



DEPARTMENT OF  
**MATERIALS**

M.Eng in Materials Science  
Prelims Course Handbook 2023-24



Department of Materials



# The M.Eng in Materials Science Prelims Course Handbook

## Handbook 2023-24, Version 1.1 (13/11/23)

This handbook applies to students starting the degree programme in Michaelmas term 2023. The information in this handbook may be different for students starting in other years.

The Examination Regulations relating to this course are available at [2023-24, Preliminary Examination in Materials Science \(ox.ac.uk\)](#). If there is a conflict between information in this handbook and the Examination Regulations then you should follow the Examination Regulations. If you have any concerns in the first instance please contact Philippa Moss ([philippa.moss@materials.ox.ac.uk](mailto:philippa.moss@materials.ox.ac.uk)).

The information in this handbook is accurate as at 12<sup>th</sup> November 2023, however it may be necessary for changes to be made in certain circumstances, as explained at [www.ox.ac.uk/coursechanges](http://www.ox.ac.uk/coursechanges) . If such changes are made the Department will publish a new version of this handbook together with a list of the changes and students will be informed.

Version	Action	Date
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Version 1.1	- Addition p25 re printing costs	13/11/2023

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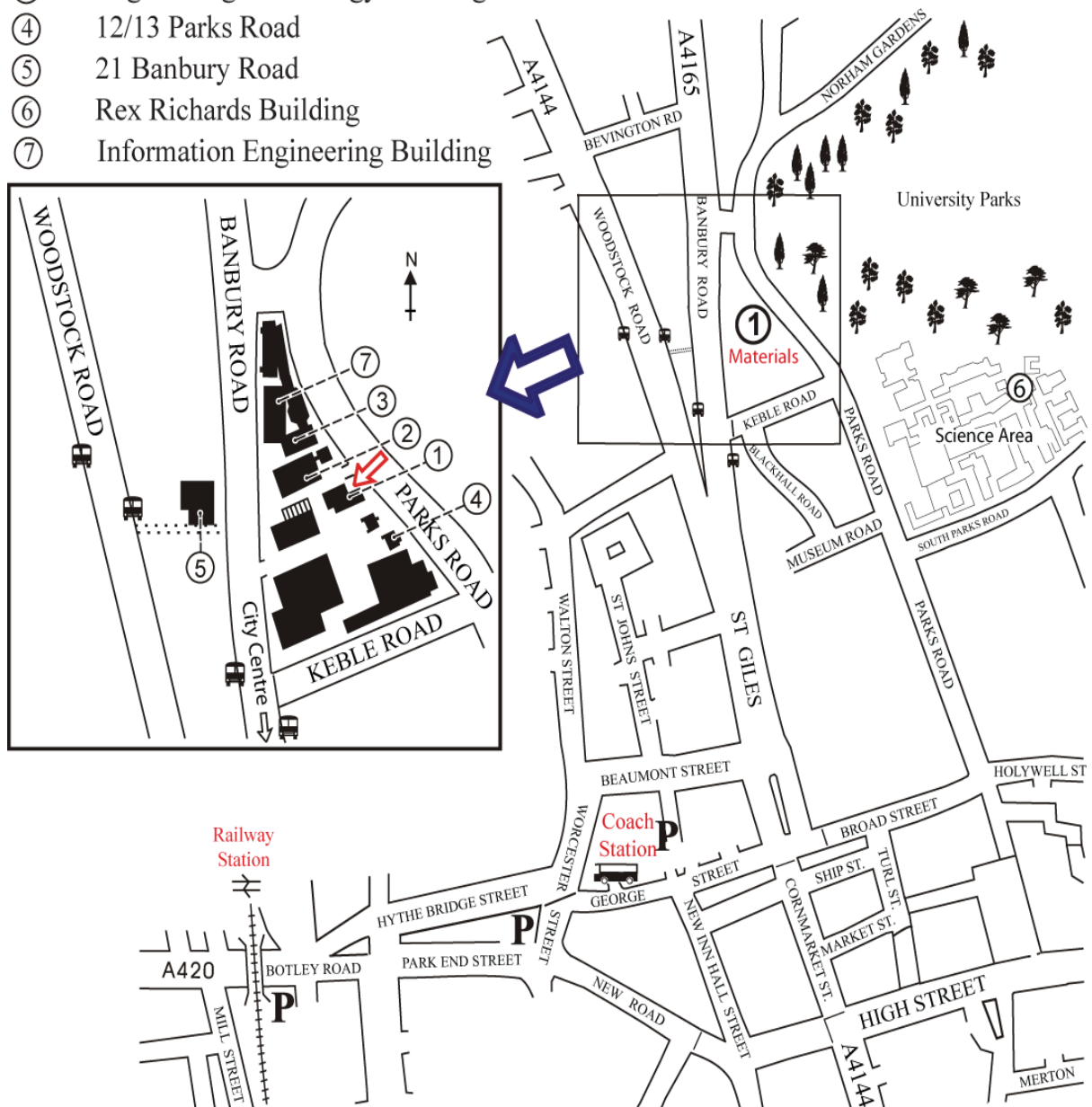
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## Department of Materials - Map of Central Site

- ➡ 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 and Engineering in the world, and the undergraduate students are an important component of our past and future success.

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

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

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

A handwritten signature in black ink, appearing to read 'Hazel Assender', written in a cursive style.

Professor Hazel Assender  
Head of Department

## Important dates and deadlines

### Michaelmas Term:

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

### Hilary Term:

- **Week 5 Tuesday Noon EXAMINATION:** submission of [CMS MATLAB](#) Project work via [Inspira](#).
- **Week 7 Friday Noon** deadline for receiving entries for Prelims. **College co-ordinated.**

### Trinity Term:

- **Week 6 Friday 10.00 am EXAMINATION:** All practical reports and lab notebooks to be released to the Examiners
- **Week 7 Monday EXAMINATION:** Prelims written exam papers begin (provisional).
- **Week 8 Friday** Deadline for submission of application for Foreign Language Option in Year 2. **Departmentally co-ordinated.**

### Long vacation:

- **July 2024** deadline for receiving entries for Prelims resits. **College co-ordinated.**
- **September 2024: EXAMINATION** 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. Supporting **reading lists** are included within the lecture synopses (see [Section 7.1](#) for further details).

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 1-2 weeks before term starts.

Any changes to the published lecture lists will be communicated to you via email; this is our primary method of disseminating information and you must ensure that you check your email regularly (see [Section 18.3](#) for further details).

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

Course handbooks, together with supplementary information, are published on the Department of Materials website ([www.materials.ox.ac.uk/teaching](http://www.materials.ox.ac.uk/teaching)).

## Other sources of information

You should also receive:

- further information about your particular college's regulations and requirements,
- The Oxford Students' website and Student Handbook (formerly known as the Proctors' and Assessor's Memorandum - available electronically at [www.ox.ac.uk/students/academic/student-handbook](http://www.ox.ac.uk/students/academic/student-handbook)). 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 ([www.ox.ac.uk/students](http://www.ox.ac.uk/students)).

## General

Comments or suggestions for matters which might be amended or which might usefully be covered in future editions of this handbook would be welcome. They should be sent to the Education Support Team in the Department of Materials, or emailed to [undergraduate.studies@materials.ox.ac.uk](mailto:undergraduate.studies@materials.ox.ac.uk).

If you require this handbook in a different format, please contact the Education Manager: [philippa.moss@materials.ox.ac.uk](mailto:philippa.moss@materials.ox.ac.uk) or 01865 273750.

## 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)

CANVAS

<https://canvas.ox.ac.uk>

MPLS Online Bridging Programme

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

Oxford University information for students

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

Inspira – submission site for Prelims coursework

<https://oxford.inspera.com/>

Oxford Exam Papers Online (OXAM)

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

Examination Regulations

[2023-24, Preliminary Examination in Materials Science \(ox.ac.uk\)](#)

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

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)

Materials Society (Undergraduate)

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

## **Freshers' Induction Programme**

**1.15 – 5.00 pm Friday 0th Week Michaelmas Term 2023 (6<sup>th</sup> October)**

1.15 p.m.	Arrival and sign in Philippa Moss & Tom Heath, Education Support Team Coffee & Tea
1.30 p.m.	Introduction to the Department Professor James Marrow, Acting Head of Department and Director of Undergraduate Studies
1.40 p.m.	Materials Science Course Structure Prof. James Marrow, Acting Head of Department and Director of Undergraduate Studies
2.10 p.m.	Departmental Library Prof. James Marrow (for Grace Sewell, Department Librarian)
2.25 p.m.	Overview of Canvas Philippa Moss, Education Manager
2.35 p.m.	Health and Safety Philippa Moss, for Dr Charlotte Sweeney, Departmental Safety Officer
2.45 p.m.	Equality & Diversity Prof. Angus Wilkinson, Chair of Equality & Diversity Committee
2.55 p.m.	Break and Brief Tour of the Department 2 <sup>nd</sup> year students including JCCU Committee members
3.30 p.m.	Education Support Team Tom Heath and Shreya Manna
3.35 p.m.	Practical Classes Philippa Moss on behalf of Prof. Dave Armstrong, Practical Courses Organiser
3.45 p.m.	Outreach Opportunities Helena Cotterill, Access & Outreach Manager
3.55 p.m.	Materials Society (MatSoc) Emily Treacher, President of MatSoc
4.05 p.m.	Introduction to the JCCU & Announcement of Election of 1 <sup>st</sup> year representatives Danyaal Abdul, 4th year JCCU representative (and former Chair)
4:20 p.m.	Individual Photographs and then Depart

## **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, the Holder Building and 21 Banbury 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 visit Reception in the Hume-Rothery Building.

