73761	chris.grovenor
Mrs A. Jewitt	HR	30.13	73666	alison.jewitt
Prof. A.I. Kirkland	HB	30.07	73662	angus.kirkland
Ms L. Laird	HR	30.17	73737	lorraine.laird
Dr S. Lozano-Perez	HB	30.23	73707	sergio.lozano-perez
Prof. T.J. Marrow	BR	10.12	73938	james.marrow
Dr M.P. Moody	HR	30.21	73693	michael.moody
Ms P. 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
Dr J.P. Northover	BB	3.4	83721	peter.northover
Dr K.A.Q. O'Reilly	BR	10.02	73743	keyna.oreilly
Prof. S.G. Roberts	BR	10.16	73775	steve.roberts
Mrs G. Sewell	HR	20.19	73697	library / grace.sewell

<b>Name</b>	<b>Building</b>	<b>Room</b>	<b>Phone</b>	<b>First part of email</b>
Dr J.M. Smith	PR	30.10	73780	jason.smith
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	73680	debbie.townsend
Mr L. Walton	HR	Lab	73687/73749	laurie.walton
Dr J.H. Warner	PR	20.03	73790	jamie.warner
Dr P.J. Warren	HR	30.06	73727	paul.warren
Dr 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
Dr 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/](http://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) as your first port of call. If she cannot help, she 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 Assistant to the Deputy Administrator (Academic).

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 consult your College Tutor first.**

**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 Nicky Carlin	Assistant to the Deputy Administrator (Academic)
Dr Keyna O'Reilly	MEM Coordinator, Part II Project Organiser, Practical Class Organiser
Dr Judy Kim	Industrial Visits Organiser
Dr Marina Galano	Maths Class Coordinator
Prof. Peter Nellist	Chair of the Tutors' Committee
Mrs Paula Topping	Practical Class Technician
Mrs Marion Beckett	PA to the Director of Studies, Graduate Studies Secretary
Mrs Rebecca Bradford	General Office
Ms Debbie Townsend	General Office
Dr Andrew Watt	Departmental Safety Officer, Chair of the Safety Committee
Prof. Angus Kirkland	Crystallography Class Organiser

## 5 The Joint Consultative Committee for Undergraduates (JCCU)

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 criticise, praise and complain about the course, and also to suggest improvements. Information about the JCCU and previous minutes can be found at: <http://www.materials.ox.ac.uk/teaching/jccu.html>.

The Committee consists of three students from each year group, as well as members of academic staff. We meet once a term for an hour-long meeting over a light lunch. The Chair is always an undergraduate (currently Matt Bradbury), 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 Organiser, Dr Keyna O’Reilly, and the Industrial Visits Organiser, Dr Judy Kim. In addition, one member of academic staff from the Faculty of Materials is an elected member.

Probably the most obvious indication to undergraduates of the JCCU’s existence is the lecture questionnaires that should be given out by the lecturer in either the penultimate or final lecture of each course. 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 fill these in. 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 kept in the lecturer’s file, held by the Head of Department, and is used in annual appraisals, 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 industrial tours both in the UK and abroad. Recent successes were the industrial tours to: Japan Easter 2007, Milan Easter 2008, Beijing Easter 2009, the Netherlands Easter 2010, California Easter 2011, Milan again Easter 2012 and Beijing again Easter 2013. The Worshipful Company of Armourers and Brasiers, 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 Maths, 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/learning/student-representation-mpls](http://www.mpls.ox.ac.uk/learning/student-representation-mpls).

## **6 Overview of the Courses**

### **6.1 General Structure of the Materials Science and Materials, Economics and Management Courses**

The overall structure of the MS and MEM courses is shown in Table 3. More details of the courses taken each year and the options available are discussed in the following sections.