### **1.1 Hume-Rothery Building (HR)**

The Lecture Theatre is on the ground floor.

The Reception Area is on the ground floor.

The Education Support Team can be found in rooms 30.05 and 30.06 on the second floor.

The Finance team is located on the second floor.

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

The main photocopier is in the foyer by Reception on the ground floor.

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

The Head of Administration and Finance's office is room 30.22A on the second floor.

Stores are in room 10.17 on the ground floor.

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

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

The Electron Microscope Suite is on level 1.

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.

### **1.3 Engineering and Technology Building (ETB)**

The ETB is also known as the Wolfson Building.

The Wolfson Committee Room (or ETB Committee Room) is room 20.30.

### **1.4 21 Banbury Road (BR)**

The Lecture Theatre is room 00.19 on the ground floor.

The Conference Room is room 10.04 on the first floor.

### **1.5 Thom Building (Department of Engineering Science)**

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

## **1.6 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 David Armstrong, Professor of Materials Science and Engineering, Fellow and Tutor of Corpus Christi College, Practical Courses Organiser

Professor Hazel Assender, Head of Department, Fellow of Linacre College

Professor Simon Benjamin, Professor of Quantum Technologies, Fellow of Wolfson College

Professor Harish Bhaskaran, Professor of Applied Nanomaterials, Entrepreneurship Organiser

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

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

Professor Ralf Drautz, Visiting Professor of Materials

Professor Patrick Grant FEng FIMMM, Vesuvius Professor of Materials, Pro-Vice Chancellor (Research), Director of Faraday Partnership in Automotive and Aerospace Materials, Fellow of St Catherine's College

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

Professor Chris Grovenor, Associate Head of Department (Research), Professor of Materials, Fellow and Tutor of St Anne's College

Professor Saiful Islam, Professor of Materials Modelling, Professorial Fellow of St Anne's College

Professor Angus Kirkland, Professor of Materials, Fellow of Linacre College

Professor Sergio Lozano-Perez, George Kelley Professor of Materials,

Professor James Marrow, Associate Head of Department (Teaching), James Martin Chair in Energy Materials, Director of Undergraduate Studies, Chair of Academic Committee, Fellow of Mansfield College

Professor Michael Moody, Professor of Materials, Chair of Tutors' Committee, Fellow and Tutor of Trinity College, Characterisation Module Organiser

Professor Peter Nellist FRS, Professor of Materials, Fellow and Tutor of Corpus Christi College

Professor Mauro Pasta, Professor of Applied Electrochemistry, Fellow and Tutor of St Edmund Hall

Professor Roger Reed FEng, Professor in Materials and Solid Mechanics, Fellow of St Anne's College

Professor Jason Smith, Associate Head of Department (Infrastructure), Professor of Photonic Materials and Devices, Fellow and Tutor of Mansfield College

Professor Susie Speller, Professor of Materials Science, Fellow and Tutor of St Catherine's College

Professor Richard Todd, Professor of Materials, Goldsmiths Fellow and Tutor of St Catherine's College

Professor Angus Wilkinson, Professor of Materials, Chair of Equality & Diversity Committee and Fellow of St Cross College

Professor Jonathan Yates, Professor of Materials Modelling, Fellow and Tutor of St Edmund Hall, CMS Class Organiser, IMM & Atomistic Modelling Module Organiser

## **2.2 Associate Professors and Lecturers**

Professor Sebastian Bonilla, Associate Professor of Materials and Fellow and Tutor of St Anne's College

Professor Jan Czernuszka, Associate Professor of Materials, Harassment Advisor, Fellow and Tutor of Trinity College, Part II Project Organiser

Professor Marina Galano, Associate Professor of Materials, Fellow and Tutor of Mansfield College

Professor Katharina Marquardt, Associate Professor of Materials, Fellow and Tutor of St Edmund Hall

Professor Rebecca Nicholls, Associate Professor of Materials

Professor Keyna O'Reilly, Associate Professor of Materials, Fellow and Tutor of The Queen's College

Professor Ed Tarleton, Associate Professor of Engineering Science

Professor Andrew Watt, Associate Professor, Fellow of St Cross College, Team Design Projects Organiser, Summer Exchanges & Placements Organiser

Professor Rob Weatherup, Associate Professor of Materials, Chair of Tutors' Committee, Fellow and Tutor of The Queen's College

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

Dr Chris Allen, Research Fellow

Dr Marveh Forghani, Research Fellow

Dr James Gibson, Research Fellow

Dr Phani Karamched, Research Fellow

Dr Balint Koczor, Senior Research Fellow in Quantum Technologies and Glasstone Research Fellow

Dr Emanuela Liberti, Academic Visitor Diamond Lightsource

Dr Enzo Liotti, Departmental Lecturer in Processing of Advanced Materials and Industrial Visits Organiser

Dr Ali Mostaed, Research Fellow and Crystallography Class Organiser

Dr Sreejith Olakkil Veedu, Research Fellow

Dr Chris Patrick, Departmental Lecturer, Senior Research Fellow in Materials Modelling

Dr Talha Pirzada, Research Fellow

Dr Andrey Poletayev, Research Fellow

Dr Joe Prentice, Cooksey Early Career Teaching and Research Fellow at St Edmund Hall  
Dr Alex Sheader, Research Fellow and Crystallography Organiser  
Dr Michael Slota, Research Fellow  
Dr Yige Sun, Research Fellow  
Dr Stuart Wilkinson, Business Plan Tutor, Assistant Director of Innovation & Engagement Team,  
Research Services, Entrepreneurship Fellow of Reuben College  
Dr Neil Young, Senior Research Scientist, DCCCEM Manager

## **2.4 Support staff**

Mr Chris Akinola, IT Officer  
Ms Fernanda Haswell-Martin, Head of Administration and Finance, Departmental Safety Officer  
Mrs Kay Davies, Reception, Outreach and Access Officer  
Mrs Christina Foldbjerg Holdway, Teaching Class and Chemical Safety Technician  
Mr Tom Heath, Senior Education Officer, Disability Contact  
Mrs Sharmaine Ijada, Education Support Officer  
Mrs Alison Jewitt, Administrative Secretary  
Ms Lorraine Laird, EA to the Head of Department  
Mr Tim McAree, Finance Manager  
Ms Shreya Manna, Education Support Assistant  
Ms Philippa Moss, Education Manager, Disability Contact  
Dr Safa Najjar, Education Support Officer  
Ms Diana Passmore, Teaching Laboratory Technician  
Dr Jo Roberts, Research Finance Manager  
Mr Tauseef Ansari, IT Officer  
Mrs Grace Sewell, Librarian  
Ms Helena Cotterill, Access and Outreach Manager  
Dr Adrian Taylor, Director of Graduate Studies, Admissions Coordinator  
Dr Paul Warren, IT Manager

## **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](#).

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



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

<b>Name</b>	<b>Building</b>	<b>Room</b>	<b>Phone</b>	<b>First part of email</b>
Prof. D.E.J. Armstrong	BR	20.08	73708	david.armstrong
Prof. H.E. Assender	HR	30.16	73781	hazel.assender
Prof. S.C. Benjamin	PR	40.02	73732	simon.benjamin
Prof. R.S. Bonilla	ETB	50.15	73736	sebastian.bonilla
Prof. M.R. Castell	ETB	40.24	73786	martin.castell
Prof. J.T. Czernuszka	BR	10.15	73771	jan.czernuszka
Prof. M.L. Galano	BR	20.07	73776	marina.galano
Prof. N. Grobert	BB	20.09	83720	nicole.grobert
Prof. C.R.M. Grovenor	ETB	50.12	73751	chris.grovenor
Mr T. Heath	HR	30.05	73703	thomas.heath
Mrs S. Ijada	HR	30.06	73695	sharmaine.ijada
Prof. A.I. Kirkland	HB	30.07	73662	angus.kirkland
Ms L.I. Laird	HR	30.17	73737	lorraine.laird
Dr E Liotti	BB	10.03	83714	enzo.liotti
Prof. S. Lozano-Perez	HB	30.23	73707	sergio.lozano-perez
Ms S. Manna	HR	30.06	73703	shreya.manna
Prof. T.J. Marrow	BR	10.12	73938	james.marrow
Prof. K. Marquardt	BR			katharina.marquardt
Prof. M.P. Moody	HR	30.21	73693	michael.moody
Ms P.J. Moss	HR	30.05	73750	philippa.moss
Dr S Najjar	HR	30.06	83226	safa.najjar
Prof. P.D. Nellist	HB	30.04	73656	peter.nellist
Prof. K.A.Q. O'Reilly	BR	10.02	73743	keyna.oreilly
Ms D. Passmore	HB	30.20	73658	diana.passmore
Prof. M. Pasta	HB	40.22	83324	mauro.pasta
Dr C.E Patrick	RR	40.27	12790	christopher.patrick
Mrs G. Sewell	HR	20.19	73697	library / grace.sewell
Prof. J.M. Smith	PR	30.10	73780	jason.smith
Prof. S.C. Speller	BR	20.05	73734	susannah.speller
Dr A.O. Taylor	HR	30.19	83227	adrian.taylor
Prof. R.I. Todd	ETB	40.23	73718	richard.todd
Dr P.J. Warren	HR	30.06	73727	paul.warren
Prof. A.A.R. Watt	PR	20.03	73790	andrew.watt
Prof. R.S. Weatherup	PR	30.09	73724	robert.weatherup
Prof. A.J. Wilkinson	HR	30.16	73737	angus.wilkinson
Prof. J.R. Yates	MML	30.06	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 Reception area only), Holder Building and 21 Banbury 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: <https://safety.admin.ox.ac.uk>.

Further information on safety in the Teaching Laboratory is found in [Section 10.1](#).

### **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 Education Support Team as your first port of call. If they cannot help, they will refer your question to the appropriate member of staff.

Exceptions are:

- a) matters concerning voluntary industrial placements, for which your first port of call should be the Summer Exchanges and Placements Organiser,
- b) matters concerning team design projects, for which your first port of call should be the Team Design Project Organiser, and
- c) matters concerning Part II projects, which are looked after by the Part II Project Organiser, assisted by the Education Support Team.

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

**Table 2: Administration of the course**

Prof. James Marrow	Director of Undergraduate Studies & Chair of the Academic Committee
Dr Adrian Taylor	Director of Graduate Studies and Admissions Coordinator
Ms Philippa Moss	Education Manager, Disability Contact
Mr Tom Heath	Senior Education Officer, Disability Contact
Mrs Sharmaine Ijada	Education Support Officer
Dr Safa Najjar	Education Support Officer
Ms Shreya Manna	Education Support Assistant
Mrs Grace Sewell	Librarian
Prof. David Armstrong	Practical Courses Organiser
Prof. Jan Czernuszka	Part II Project Organiser
Dr Enzo Liotti	Industrial Visits Organiser
Prof. Rob Weatherup	Chair of the Tutors' Committee
Ms Diana Passmore	Teaching Lab Technician
Prof. Andrew Watt	Team Design Projects Organiser and Summer Exchanges & Placements Organiser
Dr Alex Sheader	Crystallography Class Organiser
Dr Ali Mostaed	Crystallography Class Organiser
Prof. Simon Benjamin	CMS and Maths Class Organiser
Prof. Jonathan Yates	Modelling Module Organiser
Prof. Michael Moody	Characterisation Module Organiser
Dr Chris Patrick	Atomistic Module Organiser
Dr Paul Warren	IT Manager

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

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

The JCCU constitution states:

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

In other words, the JCCU provides a direct opportunity for you to constructively criticise, praise and complain about the course, and also to suggest improvements. Information about the JCCU, including the current student representatives, and previous minutes can be found on the [JCCU site in Sharepoint](#), and via [Canvas](#).

The Committee consists of normally three students from each year group, as well as members of academic staff. We meet once a term over a light lunch. The Chair is always an undergraduate (currently Qianyi (Q) Sun ([qianyi.sun@seh.ox.ac.uk](mailto:qianyi.sun@seh.ox.ac.uk)), and the Secretary is currently the Senior Education Officer, Tom Heath, who is also an ex officio member of the Committee. Other ex officio members of the Committee are the Director of Undergraduate Studies, Prof. James Marrow, the Chair of Faculty, Prof. Susie Speller, the Practical Courses Organiser, Prof Sergio Lozano-Perez, the Part II Project Organiser, Prof Jan Czernuszka and the Education Manager, Philippa Moss.

Probably the most obvious indication to undergraduates of the JCCU's existence is the lecture and coursework feedback questionnaires that are considered by the Committee each term. We use electronic questionnaires and the online surveys will be available towards the end of each course or piece of coursework. The questionnaires are analysed and summarized by the Education Manager and then passed to the lecturers for review.

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

Another role of the JCCU is to arrange social functions (such as the annual drinks party) and overseas industrial tours (usually annually). Previous successes were the industrial tours to: Beijing in Easter 2017, the south of France in Easter 2018, Singapore in Easter 2019 and, following a gap due to the pandemic, to Leipzig in Germany in Easter 2023. The Worshipful Company of Armourers' and Brasiers', The Worshipful Company of Ironmongers, The IOM3 and industrial sponsors supported these trips.

The three JCCU members from your year are normally elected on **Friday, 0th Week of Michaelmas term** - please consider standing for membership of this important committee of the Department. If you have any queries about the JCCU or the course in general, please do not hesitate to contact any member of the JCCU, or the Chair of the Academic Committee. Details of the current members are available on the [JCCU site in Sharepoint](#) and via [Canvas](#).

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

Students on full-time and part-time matriculated courses are surveyed once per year on all aspects of their course (learning, living, pastoral support, college) through the Student Barometer. Previous results can be viewed by students, staff and the general public at: [www.ox.ac.uk/students/life](http://www.ox.ac.uk/students/life)

Final year undergraduate students are surveyed instead through the National Student Survey. Results from previous NSS can be found at [www.officeforstudents.org.uk](http://www.officeforstudents.org.uk). The results of these surveys are considered by various committees, namely the JCCU and the Departmental Academic Committee.

## **5.2 Feedback to our Students**

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

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

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

In addition, more generic feedback is found in the detailed reports of the Examiners, which are available to you via [Canvas](#), and in the Y3 workshop “Answering finals exam questions”.

## **6 Overview of the Course**

### **6.1 General Structure of the Materials Science Programme**

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

The Department is responsible for the provision shown in the outline below and your College is responsible for the associated tutorials, tutorial classes (although these are co-ordinated by the Department), and pastoral care. Naturally, the Department also plays a pastoral role even though this responsibility lies primarily with your College. If you have any issues with teaching or supervision please raise these as soon as possible so that they can be addressed promptly. Details of who to contact are provided in [Section 24](#) about complaints and appeals.

## 7 An Outline of the Programme Content, Assessment and Key Progression

### Criteria for the M.Eng in Materials Science

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

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

#### 1st year ('Prelims')

##### Courses

Directly examined

- Physical Foundations of Materials
- Structure and Mechanical Properties of Materials
- Transforming Materials
- Mathematics for Materials Science

Continual assessment

- Practical Course
- Crystallography Classes
- Computing for Materials Science (MATLAB)

Additional elements

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

##### Assessment

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

##### Progression

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

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

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

### 2nd year

#### Courses

Directly examined

- Lifecycle, Processing & Engineering of Materials
- Electronic Properties of Materials
- Mechanical Properties of Materials
- Structure & Thermodynamics of Materials
- Foreign language (optional)
- Supplementary subject (optional)

Continual assessment

- Practical work
- Industrial visits and talks
- Entrepreneurship course

Additional elements

- Mathematics
- Communication skills

### 3rd year

#### Courses

Directly examined

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

Continual assessment

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



## **2nd year & 3rd Year ('Part I Final Honours School').....continued**

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

### **Assessment**

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

### **Progression**

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

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

### **Courses**

Research project (full-time). See examples of [previous projects](#).

Additional elements

- Presentation skills
- Project management skills
- Engineering Ethics & Sustainability
- Industrial visits (optional)
- Careers events
- Information skills & Reference Management
- Writing skills and IPR
- Foreign language option
- Technology Transfer (tbc)
- Workshop skills
- LabVIEW

### **Assessment**

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

## 7.1 The First Year

During the first year, you will study four different course units, called papers, and attend various general lectures/courses (see Table 3). The outline syllabuses for these units are given below and they are described in detail in the Prelims Lecture Course Synopses Booklet, which can be found on-line at [www.materials.ox.ac.uk/teaching/ug/uglectures.html](http://www.materials.ox.ac.uk/teaching/ug/uglectures.html). In addition, you must carry out practical work in Materials, Crystallography and Computing for Materials Science to a satisfactory standard (see [Section 13](#)).

Lectures are an important part of the teaching in science subjects, and whilst attendance at lectures is not compulsory in Oxford, we strongly advise you to attend them. In many cases the material that is taught in lectures is not available in books. Tutorials are likely to be based on the lectures so attendance at lectures ensures you will get the most from your tutorials. Lecturers are free to give out lecture handouts for their courses and many do. **However, the Departmental policy on this practice allows to the lecturers' discretion as to whether they provide notes or not, and as to how detailed those notes may be.** Ordinarily, those who do issue lecture notes provide these via Canvas (provided there are no copyright issues that restrict electronic publication).

The Department is conscious that some students will always prefer to work and revise from notes in hard copy. Although notes will not be issued as standard in hard copy (in an attempt to save some trees!), the Department invites those who wish to print their notes to claim a set amount (currently £75 per term) to cover the cost of printing where colleges charge for printing.