**Table 3: Outline of MS & MEM Programme & Assessment Structure as at October 2013**

Year	Materials Science (MS)			Materials, Economics and Management		
1	<b>Common First year:</b>					
	<b>Directly examined</b>		<b>Continually assessed</b>		<b>Additional elements</b>	
	Structure of Materials (40) Properties of Materials (34) Transforming Materials (37) Maths for Materials & Earth Sciences (42)		Practical work (128) Crystallography classes (36)		IT skills Industrial visits Career Planning (1) Foreign Language 1a option (80) Engineering Drawing classes (6) Introduction to Errors in Measurement (2)	
<b>Preliminary Examinations</b>						<b>Resit Available in September</b>
2	<b>Directly examined</b>	<b>Continually assessed</b>	<b>Additional elements</b>	<b>Directly examined</b>	<b>Continually assessed</b>	<b>Additional elements</b>
	Structure & Transformation of Materials (40) Electronic Properties of Materials (42) Mechanical Properties (42) Engineering Applications of Materials (40) <b>Foreign language 1b option (64)</b> <b>Supplementary subject option (32)</b>	Practical work (198) Industrial Visits (11) <b>Entrepreneurship &amp; New Ventures (34)</b>	Industrial Talks (5) Mathematics (8) Experimental Error Analysis (tbc) (4) Communication Skills	Structure & Transformation of Materials (40) Electronic Properties of Materials (42) Mechanical Properties (42) Engineering Applications of Materials (40) <b>Introductory Economics (32)</b>	Practical work (83) Industrial Visits (11)	Industrial Talks (5) Mathematics (8) Experimental Error Analysis (tbc) (4) Communication Skills
	<b>Introductory Economics Finals Examination (Part I) : Marks held until year 3</b>					
3	<b>Materials Options 1 (36 + 9 classes)</b> Materials Options 2 (36 + 9 classes)	Team design project (100) <b>Characterisation / Modelling module (100)</b> Industrial visits (11)		<b>Microeconomics (22+4)</b> <b>General Management (32)</b>	Team design project (75) Industrial visits (11) Practical work (66)	<b>3 preparatory workshops for Mgt Project</b> <b>Essay writing skills (2)</b>
	<b>Finals Examinations Part I</b>					
	Pass with Honours – unclassified BA (Hons) [≥50% required for progression onto Part II]		Pass without Honours or Pass with Honours <50% - unclassified BA (pass or Hons as appropriate [no progression onto Part II or resit following year]			Fail –resit following year
4	<b>8-month Research Project</b>		<b>Project Mgt Skills</b> <b>Information Skills</b> <u>Optional Skills Training:</u> <b>Reference Management</b> <b>Technology Transfer</b> <b>Workshop Skills</b> <b>Presentation Skills</b> <b>Writing Skills &amp; IPR</b> <b>Foreign Language 2</b> <b>LabVIEW</b> Industrial Visits Careers Lecture Careers & Networking event with Alumni	Materials Options 2 (36 + 9 classes) <b>Economics / Management Options (32)</b> 24-week management project and placement + associated skills workshops		Industrial Visits Careers Lecture Careers & Networking Event with Alumni
	<b>Finals Examinations, Part II</b>					
	Pass with Honours - Classified M.Eng		Pass without Honours - unclassified BA (Honours)			Fail - Unclassified BA (Honours)

Bold indicates course elements that are NOT shared between MS & MEM.

Approximate contact hours are given in brackets

## 6.2 The First Year

The MS and MEM courses have a common first year. During the first year, you will study four different course units, called papers, and attend various general lectures/courses (see Table 4). The outline syllabus 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](http://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). Students initially accepted on direct entry to the MEM course may be required by their Colleges to pass Prelims to a high standard in order to ensure continuation on the MEM course. If in doubt confirm with your College tutor.

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, there is no Departmental policy on this practice and it is up 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 4: The First Year Courses and General Lectures**

<b>Subject</b>	<b>Hours per course</b>
<b>General Lectures</b>	
Induction course	2
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
Looking to the Future - Career planning	1
Introduction to MEM & EEM	1
Practical Class Meetings	3
Introduction to Computing	6
Industrial Placements Briefing	1

<b>Subject</b>	<b>Hours per course</b>
<b>Materials Science 1: Structure of Materials</b>	
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
<b>Materials Science 2: Properties of Materials</b>	
Introduction	1
Elasticity & Structures	8
Electrical & Magnetic Properties	8
Mechanical Properties	10
Classes in Mechanical Properties	3
Kinetic Theory of Gases	4
<b>Materials Science 3: Transforming Materials</b>	
Introduction to Processing	4
Thermodynamics	10
Kinetics	4
Electrochemistry	4
Polymer Synthesis	4
Microstructure of Materials	12
<b>Mathematics for Materials &amp; Earth Sciences</b>	
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. If you are interested in pursuing any of these options, you should discuss these with your Tutor in Trinity Term.