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!).

The Faculty of Materials has currently agreed that the majority of lectures will be recorded and the recordings will be made available to the year cohort via Canvas, normally within 24 hours of the lecture. See <https://academic.admin.ox.ac.uk/educational-recordings-policy> for the full policy on the recording of lectures and other teaching sessions.

## Definition of Examinable Material

Examinable material is defined broadly by the [course synopses](#) and includes all material covered in lectures and all material covered in course handouts of any type (including problems sheets issued by the lecturers). The only exceptions to this rule are:

- (i) If a course handout states in writing that the material below is for background information only and is non-examinable
- (ii) Notification by the Chair of Examiners to all students taking the course indicating that a specific part of the course is non-examinable.

## Reading Lists

You should note that each course synopsis also includes a reading list. Reading lists are an integral part of learning and teaching at university, being a collection of reading materials either necessary or helpful to your lecture courses.

At Oxford we use [ORLO \(Oxford Reading Lists Online\)](#) which provides an easy link to all the texts (or chapters of texts) that have been identified by your course lecturers as useful resources to help your understanding of the material.

Reading lists are not pointless. If you disregard the reading lists, you are limiting yourself only to the material delivered at the lectures which really is just the entry point to a whole new world of knowledge. And the lecturers have already invested their time identifying the most useful resources to save you wading through text after text in case it is relevant. If you engage with the recommended reading as identified by your lecturers to deepen your understanding of a subject, you will be far better placed to achieve superior results.

It is also crucial to note that the definition of examinable material, that is the material from which exam questions may be drawn, includes any essential texts as identified on reading lists.

**Table 3: The First Year Courses and General Lectures**

Subject	Lecture Content
	Hours per course
<b>General Lectures</b>	
Induction course	3
Introduction to the Prelims Programme	1
Teaching, Study Skills & Learning Development	1
The IOM3 – Benefits of Student Membership	1
Engineering Drawing & CAD Classes	6

<b>Subject</b>	<b>Lecture Content Hours per course</b>
Introduction to Errors in Measurement	2
Looking to the Future - Career planning	1
Year 2 Options Briefing	1
Practical Class Meetings	3
Introduction to Computing	3
Industrial Placements Briefing	1
Computing for Materials Science	12
<b>Materials Science 1: Physical Foundations of Materials</b>	
The Study of Crystalline Materials by Diffraction	8
Electromagnetic Properties and Devices	12
Random Processes and Statistical Physics	8
Wave Mechanics, Quantum Theory and Bonding	12
<b>Materials Science 2: Structure and Mechanical Properties of Materials</b>	
Elastic Deformation	8
Structures of Crystalline and Glassy Materials	12
Defects in Crystals	8
Mechanical Properties	12
<b>Materials Science 3: Transforming Materials</b>	
Thermodynamics	8
Introduction to Nanomaterials	8
Microstructure and Processing of Materials I	8
Electrochemistry	8
Microstructure and Processing of Materials II	8
<b>Mathematics for Materials</b>	
Introduction to Maths & Computing for Materials Science	1
Ordinary & Partial Differentiation	7
Vectors & Matrices	11
Taylor Series & Limits	3
Integration	5
Complex Number	4
Ordinary Differential Equations	6

## 7.1.1 First Year Recommended Teaching Pattern

### Course structure

Four compulsory written exam papers:

- Materials Science 1 – Physical Foundations of Materials
- Materials Science 2 – Structure and Mechanical Properties of Materials
- Materials Science 3 – Transforming Materials
- Mathematics for Materials Science

plus compulsory Materials coursework equivalent to one written examination paper

plus non-examined element

From [Section 15](#): ‘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.’

YEAR 1 ‘PRELIMS’  Paper	Term	Dept/ Faculty		College		Comments
		Lectures	Classes	Tutorials	Classes	
[1.] Materials Science 1 – Physical Foundations of Materials (40)	MT	8		10		<i>Figures in this table are in hours unless otherwise stated.</i>
	HT	28				
	TT	4				
[2.] Materials Science 2 – Structure and Mechanical Properties of Materials (40)	MT	16		10		
	HT	12				
	TT	12				
[3.] Materials Science 3 – Transforming Materials (40)	MT	24		10		
	HT	8				
	TT	8				
[4.] Mathematics for Materials Science (37)	MT	19			8	
	HT	18			8	
	TT	-			-	

YEAR 1 ‘PRELIMS’  Paper	Term	Dept/ Faculty		College		Comments
		Lectures	Classes	Tutorials	Classes	
<i>Figures in this table are in hours unless otherwise stated.</i>						
[5.] Coursework ‘Paper’						
(a) Crystallography	MT		9			
	HT		9			
(b) Computing for Materials Science	MT		6			
	HT		6			
(c) Practical Classes	MT		22			Department classes hours for practicals = 3 hours per afternoon
	HT		25			
	TT		13			
[6.] Non-examined elements						
(a) Engineering Drawing and CAD Classes	HT		6			
(b) Introduction to Errors in Measurement	MT	2				
<u>Notes</u>						

See also [Section 15](#) - Teaching Norms (Expectations of Study & Student Workload).

### 7.1.3 Thinking ahead to the second year

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

#### Foreign Language Option:

You have the opportunity to study a foreign language in the first year of your course. You may continue this study in your second year as part of your degree - please see [Section 9.2](#) for details.

#### Supplementary Subject:

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

The Supplementary Subjects are advertised each year and are currently:

- Quantum Chemistry - <https://canvas.ox.ac.uk/courses/219547>
- History and Philosophy of Science - <https://canvas.ox.ac.uk/courses/70250/>

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.

## **7.2 The Second and Third Years**

In the second year, you will study core courses, which are divided into four main subject areas: Lifecycle, Processing & Engineering of Materials; Electronic Properties of Materials; Mechanical Properties of Materials; and Structure & Thermodynamics of Materials. Laboratory work continues in the second year (see [Section 10](#)). You can also carry out a team-based Entrepreneurship module.

The third year Materials lectures are offered as option courses with lectures taking place in Michaelmas and Hilary terms. Students who are following the M.Eng programme study the courses in both terms. Students normally choose 3 courses per term. The courses currently available are as follows: Magnetic and Superconducting Materials; Microstructural Control in Engineering Alloys; Enabling Nanotechnology – from Materials to Devices; Materials & Devices for Optics & Optoelectronics; Biomaterials and Natural Materials; Engineering Ceramics: Synthesis & Properties; Quantum Technology; Advanced Polymers; Prediction of Materials' Properties; Energy Materials; and Materials for Nuclear Systems. (Note that the Option Courses available in any given year will be as per the list published in the Materials Options Lecture Course Synopses for that academic year.)

At the beginning of the third year it is possible to opt to transfer to a 3 year BA (Hons) degree. A student opting to do this takes a smaller set of materials option lecture courses and carries out a literature-based research module. Further information regarding this and the structure of the second and subsequent years of the course are provided in the FHS Course Handbook and the associated lecture synopses. This option is intended for the rare case when a student may not wish to pursue the study of Materials Science for a further fourth year. A copy of the FHS Course Handbook pertinent to your year of matriculation will be provided in your 2<sup>nd</sup> year.

In addition, you will carry out a Team Design Project in the first two weeks of Michaelmas Term, complete an Introduction to Modelling of Materials module, followed by one of two options modules, Characterisation of Materials or Atomistic Modelling, later in the year.

## **7.3 The Fourth Year (M.Eng)**

The fourth year consists of an 8-month research project, examined by a thesis and viva.

## 7.4 Coursework

The assessed coursework in your first year comprises Crystallography class work, Computing for Materials Science 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, work carried out in crystallography classes, and project work for Computing in Materials Science (CMS), as described in the Course Handbook, and it shall be assessed under the following provisions:

- (a) All elements of coursework must be submitted to the University approved online assessment platform, accompanied by a declaration indicating that it is the candidate's own work.
- (b) **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 13](#).

## 7.5 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.

## 8 Teaching and Learning throughout your Degree

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



Table 4.

**Table 4: Educational aims of the programme**

### **Materials Science**

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

## **8.1 Bridging Programme**

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

## **8.2 Learning Development, Study Skills and Tutorials**

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

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

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

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

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

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

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

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

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

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

The University's Education Committee summarises the purpose of tutorials as follows:

“To develop an individual student's capacity to think in depth about a subject area, and to operate with growing confidence within its techniques and methodologies, with the expectation that the process will promote increased understanding of the discipline for both tutor and student”.

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

A wide range of information and training materials are available to help you develop your academic skills – including time management, research and library skills, referencing, revision skills and academic writing - through the Oxford Students website

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

### **8.3 Research-Teaching Nexus**

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

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

## **8.4 Communication Skills**

Although just one part of Learning Development, communication skills are so highly valued throughout life that they deserve their own entry! From what you have read so far, you will be aware that the different methods of teaching and assessment provide various methods for developing communication skills. As well as the immediately apparent writing skills that you develop throughout the course of the programme, tutorials develop and refine your abilities in both written and oral communication; practical classes provide opportunities for collaboration and teamwork, as well as the written report and lab notebook entries; the Business Plan and Team Design Projects have team oral presentation sessions following the team written reports, and the Y2 Poster Competition provides yet another medium to communicate your scientific understanding. Your ability to write individual reports is developed gradually; initially through lab reports, then the Y3 Modelling and Options modules and finally the Part II thesis. In Part II, you will need to report your findings to your supervisor, identify why these are useful and whether or not they support your thesis, as well as produce a substantial written thesis, defend this at an oral examination and give a research talk to your peers on your Part II work.