**Transfer to MEM:**

If you were not admitted to the MEM course when you entered the University, it may be possible for you to transfer to the MEM course at the end of the first year. A briefing lecture is given in Trinity Term in which further information is provided. Transfer is dependent on progress in the first year and on quota limitations if it is necessary to impose them. The quota is normally 5-7 per annum. Appendix A outlines the procedures for transferring.

**Foreign Language Option:**

You have the opportunity to study a foreign language in the first year of your course. MS students may continue this study in their second year - please see Section 8 for details.

**Supplementary Subject:**

There is also an opportunity for MS students to substitute the second year "Entrepreneurship and New Ventures" module with a Supplementary Subject. Please see Section 12 for details.

### 6.3 The Second and Third Years

In the second year, MS and MEM students 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). MEM students study the same core courses, but some parts of the practical course are done in the third year, as MEM students have courses in Economics and Management from their second year onwards.

The third year Materials lectures are offered as option courses with lectures taking place in Michaelmas and Hilary terms. MS students study the courses in both terms whilst MEM only in the Hilary term of their 4<sup>th</sup> year. 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, Memory & Storage; 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.

Further information regarding the structure of the second and subsequent years of the course are provided in the FHS Course Handbook and associated lecture synopses – all are available online. More information about the 3<sup>rd</sup> year Options Courses is provided in the options synopses document. A hardcopy of the FHS Course Handbook pertinent to your year of matriculation will be provided in your 2<sup>nd</sup> year.

In addition, MS and MEM students carry out a Team Design Project in the first two weeks of Michaelmas Term, whilst MS students only also take either of two options modules, Advanced Characterisation or Materials Modelling, in the first two weeks of Hilary Term.

## 6.4 The Fourth Year

The fourth year of MS consists of a research project, examined by a thesis and viva. MEM students undertake a 24 week management project in the summer after their third year and extending into Michaelmas Term of their fourth year. In Hilary and Trinity Terms of their fourth year, they return to the Department for further lectures and tutorials, comprising the Materials options courses taught in Hilary Term, and Economics / Management options. These are followed by two examination papers.

## 6.5 Coursework

The 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](http://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**

Both the MS and MEM course are accredited by the Engineering Council at M.Eng level. The aims and objectives of each course are shown below in Table 5.

**Table 5: Aims and Objectives of the Course**

**Materials Science**

- to provide a course of the highest academic quality in Materials Science in a challenging and supportive learning environment that attracts 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.

**Materials, Economics and Management**

- to provide a course of the highest academic quality in Materials Science, Economics and Management in a challenging and supportive learning environment that attracts the best students from the UK and elsewhere;
- to provide students with a broad, balanced knowledge of Materials Science, Management studies and Economics supported by the necessary background science, mathematical and statistical techniques where appropriate;
- to engage and enhance the critical skills of the students by the pursuits of specialist options via Management, Economics and Materials option papers;
- 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 different careers, whether within Materials Science, industry or neither, 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 Learning Development

Learning development is the process by which students become increasingly competent and sophisticated in their approach to work. 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”.

This process 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 details of how they are assessed, can be found in Appendix E and in the programme specifications at [www.materials.ox.ac.uk/teaching/ug/ugprogspecs.html](http://www.materials.ox.ac.uk/teaching/ug/ugprogspecs.html).

## 7.2 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 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 (for MEM students only route (i) is available):

- i) **Additional study in the first year - foreign language** (MS or MEM). This option does not count towards your Prelims Examination, but successful completion leads to a Certificate of Achievement.
- ii) **2<sup>nd</sup> year foreign language option** (MS only). [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** (MS only). This option does not count towards your Finals Examination, but successful completion leads to a Certificate of Achievement.