## **9 Foreign Language Study**

We recognise that many students are keen to develop their language skills while reading for their Materials degree. The Language Centre ([www.lang.ox.ac.uk](http://www.lang.ox.ac.uk)) offers a range of courses in Arabic, Dutch, French, German, Greek, Italian, Japanese, Mandarin, Portuguese, Russian and Spanish in a variety of formats – please see [www.lang.ox.ac.uk/language-courses](http://www.lang.ox.ac.uk/language-courses) for details of the different courses that are offered. All courses are calibrated on the Common European Framework of Reference (CEFR) for Languages. It is possible for Materials students to develop language skills through three routes, supported by the Department of Materials:

- i) **Additional study in the first year - foreign language.** This option does **not** count towards your Prelims Examination, but successful completion leads to a Certificate of Completion from the Language Centre. The mode of study could be either **Fast Track** or **General** (but please check the schedules to ensure the class timings do not conflict with Departmentally-scheduled activities).
- ii) **2<sup>nd</sup> year Foreign Language Option.** [For this option normally language study is through your first **and** second years, but could be taken in the second year only, especially if you have studied a foreign language to GCSE or A-level (or equivalent).] This would involve taking one of the **Fast Track** options offered by the Language Centre and substitutes for the Entrepreneurship coursework; as such this counts a small amount towards your final degree result.
- iii) **Additional study in the fourth year - foreign language.** This option does not count towards your Finals Examination, but successful completion leads to a Certificate of Completion. The mode of study could be either **Fast Track** or **General**.

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

The Language Centre ([www.lang.ox.ac.uk](http://www.lang.ox.ac.uk)) offers various languages in different modes of study, giving further flexibility to your learning. There are **General** courses that are taught weekly (or intensively at the end of term - note you may need to arrange accommodation with your college, depending upon the mode of delivery), with enrolment being term by term; or **Fast Track** courses which are fast-paced and more demanding but as such offer quicker progression in your chosen language – these courses run across all 3 terms. The Department may fund the cost for, normally, up to 10 students to attend courses. There is clear guidance on the Language Centre website about which level may be right for you, depending on any prior language study. Language courses in the first year do not contribute towards your degree but you will be awarded a Certificate of Completion 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 a language 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.

When identifying the level and course format that is suitable to you, please bear in mind that timetabling conflicts with scheduled Materials events mean that the daytime classes are unsuitable for Materials students except for 4<sup>th</sup> years. Note too that there is an 80% attendance requirement.

In 2023 the language courses will be taught through a flexible and inclusive mode of delivery, with many of the courses offered in in-person and/or online variants. Please see the Language Centre website (<https://www.lang.ox.ac.uk/language-courses#/>) for further information about the different courses, what these entail and the detailed timetables.

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**. In the first year, you must pay the fees yourself but may apply for reimbursement of these costs at the end of the language course. At the time of writing this handbook, your College will reimburse half the cost and the Department the other half – you should check with your College Office in case they require you to register your intentions with them also. Reimbursement will be subject to successful completion; you are required to submit a copy of the Certificate of Completion 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 H](#). This form, countersigned by your Tutor, must be submitted to the Education Support Office by Monday of week 2 in Michaelmas Term. Once you have done this, you may self-enrol via the Language Centre website.

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

It is possible to study a language as the Foreign Language Option and drop the Entrepreneurship course (taken in the second year). The Department may fund the cost for, normally, up to 10 students to attend one of the **Fast Track** courses offered by the Language Centre. These courses are fast paced and are intended for those who are highly motivated, can commit to regular attendance (80% 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.

There is a progress test, normally in week 7 of Hilary Term and a presentation towards the end of Trinity Term. It is important that you are confident that you can attend the entire course as your marks will be derived from both and will contribute to Part I. Upon satisfactory completion, you will receive a Certificate of Completion 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 I](#). Once countersigned by your Tutor, this must be handed in to the **Education Support Office by the end of week 8 in Trinity Term of your first year**: this allows us to liaise with the Language Centre in advance of their registration window to try to ensure a place on your chosen course.

It is also possible for students to take the 2<sup>nd</sup> year Foreign Language Option without having studied this language in the first year, normally providing you have previously studied the language to GCSE or A Level (or equivalent). In this case, it is essential that you have your tutor's support and agreement before you enrol in any courses. The second year workload in Materials is quite demanding and taking the Foreign Language Option as part of your degree may prove challenging for some with the hours you need to devote to learning a new language.

As above, you must register with the Language Centre by **Wednesday of week 1**. To confirm, the Department will pay the fees for the second year Foreign Language Option. You must confirm your intention to take the Foreign Language Option by Monday of week 2 via [undergraduate.studies@materials.ox.ac.uk](mailto:undergraduate.studies@materials.ox.ac.uk) so the team may arrange payment.

### 9.3 Additional study in the Fourth Year - Foreign Language

At the time of writing, if your tutor **and** your Part II project supervisor give their approval, it is possible to take a voluntary foreign language course in your 4<sup>th</sup> year. This option does not count towards your Finals Examination, but successful completion leads to a Certificate of Completion. Again, as a voluntary extra, you may wish to consider which mode of learning would be right for you – **General**, either term by term, or **Fast Track**, across the entire year. The Department will reimburse 50% of the costs, subject to production of the Certificate of Completion, and receipts.

## 10 Practicals

Materials Science is predominantly an applied science and much of the research in Materials Science is experimental in nature. It is therefore important that you learn appropriate experimental skills as part of your degree. This involves not only practical skills in handling samples and equipment in the laboratory, but also associated skills such as reading and assimilating briefing documents, effective time management, working in groups and ability to meet deadlines in writing and submitting reports. We also hope that you will find the teaching laboratory experiments to be interesting and enjoyable, and that they help reinforce your learning in other parts of the degree course. Attendance at all practicals is **compulsory**, for each day your practical is scheduled.

Set experiments are conducted in the Teaching Laboratory in the first two years. The experiments are carried out by students in small teams (normally teams of two or three). 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 typically run on Thursday and Friday afternoons. Some experiments run in Trinity term use equipment, such as electron microscopes, that is too costly to duplicate and will be carried out by the teams in series throughout weeks 1-4 of that term.



The current Practical Courses Organiser (PCO) is Prof. David Armstrong; he has overall responsibility for the smooth running of the practicals and for applying any penalties such as those incurred for late submission of a report. The Teaching Laboratory is open only in the afternoons.

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

We recommend that you read through the instruction sheets in advance of the practical (they are all available on the website at [www.materials.ox.ac.uk/teaching/ug/ugpracticals.html](http://www.materials.ox.ac.uk/teaching/ug/ugpracticals.html)) as well as on [Canvas](#). Do make sure that by a combination of the briefing and the instruction sheets you understand what is required for each specific experiment. If you have any doubts, please ask the SD when they are present during the practical.

Your practical work will be assessed by your lab notebook entries and, for three practicals, also by the submission of a scientific report. The first of these will be formatively assessed only. A maximum mark of 13 will be available for each of the two summatively assessed scientific reports.

Scientific reports will be required for the following practical classes:

- 1P3 Young's Module (formative only)
- 1P5 Bubble Raft
- 1P8 Electrode Potential of Solutions

Your laboratory notebook entries will be summatively assessed; for each of the eight practicals a maximum mark of 3 will be awarded for these notebook entries. An example of the marking scheme to be used in the assessment of the lab notebook entries is available at [Appendix L](#). Formative feedback will be provided on each summatively assessed piece of work.

You have been provided with hardback practical notebooks (hereafter referred to as the "practical book") which you **must** use whenever you are in the lab to record your data, observations, results of any analysis, etc. Following good practice in research and industrial labs, all entries should be legible, written in pen and, if you make a mistake, just draw a line through the entry. Practical books **MUST NOT** be removed from the practical labs.

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

## 10.1 Safety in the Teaching Laboratory

One of the aims of the Materials Science degree is to teach you to be a professional scientist. The teaching laboratory is a professional space, and we expect an appropriate conduct in the 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 Lab Technician, Teaching Assistants and Senior Demonstrators.
- DO** read and follow the safety instructions.
- DO** concentrate on what you are doing to avoid mistakes.
- DO** familiarise yourself with fire escape routes.
- DO** keep fire doors closed and escape routes clear.
- DO** sign-in / sign-out at the start / end of **each day** of the practical.
- 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.
- DO** tie back long hair.
- DO** speak in English at all times in the labs.
- DO** alert the teaching lab technician if you need to leave the laboratory for any reason before the end of the afternoon.
- DO NOT** remove your practical book from the lab at any time.
- 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 (this includes sucking your pen!).
- DO NOT** smoke in the laboratory.
- DO NOT** mess around.
- DO NOT** wear inappropriate clothing and shoes, e.g. sandals, short skirts, long scarves.