Note: Owing to their other course commitments MEM students may study a foreign language (supported by the Department) in their first year only, through option (i) above.

### 8.1 Additional Study in the First Year - Foreign Language

The Language Centre ([www.lang.ox.ac.uk](http://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 MS 4<sup>th</sup> 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. 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 the end of week 1 in Michaelmas Term.

## **8.2 Foreign Language Option in the Second Year**

If you are studying Materials Science in your second and subsequent years, you may 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 MS students to take the 2<sup>nd</sup> Foreign Language Option without having studied this language in the first year, providing they 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**

For MS students, 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 4<sup>th</sup> 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 for MS and first three years for MEM students. The experiments are carried out by students in small teams (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 Practical Class Organiser is Dr 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. 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 full 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 during the first afternoon of each experiment and accessible on the other afternoons.

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.



You have been provided with hardback practical notebooks which you should 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/academic/labnotebooks>.

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 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.

Note: it is important that the only language spoken in the Teaching Labs is English - whether that be student-to-student or JD-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.

The following practicals are provided and instruction sheets are available at [www.materials.ox.ac.uk/teaching/ug/ugpracticals.html](http://www.materials.ox.ac.uk/teaching/ug/ugpracticals.html):

- Introduction to Computing
- Introduction to Microscopy
- Introduction to MatLab
- Polymers
- Bubble Raft
- Energy Levels and Band Gaps
- Young's Modulus
- Electrode Potential of Solutions
- Thermal Analysis
- Metallography
- Fabrication and Testing

## 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 (Dr 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 with the student present for oral discussion at a scheduled time, normally within two weeks of submission of the report.

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 13 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 8<sup>th</sup> 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. They 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 books will be returned 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 notebook, to the Assistant to the Deputy Administrator (ADA), Nicky Carlin, for date stamping. The ADA will retain the reports to pass on to the SD for marking. The ADA will be available in her office to receive your reports and date-stamp your practical notebooks 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 ADA 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 8<sup>th</sup> week and details will be sent by email before the end of term. You are required to post your report 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 a photocopy before sending it. You are required to submit your practical book to the ADA 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.

For practicals to be marked during term, the PCT will help to arrange a date and time for you to discuss your work with the SD responsible for marking it. Normally this will be within 2 weeks of submission; you need to ensure that the time chosen from those on offer fits in with your other commitments such as tutorials. As a planning aid, the PCT will put up a provisional list of marking sessions shortly after the beginning of term. The SD will provide feedback, grade your report and give it a mark out of 10.

**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. The PCT will also check that there is not more than one unmarked report in your book. If more than one unmarked report is present, your Tutor will be informed.

## 9.6 Penalties

The writing of reports and marking arrangements are simple and straightforward. Unfortunately, without a sanction, a 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 13.

**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 notebook 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. One final opportunity for marking, without the benefit of oral feedback, will be offered provided the report is submitted for this purpose to the DAA no later than four weeks after the start of the practical in question. 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. For students who miss their scheduled marking session and fail to hand in their book for 'marking without benefit of oral feedback' within the stipulated time a default mark of zero will be awarded and no feedback will be provided.

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 at the end of term:**

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

f) **Loss of a practical book:**

It is the responsibility of the student to look after the practical book during term. If a student loses the practical book 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 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. The marks for crystallography classes contribute directly to the Preliminary Examination in Materials Science. More detailed guidance is given in Appendix I.

## 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 Supplementary Subjects

MS students only may take a Supplementary Subject in the second year. Anyone who decides to take a supplementary subject can drop the course on "Entrepreneurship and New Ventures".

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>

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.

## **13 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.

## **14 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 Programmes 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.

### **14.1 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 for MS and HT of the fourth year for MEM). For the Part II MEM Economics/Management Options you will select one course (typically of the order of 36h duration).

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). MEM Part I students have a lighter load (9 practicals in total) and this is spread over their second and third years.

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 45 minutes per practical per group of three students, although this will vary depending on whether the Senior Demonstrator chooses to mark the report in advance or during the face-to-face session.

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

### **14.2 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.

Management and Economics Tutorials / Classes are given to 2<sup>nd</sup> and 3<sup>rd</sup> year MEM students at a similar rate of approximately one per 3 or 4 lectures. The preparation time for each of these tutorials / classes may be more than for the Materials tutorials – your Management and Economics tutors will advise you on this.

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 Peter Nellist.

### **14.3 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.

### **14.4 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 Dr 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 MS and fourth year MEM students take Materials Options classes (co-ordinated by the office of the Deputy Administrator Academic); there are three classes per 12h lecture course.



## 14.5 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 or 75h for an MEM student, in both cases including writing the team report.
- (iv) Characterisation of Materials or Introduction to Materials Modelling module – typically 100h, including writing the report(s).

## 14.6 Final year Part II Projects

Detailed guidance is issued for Materials Science students in the MS Part II Handbook (see Oxford Materials website), and for Materials, Economics & Management students in the E(M)EM Project Handbook (issued by the Said Business School). 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. The MEM Management Project involves a twenty-four week full-time placement in a company.

## 14.7 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.

## 15 Other activities

### 15.1 The Industrial Tour

As mentioned previously, the JCCU arrange an industrial tour during the Easter vacation. Recent destinations have included Germany, Finland, Hong Kong, Japan, California, The Netherlands, Italy and the most recent tour was to China. 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](http://www.materials.ox.ac.uk/teaching/tour.html).

## **15.2 Industrial Placement**

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 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 placement in good time, you can apply for financial assistance from the grant 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 placement can be gained from the Director of Studies who will give a lunchtime briefing on seeking industrial placements early in Hilary Term of the second year.

## **15.3 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 1<sup>st</sup> year students may choose to attend these visits for general interest if space is available.

## **15.4 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. 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.

## 15.5 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 from Chocolate Manufacture to Car Crash Testing, or Nuclear Energy to 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.

## 15.6 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 a Corus (now Tata) Steelworks and the BMW Mini Factory. Members also benefit from a comprehensive online set of academic resources including access to an interactive Scanning Electron Microscope, as well as from the book-buying scheme, which aims to provide low-cost core textbooks from graduating students.

## 16 Libraries

Do not think that a complete 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](http://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.

## 17 Computing

### 17.1 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 (e.g. the MATTER Bookshelf). 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](http://www.materials.ox.ac.uk).

The teaching of computing is part of the undergraduate courses. An introduction is available in the first year (see Section 9.2). Some practicals have a computing element either in carrying out the experiment or in processing the results.

Computers are used increasingly in libraries. 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](http://www.materials.ox.ac.uk/library))

The Department also has a Materials Modelling Laboratory, containing a suite of unix/linux workstations. The facilities of this laboratory are very useful for computer based research projects, including Part II projects. The MML is a principal user of the Oxford Supercomputing Centre (<http://mml.materials.ox.ac.uk/>).

## **17.2 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 F. 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.

## **17.3 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](mailto: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).

## **18 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.

## **19 Examinations**

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

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. You must be considered capable of being awarded an honours degree after Part I in order to be allowed to enter Part II. The degree classification is based on the combined results of Part I and Part II. The Examination Conventions for Prelims 2012-13 can be found in Appendix G. The Examination Conventions for 2013-14 will be based on these documents but may not be identical.

## **19.1 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. The five papers are weighted equally. The four written examination papers are Materials Science 1-3 and Mathematics for Materials and Earth Sciences. All four written examination papers must be passed, but candidates who fail one or more 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 paper by a small margin can be compensated if the overall performance merits it. Failure of the fifth paper (continually assessed coursework) may result in the examiners requiring you to do further work over the summer, and the examiners may also set a practical examination or a written examination on crystallography. 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). Otherwise, Prelims is a pass/fail examination that does not contribute to the final honours classification. See 22.3 Appendix G for the Examination Conventions 2012-13.

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.

## 19.2 Calculators and SMP tables in examinations

In Prelims, MS Part I and the materials papers of MEM Parts I & II, 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 Earth Sciences and Materials examination. SMP tables are provided in all Preliminary examinations.

## 19.3 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 Chair of Moderators for 2013-14 is Dr Jonathan Yates.

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.