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

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

## 10.2 First Year Practicals

First year practicals take two afternoons each to complete and are typically carried out on Thursday and Friday afternoons, with the exception of the Trinity Term experiments which require special timetabling. There is a **compulsory** introductory meeting on normally the Monday of the first week of each term where groups are arranged and details of the timetable explained. It is expected that you attend labs for each full afternoon the practical is scheduled and you will need to secure permission if you need to leave early. You will also be required to sign-in on arrival and sign-out on departure, for safety reasons.

**N.B. You must not start an experiment without permission.** In practice, this means you must not begin the experimental work before the TLT has date stamped your practical 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 they and the TLT will have covered the relevant safety issues and highlighted any particular hazards. It is **your responsibility** to ensure that your practical book is stamped at this time. Any student starting an experiment without permission will be penalised (see [Section 10.6](#)) and will be liable to disciplinary action.

## 10.3 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 TLT (Diana Passmore) 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 Education Manager (Philippa Moss) 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 they 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 Education Manager (Philippa Moss) and one copy to the TLT (Diana Passmore). The latter copy will be passed to the PCO (Prof. Armstrong). Subsequently your College may need to present this evidence in any case they might make to the Proctors in respect of missing examinable coursework.

## 10.4 Practical Assessment

Whilst you are working on your practicals in the teaching labs, you are expected to make entries in your practical book, capturing a brief outline of the method, recording your observations and relevant data and calculations. For each of eight experiments (1P3 to 1P10) up to three marks will be awarded for the quality of your practical book entry. In awarding these marks the Senior Demonstrator will consider all of the following:

- Presentation and completeness of results, where they'll check you have followed the "best practice guidelines in this document (e.g. "Things to check section") and whether you have included and correctly described all the data/results specified in the script.
- Data analysis and errors, where we will evaluate if the analysis of data, including error analysis, is adequate.
- Interpretation of results and conclusions, where we will evaluate your understanding of the experiment, its results and how you summarize it all in some brief but meaningful conclusions.

The practical book **MUST NOT** be removed from Teaching Labs at any time. When you have finished each practical, you should present your practical book to the TLT who will stamp this at the end of your entry for that practical. The Senior Demonstrator will review the practical books before your next practical and provide a sheet with some feedback. The marks awarded will contribute a maximum of 24 marks in total to your Prelims Examination. An example of the feedback sheet may be found at [Appendix L](#).

For three of the practicals, you are required to write a scientific report, each of which will attract a maximum of 13 marks towards your Prelims Examination. The first report that you write, for the 1P3: Young's Modulus practical, will be for formative purposes only. You will receive feedback on the report but it will not count towards your Prelims mark. Reports will also be required for practical 1P5: Bubble Raft and 1P8: Electrode Potential of Solutions. For these experiments a report must be typed or word-processed and converted to a pdf file prior to submission via the assignment tools on Canvas (<https://canvas.ox.ac.uk/courses/227402>). At the start of the year, the Practical Courses Organiser will provide you with some generic guidance about how to approach writing your report. Typically, you will have 3 weeks from completing the practical before you need to submit the report, which should be no more than 3000 words and include no more than 10 figures.

The Senior Demonstrator will mark your work, normally within three weeks of submission of the report. Your work will be returned via the Practicals Canvas site annotated with comments available for you to view.

Whilst practicals are performed normally in twos or threes in the laboratory, all reports and practical book entries should be completed, as far as possible, individually. You are referred to [Section 14](#) on Plagiarism.

**Completion of all introductory sessions and all eight full practicals is a requirement for the Preliminary Examination**, and the marks for the practical book assessments and the two summative reports contribute to the Preliminary Examination in Materials Science. For this reason, the practical books and reports will be made available to the Moderators in the Preliminary Examination in Materials Science. You must ensure that all your practical work for the year is complete and available to the Moderators in your practical lab notebook and via Canvas no later than 10.00 am on Friday of the sixth week of Trinity Full Term, at which point the Teaching Lab Technician will release your practical notebooks to the Moderators for scrutiny.

Your attention is drawn to the strict [Examination Regulations](#) on completing the Practicals and other coursework to a satisfactory level, as explained in [Section 13](#) of this Handbook. You will be offered the opportunity to receive back your practical book for Prelims at the start of your second year.

### **10.5 Submission of reports and marking arrangements**

The practical report must be typed or word-processed and submitted via Canvas normally within 3 weeks of the completion 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. Your report must be submitted to Canvas as **a pdf file** by 1.00pm on the stated deadline. You can use any PDF-converter software to create a PDF. Converters include Adobe Acrobat, and a converter built into Microsoft Word 2010.

**Your PDF “assignment filename” should be in the following format, without the square brackets: [Practical number (e.g. 1P3)] - [your first name and family name].** Care must be taken on each submission of an “assignment” (your report file) as the Senior Demonstrator will mark only this submission: you are not permitted to submit subsequently a revised version should you discover problems with the file, e.g. you omitted some relevant information, pages had been deleted, the file had become scrambled prior to submission, etc.

### **10.6 Penalties**

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

**Penalties may be deducted from the marks given by the Senior Demonstrator for the scientific reports, subject to approval by the Moderators. These penalties will be incurred as a result of late submission in the absence of illness or other legitimate mitigating circumstances or other non-compliance of the rules given above.**

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 14](#). Note that you will need to 'sign' an electronic Declaration of Authorship when submitting your reports (see sample at [Appendix K](#)) and all submitted reports will be scanned by plagiarism detection software.

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:**

The number of marks available for notebook assessment for that practical.

b) **Late submission of report in the absence of illness or other legitimate mitigating circumstances:**

If the report is submitted late via Canvas (i.e. later than 1.00 pm on the Friday three weeks after the starting date):- 3 penalty marks

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 is not submitted, then a default mark of zero will be awarded and no feedback will be provided.

c) **Failure to hand in your practical book at the end of each day:**

1 penalty mark. (If data or material is needed from the book, this should be photocopied or photographed.)

d) **Non-attendance at labs for part of or all a practical without approval:**

The number of marks available for notebook assessment for that practical.

## **11 Crystallography Classes**

There will be an introductory 'Crystal Model Make and Keep' session in week 3 of Michaelmas Term from which, as the name suggests, you will be able to keep the crystal models to help in the subsequent crystallography classes.

Crystallography classes are from 9.00 am to 12 noon on select Tuesdays in both Michaelmas and Hilary Terms (see termly lecture lists for exact details). **Attendance at these classes is compulsory and will be recorded.**

In each of the six Crystallography classes, you are required to complete a piece of work as specified by the Senior Demonstrators. The first piece of work will be marked and you will receive feedback, but this will be for formative purposes only and will not contribute to the Preliminary Examination in Materials Science. Work from all other classes will also be marked but these marks will contribute directly to the Preliminary Examination in Materials Science. Some information on the Crystallography Class procedures is given in [Appendix J](#).

## **12 Computing for Materials Science - Classes and Project**

Classes in Computing for Materials Science will also be held from 9.00 am to 12 noon on select Tuesdays in both Michaelmas and Hilary Terms (again, see the termly lecture lists for exact details). The vehicle for teaching will be MATLAB, however, many of the principles will be general, and you will appreciate the relation between MATLAB and other computational approaches (C, Fortran, Python etc). Using MATLAB, these classes will provide you with the computational skills you will require to address problems you encounter in your studies. In addition, you will gain an understanding of the role computers play in Materials Science – ranging from modelling, data analysis to visualisation.

Each of the four classes will include a lecture and a series of guided problems to be tackled as a hands-on exercise. Whilst these exercises will not be marked, you will be expected to briefly discuss your findings with the Senior Demonstrator (SD) and Teaching Assistants (TA) on completion. This work will also support the requirement for an individual 1500 word report and working MATLAB script which must be submitted to the Chair of Moderators, via [Inspera](#), not later than 12 noon on Tuesday of the fifth week of Hilary Full Term. You will be expected to invest approx. 8 hours of independent study in this project; there will be 'surgery' hours when the SD/TAs will be available to help with technical queries.

**Attendance at these classes is compulsory and will be recorded.** If you are unable to attend a class due to illness or other legitimate reason, you must provide appropriate written evidence of a valid reason for missing the class. Appropriate evidence includes a medical certificate to cover illness (details of the illness need not be specified by the doctor but they must state that in their opinion you are/were unfit to attend the class) or a signed letter from a College Tutor to cover other circumstances. These must be submitted to the Education Manager within a week of the scheduled class. It will be important that you can find the time to work through the exercise with one of the Teaching Assistants before you submit your project work.

### 13 Satisfactory Performance in Coursework

To pass the coursework 'paper' candidates must normally demonstrate a satisfactory performance in both the Practical Work, Crystallography Classes and the project work for the Computing in Materials Science.

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.**

For their CMS project work to be judged as satisfactory candidates must have achieved **at least 40% on this coursework.**

As indicated in the Examination Regulations for the Preliminary Examination in Materials Science (clause 2b), 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.