## 19.4 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/>.

## 19.5 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](#)". Your College Tutor will be able to offer advice specifically suited to you based on their knowledge of your strengths and weaknesses. See also [www.ox.ac.uk/students/shw/health/exams/](http://www.ox.ac.uk/students/shw/health/exams/) at the main student portal. 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).

## 19.6 Collections

Collections are examinations sat in Colleges during 0<sup>th</sup> 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.

## 20 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 (MS/MEM) - **£250**

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

**Gibbs Prize** for best overall performance in MS/MEM 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 (MS or MEM) - **£100**

**Pilkington Prize** for best project of any kind (EEM/MEM candidates eligible) - **£200**

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

## 21 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 no immediate relevance to their Oxford studies (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 'milk round' 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/](http://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>.

## **22 If you need help**

### **22.1 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. Usually the best advice (but often the most difficult one 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 Chris Grovenor; one of the Harassment Advisers (Dr Jan Czernuszka, Mrs Paula Topping and Mr Laurie Walton), or the Administrator, Mrs Alana Davies.

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 at <http://www.ox.ac.uk/students/shw/>. 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](mailto:counselling@admin.ox.ac.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/](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](mailto: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/](http://www.admin.ox.ac.uk/eop/)).

## 22.2 Special Needs

Specialist advice and assistance is available for dyslexic, blind/partially sighted, and other disabled students from the University Disability Office ([www.ox.ac.uk/students/shw/das/](http://www.ox.ac.uk/students/shw/das/) or [disability@admin.ox.ac.uk](mailto: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.

## **22.3 The University's Complaints and Appeals Procedures**

The University has procedures for students should they believe a formal complaint or appeal is required. The details below 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 doubts and discuss it informally as soon as you think there is a problem.

### **Complaints and academic appeals within the Department of Materials**

1. The University, the Mathematical, Physical and Life Sciences Division and the Materials Department all hope that provision made for students at all stages of their programme of study will make the need for complaints (about that provision) or appeals (against the outcomes of any form of assessment) infrequent.
2. However, all those concerned believe that it is important for students to be clear about how to raise a concern or make a complaint, and how to appeal against the outcome of assessment. The following guidance attempts to provide such information.
3. Nothing in this guidance 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.
4. Many sources of advice are available within colleges, within faculties/departments and from bodies like 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.
5. General areas of concern about provision affecting students as a whole should, of course, continue to be raised through Joint Consultative Committees or via student representation on the department's committees.

### **Complaints**

1. If your concern or complaint relates to teaching or other provision made by the faculty/department, then you should raise it with the Director of Studies (Dr Adrian Taylor) as appropriate. Within the department the officer concerned will attempt to resolve your concern/complaint informally.

2. If you are dissatisfied with the outcome, then you may take your concern further by making a formal complaint to the University Proctors. A complaint may cover aspects of teaching and learning (e.g. teaching facilities, supervision arrangements, etc.), and non-academic issues (e.g. support services, library services, university accommodation, university clubs and societies, etc.). A complaint to the Proctors should be made only if attempts at informal resolution have been unsuccessful. The procedures adopted by the Proctors for the consideration of complaints and appeals are described in the Proctors and Assessor's Memorandum [[www.admin.ox.ac.uk/proctors/info/pam/](http://www.admin.ox.ac.uk/proctors/info/pam/)] and the relevant Council regulations [[www.admin.ox.ac.uk/statutes/regulations/](http://www.admin.ox.ac.uk/statutes/regulations/)]
3. If your concern or complaint relates to teaching or other provision made by your college, then 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**

1. An appeal is defined as a formal questioning of a decision on an academic matter made by the responsible academic body.
2. 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. As noted above, the procedures adopted by the Proctors in relation to complaints and appeals are on the web [[www.admin.ox.ac.uk/statutes/regulations/](http://www.admin.ox.ac.uk/statutes/regulations/)].
3. 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 authority may put your appeal directly to the Proctors.

4. Please remember in connection with all the cases in paragraphs 5 - 7 that:
  - a) The Proctors are not empowered to challenge the academic judgement of examiners or academic bodies.
  - b) 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.
  - c) On no account should you contact your examiners or assessors directly.
  
5. The Proctors will indicate what further action you can take if you are dissatisfied with the outcome of a complaint or appeal considered by them.

## **Appendix A      Procedures for Transferring to MEM**

DEPARTMENT OF MATERIALS

Parks Road

Oxford

### **MEMORANDUM**

To:    First Year MS/MEM Undergraduates

From: Dr Adrian Taylor

#### **Materials, Economics and Management**

As you know, the MS and MEM courses have a common first year syllabus. The time has now come to find out who will be taking the MEM course from the second year onwards.

If you were originally accepted by your college to read MEM and there were no special conditions in your offer letter, then the procedure is usually straightforward. All you need to do is to write and tell the Deputy Administrator (Academic), Ms Philippa Moss, whether or not you intend to continue with that course. Make sure that you discuss this with your college tutor before responding.

If you were originally accepted to read MS and wish to continue with that choice, no action is needed.

If you were originally accepted to read MS but now wish to transfer to MEM, you must make a formal application for transfer, and this must have the support of your College (obtained from your Tutor or Senior Tutor). You must discuss this matter with your College Tutor. You should also attend the Introduction to MEM lecture, given by Dr Keyna O'Reilly and representatives from the Department of Economics and the Saïd Business School.

All applications should be made, using the enclosed form, not later than Friday of 8th Week of Trinity Term.

Transfer to MEM is dependent upon good progress in your first year, good performance in the Preliminary Examination, and positive reports from the tutors concerned. The Economics and/or Management tutors will normally conduct an interview and/or set some coursework as part of the assessment of your suitability for transfer to MEM.

## Application for Transfer to MEM

To:	Deputy Administrator (Academic)
From:	
College:	

EITHER

**A. I was accepted by my College to read MEM and I do / do not wish to continue with this option.**

I have discussed this with my College Tutor:

Signature of student: ..... Date: .....

OR

**B. I was originally accepted by my College to read MS, but I should like to apply for transfer to MEM**

Signature of student: ..... Date: .....

ALL

I can confirm that the College is agreeable to the above, subject to the following conditions:

- Good performance in the Preliminary Examination
  
- Satisfactory interview and/or\* coursework for  
Economics / Management\* Tutors (\* please delete as appropriate)
  
- Other – (please specify)

Signature of Tutor: ..... Date: .....

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



## Appendix B Year 1 Foreign Language Study

To:	Director of Studies
From:	
College:	

I wish to study a Language Option this year:

Language	GCSE Grade	AS Level Grade	A Level Grade	Other qualification	Online Test score

- I have enrolled in and paid for the evening (OPAL) course and intend to claim for reimbursement of costs.
- 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: .....

Countersignature of Tutor: ..... Date: .....

This form must be returned to the Deputy Administrator (Academic) by the end of **week 1, Michaelmas Term.**

**Appendix C      Application for 2nd year Foreign Language Option (MS only)**

To:	Deputy Administrator (Academic)
From:	
College:	
Course	MS / MEM

I wish to take the following language course next year:

Language	Level	Course (LASR/OPAL)

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 Proctors' and Assessor's Memorandum, Section 9.5

[www.admin.ox.ac.uk/proctors/pam/index.shtml](http://www.admin.ox.ac.uk/proctors/pam/index.shtml))

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 Education Committee (EdC) web pages at <http://www.ox.ac.uk/students/academic/goodpractice/>

## Appendix E Learning Development

### Skills that the Materials degree programmes enable a proactive and fully-engaged student to develop

#### **Intellectual Skills for Materials Science:-**

Appreciation of the underlying principles of Materials Science, supported by an understanding of the necessary basic science required in studying this interdisciplinary subject.

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.

An understanding of engineering principles in order to understand the manufacturing methods and service performance of materials.

Ability to apply appropriate mathematical or numerical techniques to materials-based phenomena.

Ability to conduct a logical discussion and argue a coherent point of view.

Ability to solve a range of known problems and tackle unseen and more open-ended ones.

Ability to collate, analyse and interpret complex experimental data and infer conclusions where appropriate.