### 14 Plagiarism

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

### 15 Teaching Norms (Expectations of Study & Student Workload)

The University's expectation is that undergraduate students treat academic study as a full-time commitment during Full Term, with approximately 40 hours per week typically being spent on academic work; this includes both scheduled contact time (tutorials, lectures, classes, practicals etc.) and time spent in private study. This is based on the expectation that these hours are spent on focussed, concentrated academic work.

It is recognised that workloads will vary week to week, and you will sometimes need or wish to work for longer. If you find it impossible to meet your academic obligations without spending significantly longer than 48 hours per week on academic study on a regular basis (rather than occasionally, or for a limited time period), you should seek advice from your tutor.



You should also note that it is an expectation of the Oxford Materials Programme that you engage in private study and/or revision during part of each vacation. You will need to do this in preparation for College collections that are held at the end of 0th week in most terms – your tutors will provide you with the specific details. During the vacations, you should go over the tutorial problems and your notes, revising the material and supplementing it with information gained from tutorials and from your own reading. In addition to consolidating the previous term's work, there may be preparatory reading for the next term's courses. Your tutors may also set you some specific vacation work.

Please note that the following 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 their judgement of your needs. 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.

### **15.1 Lectures & Laboratory Classes (as detailed in the General Scheme)**

Lecture loads, including introductory talks, industrial talks and transferable skills workshops, are as scheduled in the General Scheme of Lectures, which can be viewed on the Oxford Materials website. For the Materials Options you will select three 12h courses per term (MT & HT of the third year). Students who have transferred to the 3 year BA (Hons) degree at the start of Y3 will take a smaller set.

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

### **15.2 Tutorials**

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

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

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

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

### **15.3 Engineering Drawing & CAD Classes**

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

### **15.4 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 Prof. Simon Benjamin); these are normally at the rate of one class for every two maths lectures, which is an average of about one class per week. Third year students take Materials Options classes (co-ordinated by the Education Support Team); students attend normally three hours of classes per 12h lecture course.

## **15.5 Other Coursework and Final Year Projects**

- (i) CMS project – 4x 3h classes and typically 8h independent work writing up the report and producing working script
- (ii) Industrial Visits – typically 3 to 5 hours for each of four visits and 1.5 hours writing per report.
- (iii) Industrial Talks- typically 1-1.5 hours for each of two industrial talks and up to 1 hour writing per report.
- (iv) Business Plan – typically 20h writing up time for the Business Plan
- (v) Team Design Project – typically 100h for an MS student including writing the team report.
- (vi) Introduction to Modelling of Materials module — typically up to 100h, including writing the report(s)
- (vii) Characterisation of Materials or Atomistic Modelling - typically 100h, including writing the report(s).
- (viii) Literature-based research module (for 3 year BA (Hons) degree) – typically 3, and no more than 4, weeks full-time equivalent effort, including writing the essay.

## **15.6 Fourth year Part II Projects**

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

## **15.7 Revision**

Revision tutorials are arranged, 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.

## **15.8 Paid Work Experience**

Term-time employment is not permitted, except under exceptional circumstances and in consultation with your tutor and senior tutor. During vacations you will be required to complete academic work and this should take priority over other commitments. However, work experience placements may be sourced with help from the Department and the University Career's Service. See [Section 22](#) for further details.

## **16 Other activities**

### **16.1 The Industrial Tour**

As mentioned previously, the JCCU arranges an industrial tour during the Easter vacation. Previous destinations have included Canada, Sweden, China, the south of France, Singapore and the most recent tour was to Germany. 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).

### **16.2 Industrial Visits and Talks**

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 weeks 4 or 5).

In addition, in the second year, two industrial talks are arranged in the Department; one in Michaelmas term and the other in Hilary term.

Students are required to attend and write reports on four industrial visits and both industrial talks during Part I, but 1<sup>st</sup> year students may choose to attend the visits for general interest if space is available.

### **16.3 Summer Vacation Projects in Industry and University Research Laboratories**

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

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

If you have arranged your project / placement in good time, you can apply for financial assistance from the grants made to us by the Armourers' and Brasiers' and Ironmongers' Companies for travel and accommodation.

All applications for financial assistance must be made through the Summer Exchanges and Placements Organiser, currently Professor James Marrow. Ideally, these should be made no later than the end of Hilary term. Further advice on finding a project / placement can be gained from the Summer Exchanges and Placements Organiser who will give a lunchtime briefing on seeking industrial projects early in Hilary Term. You **must** attend this talk if you wish to be considered for placement / project opportunities coordinated by the Department.

#### **16.4 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. As part of the degree programme you are strongly encouraged to take up this membership. Benefits of membership include a free members' magazine, online access to premium web content, discounts on IOM3 services, networking opportunities, professional development advice, etc. A representative from the Institute will provide further information in a briefing in Michaelmas Term. It's worth noting that some of the prizes available throughout the degree are sponsored by the IOM3 and, for some, one of the eligibility criteria is membership of the IOM3.

#### **16.5 Oxford Materials Society (OMS)**

The OMS is the local regional branch of the IOM3 and is involved with hosting the Oxford heat of the Young Persons' Lecture Competition (see <https://www.iom3.org/events-awards/competitions/yplc.html>), normally towards the end of Hilary Term.

#### **16.6 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 UKAEA and the National Physics Laboratory (NPL).

### **17 Libraries**

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

There are three types of library provision available to undergraduates:

- **College Libraries**, which provide books for members of the College. Most Colleges that accept undergraduates in Materials have good collections of undergraduate textbooks in the subject. If you find that a book you require is not stocked by your College library, please consult your College Tutor or College Librarian. Often the book will then be added to the library.
- **The Radcliffe Science Library (RSL)**, which is a UK Copyright Library, with a large collection of books and journals, and extensive reading rooms. The RSL is both a lending and reference library. You need a University Card to be admitted to the RSL. Students register through their Colleges to use the RSL.
- **The Departmental Library**, where we aim to stock all books recommended for individual lecture courses in Materials. We also have many other textbooks, monographs, conference proceedings, key materials journals and some electronic publications. A lending service is offered to students. Further information about the library can be found on the Departmental website, at [www.materials.ox.ac.uk/library](http://www.materials.ox.ac.uk/library).  
**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.

## 18 Computing

### 18.1 Facilities available

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

Students are expected to access the internet frequently for communicating by email and for searching for information on the web. There is lots of useful information on the Department's website at: [www.materials.ox.ac.uk](http://www.materials.ox.ac.uk) and of course on Canvas <https://canvas.ox.ac.uk>.

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 teaching of computing is part of the undergraduate courses. An introduction is available in the first year. Some practicals have a computing element either in carrying out the experiment or in processing the results – and of course in submitting your reports.

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

## **18.2 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 E](#). 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 IT Manager and prompt action will be taken to resolve the problem.

## **18.3 Email**

All undergraduates are provided with an email address by IT Services 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).

## 18.4 Social Media

The Department recognises the benefits and opportunities that a social media presence offers for students (and staff) and realises that social media is a part of everyday life for most students. Freedom of expression and academic freedom are central beliefs of the University and it encourages its staff and students to exchange ideas and participate in discourse and debate, including in a social media context. The University is mindful that the use of social media can carry risks and IT Services have produced some helpful guidance on etiquette (see [www.ox.ac.uk/students/life/it/socialmedia](http://www.ox.ac.uk/students/life/it/socialmedia)). Students should also familiarise themselves with the [Code of Discipline under Statute XI](#) as breaching this could result in disciplinary action by the Proctors.

## 18.5 Programming and Computation

The Department understands that some students will have a particular desire to develop and enhance programming and computational skills during their time here. There are many opportunities available throughout the University for personal development such as via the IT Learning Centre's [classroom-based and online courses](#). An additional resource that sits alongside this is LinkedIn Learning, which provides a vast online library of instructional videos covering a good number of technical topics, particularly programming and web development. You have access to this using your Oxford credentials - login and give it a try!  
<https://skills.it.ox.ac.uk/linkedin-learning>

Within the course programme, students will receive training in MATLAB, which is a high-performance language for technical computing. It is a tool that provides a graphical interface for numerical and symbolic computation along with a number of data analysis, simulation and acquisition functions. Following the introductory practical in the first year, you will come across problems requiring the use of MATLAB in tutorial sheets, as well as further use in lab practicals. There are also dedicated classes and associated project work for Computing in Materials Science (CMS), through which you will learn the computational skills you will require to address problems you encounter in your studies and, in addition, you will gain an understanding of the role computers play in Materials Science – ranging from modelling, data analysis to visualisation. Whilst the vehicle for this teaching will be MATLAB, many of the principles will be general, and you will come to appreciate the relation between MATLAB and other computational approaches (C, Fortran, python etc).

## 19 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.



## **20 Examinations (for students embarking on the “Prelims” programme in October 2023)**

Your attention is drawn to the statement on plagiarism in [Appendix B](#).