Ability to summarise scientific arguments and facts and to give succinct oral and written presentations using IT-based methods where appropriate.

#### **Intellectual Skills for Materials, Economics & Management:-**

Appreciation of the underlying principles of Materials Science, supported by an understanding of the necessary basic science required studying this interdisciplinary subject.

An understanding of the processes and principles involved that lead to the appropriate application of materials, the importance of materials to industry and society.

An understanding of engineering principles in order to understand the manufacturing methods and service performance of materials.

A willingness and ability to challenge orthodoxy and deconstruct practitioners' accounts of business practice.

An understanding of commercial risk evaluation, supported by the ability to argue persuasively and to marshal evidence and analysis in a logical and coherent way.

Ability to apply appropriate mathematical or numerical techniques to materials-, business-, and economics-based phenomena.

Ability to solve a range of known problems and tackle unseen and more open-ended ones.

Ability to collate, analyse and interpret complex experimental data and infer conclusions where appropriate.

Ability to summarise arguments and facts and to give succinct oral and written presentations using IT-based methods where appropriate.



**Practical Skills:**

Aware of the need for safety in practical laboratories, and the importance of good laboratory practice.

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.

Ability to plan, execute and write up projects.

Aware of the applications of practical Materials Science.

Knowledge of safe workshop practice and development of workshop skills.

**Additionally, MEM students will be able to:**

Listen attentively to complex presentations and identify the structure of the arguments presented and engage in positive but searching discussion with peers.

**Transferable Skills:**

Critical analysis and problem solving in a variety of contexts.

The ability to devise and apply the relevant numerical, mathematical or computational skills.

Project management skills, including time management and organisation in both a practical and non-practical context.

The ability and skills required to study effectively, for example for further research or professional qualifications.

Effective communication skills.

IT skills, especially those required for data processing and effective oral or written presentations and information retrieval.

The ability to work independently, with a strong sense of self-direction, and also constructively in co-operation with others.

**And, additionally, for Material Science:**

Entrepreneurship and business skills.

Foreign language ability (optional for those who wish to improve or take up a language).

**And, additionally, for Materials, Economics and Management:**

Experience of using bibliographic and statistical databases and internet search engines to find useful and appropriate data.

## Appendix F 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 G      Examination Conventions 2012/13**

### **Common Preliminary Examination**

#### **Materials Science and Materials, Economics & Management**

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 EPSC and the Proctors who may offer advice or make recommendations to the moderators.

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 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 Prelims.

#### *(1) Setting of papers*

The Moderators set the papers, but are advised to consult the course lecturers. The course lecturers are required to provide draft questions if so requested by the Moderators. The Prelims paper on Maths for Materials and Earth Sciences is set jointly by the Departments of Earth Sciences and Materials. There are no external examiners for Prelims.

#### *(2) 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 and Earth Sciences consists of two sections, candidates are required to answer all questions in Part A and 4 from Part B.

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\* for the 2012-13 examinations the Nominating Committee comprised Prof Grovenor & Dr Taylor.

(3) *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.

(4) *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). The assessed work for both practicals and crystallography classes constitutes the Coursework Paper. Each of the five papers in Prelims, comprising the 3 Materials Science papers, Maths for Materials and Earth Sciences, and the Coursework Paper, carry equal total marks. Satisfactory performance in the practical work and in the crystallography classes is defined in the MS/MEM Prelims Handbook. Penalties for late submission of coursework are set out in this handbook.

(5) *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.

(6) *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 H            University Policy on Intellectual Property Rights**

Intellectual property (IP) is intangible property that 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 reproduced 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 ([www.admin.ox.ac.uk/researchsupport/ip](http://www.admin.ox.ac.uk/researchsupport/ip) ).

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. 'Commissioned works' explicitly exclude (i) lectures delivered by University Lecturers, Departmental Lecturers and the holders of University Chairs in fulfilment of obligations in their contracts of employment and (ii) works commissioned by the University Press in the course of its publishing business (save as may be separately agreed between the University Press and the person concerned).

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 I          Crystallography Class Procedures**

### **Handing in the work**

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.

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

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.

### **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.*



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