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

During your four-year course, there are 3 sets of examinations. The Preliminary Examinations ('Prelims') are at the end of the first year and the Final Examinations are in two parts: Part I at the end of the third year and Part II at the end of the fourth year. You must pass Prelims before you can start the second year, but the result does not count towards your degree classification. Candidates who get particularly good results in Prelims are awarded a distinction. Normally, you must achieve an overall mark at Part I of at least 50% if you are to progress to Part II.

The degree classification is based on the combined results of Part I and Part II. The Examination Conventions for Prelims 2022-23 can be found in [Appendix F](#). The Examination Conventions for 2023-24 will be based on these documents but may not be identical. They will be issued to you in Hilary Term and provide the framework under which the examiners or moderators act.

Examination conventions are the formal record of the specific assessment standards for the course or courses to which they apply. They set out how your examined work will be marked and how the resulting marks will be used to arrive at a final result. They include information on: marking scales, marking and classification criteria, scaling of marks, progression, resits, use of viva voce examinations, penalties for late submission, and penalties for over-length of work. The last reports of the examiners can be found via Canvas (<https://canvas.ox.ac.uk/courses/227406>).

Currently all examinations for the Materials Science programme are taken as in-person examinations. Practical information and support for sitting in-person exams is provided on the Oxford students website ([www.ox.ac.uk/students/academic/exams/guidance](http://www.ox.ac.uk/students/academic/exams/guidance)).

## 20.1 Preliminary Examination

The Prelims examination comprises four written examination papers, and continuously assessed work for the first year practicals, crystallography classes and project work in Computing for Materials Science (CMS). The continually assessed work counts as the equivalent of a fifth paper and the five papers are weighted equally. The four written examination papers are Materials Science 1-3 and Mathematics for Materials Science.

	<b>Component</b>	<b>Mark</b>
<b>Prelims</b>	Materials Science 1	100
	Materials Science 2	100
	Materials Science 3	100
	Mathematics for Materials Science	100
	Practical Classes	50
	Crystallography	25
	Computing for Materials Science	25
<b>Overall Total</b>		<b>500</b>

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

The pass mark is normally 40%, with the possibility that failure in one of the four written papers by a small margin can be compensated if the overall performance merits it. Failure of the fifth paper (continually assessed coursework) normally will constitute failure of the Prelims examination. Materials coursework normally cannot be retaken. Exceptionally a candidate who has failed the coursework may be permitted jointly by the Moderators and the candidate's college to retake the entire academic year. Coursework must be passed to a satisfactory level (see [Section 13](#)).

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

You will be able to access your own results via the Student Self Service portal approximately 2 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) together with your ranking position. You will need your Single Sign-On ID and password to access Student Self Service.

## **20.2 Calculators and mathematical definitions & formulae in examinations**

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

CASIO fx-83

CASIO fx-85

SHARP EL-531

Candidates are not permitted calculators in the Mathematics for Materials Science examination. A booklet providing some mathematical definitions and formulae is provided for the Mathematics in Materials Science examination and is available for review in advance via Canvas (<https://canvas.ox.ac.uk/courses/227406>).

## **20.3 Examiners**

The examiners for Prelims (known as Moderators) are appointed on an annual basis and are distinct from those that examine Parts I and II in the Final Honours School. The Moderators in the Department of Materials for 20231-24 are as follows:

Professor Angus Kirkland, Dr Enzo Liotti, Professor James Marrow (Chair) and Professor Angus Wilkinson.

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 they deem the matter of importance, contact the Proctors. The Proctors in turn communicate with the Chair 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.

## **20.4 Entry for University examinations and examination dates**

Instructions for entering for University examinations and examination timetables can be found via [www.ox.ac.uk/students/academic/exams](http://www.ox.ac.uk/students/academic/exams).

## 20.5 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 University provides some helpful advice on the website at <https://www.ox.ac.uk/students/academic/exams/wellbeing>. Mock examinations are run normally in week 3 of Trinity Term down at Exam Schools to help manage your expectations about what will happen during your public examinations, and reduce some of the anxiety by ensuring you are familiar with arrangements. You are strongly encouraged to sign-up and attend one of these sessions. Your College Tutor will be able to offer advice specifically suited to you based on their knowledge of your strengths and weaknesses. Past exam papers are available online through OXAM at <http://oxam.ox.ac.uk/> (you will need to sign in using your Single Sign-On).

## 20.6 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. Collections questions are often drawn from past Prelims exam papers and your own reflection on your performance in 'Collections' together with the feedback from your tutor on this performance should help you to understand what is required for a first-class answer to an exam question.

## 21 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**

**Armourers and Brasiers' Company Prize** for best 2nd Year Materials Selection poster - **£100 per student** (students work in groups)

**Armourers and Brasiers' Company Prize** for best Year 2 Business Plan Team Presentation - **£50 per student** (students work in groups)

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

**Armourers' and Brasiers' Company / TATA Steel Prize** for the best Team Design Project - **£150 per student** (students work in groups)

**Gibbs Prize** for best overall performance in MS Part I - **£800**

**Worshipful Company of Ironmongers Prize** for best MS Part II presentation - **£450 and a medal**

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

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

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

## **22 Careers and Vacation jobs**

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

It is a very good idea to work in industry during one or more long vacations, and if possible to obtain industrial sponsorship whilst at University. Employers are becoming increasingly 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 industrial placements, research projects 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. Prof. James Marrow gives a briefing early in Hilary Term for all students who are interested in vacation placements and summer research projects. Normally, several research project opportunities are available overseas, including China and the USA. 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. . Further information about various opportunities can be found at [www.ox.ac.uk/students/life/experience](http://www.ox.ac.uk/students/life/experience).

## 23 If you need help

### 23.1 Asking for assistance

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

There are perhaps three main aspects to this:

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

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

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

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.

There is information available that may be of help on the Oxford Wellbeing site at <https://www.ox.ac.uk/wellbeingatoxford>. Further details about support available through the University may be found on the Oxford Students website at [www.ox.ac.uk/students/welfare/](http://www.ox.ac.uk/students/welfare/). In addition, there are several organisations that exist to help you, including:

- The University Counselling Service, 3 Worcester Street (appointments may be made by telephoning 70300 from within the university or 270300 from outside, or by email: [counselling@admin.ox.ac.uk](mailto:counselling@admin.ox.ac.uk)).
- Nightline - a student-run counselling service (<https://oxford.nightline.ac.uk/>), Oxford 270270. You can reach Nightline via phone, instant message, or Skype, term time, 8 p.m. to 8 a.m.).
- Student Advice & Wellbeing Service, a confidential service offered by the Oxford University Student Union - <https://www.oxfordsu.org/advice-wellbeing>. Contact [advice@oxfordsu.ox.ac.uk](mailto:advice@oxfordsu.ox.ac.uk) for confidential advice on a wide range of issues such as academic appeals, money management, accommodation problems, disciplinary matters, harassment and many other aspects of student wellbeing and healthcare.
- Turning Point offer a range of confidential health and wellbeing services encompassing mental health concerns to drug and/or alcohol issues. See <https://www.turning-point.co.uk/services/oxfordshire#about> for details of the Oxford hubs; or call on 01865 261690 between 9am and 5pm on weekdays to speak to one of the team.
- The Samaritans (email [jo@samaritans.org](mailto:jo@samaritans.org) or call 116 123 or 0330 094 5717 for the Oxford branch), who can provide counselling, as well as an emergency service for the suicidal and despairing. For further details, refer to the Samaritans Oxford website at [www.samaritans.org/branches/oxford-samaritans](http://www.samaritans.org/branches/oxford-samaritans).
- Papyrus (<https://www.papyrus-uk.org/>) is a UK charity dedicated to the prevention of suicide, and promoting positive mental health and emotional wellbeing in young people. Contact [pat@papyrus-uk.org](mailto:pat@papyrus-uk.org) or telephone 0800 068 4141 / text 07860 039967
- The Libra Project (Oxford 749800) 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 (email [disability@admin.ox.ac.uk](mailto:disability@admin.ox.ac.uk) or call 89830 from within the university or 289830 from outside; <https://edu.admin.ox.ac.uk/disability-support>).
- The Sexual Harassment and Violence Support Service - offers free confidential support and advice to all students. This service is delivered by Student Welfare and Support Services (SWSS) and was set up in collaboration with Oxfordshire Sexual Abuse & Rape Crisis Centre, and works closely with the University's wider welfare community. Contact [supportservice@admin.ox.ac.uk](mailto:supportservice@admin.ox.ac.uk) for confidential advice. For further information, see the [Oxford Against Sexual Violence](#) page on the University website.

## 23.2 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. Alternatively – or as well – contact the Education Manager, Ms Philippa Moss, who is one of the Disability Contacts within the Department and is well-placed to help ensure your requirements for support on the course are met. Mr Tom Heath is another Disability Contact, working within the Education Support Team.

## 24 Complaints and Appeals

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

## 25 Policies and Regulations

The University has a wide range of policies and regulations that apply to students. These are easily accessible through the A-Z of University regulations, codes of conduct and policies available on the Oxford Students website [www.ox.ac.uk/students/academic/regulations/a-z](http://www.ox.ac.uk/students/academic/regulations/a-z).



## **Appendix A      The University's Complaints and Appeals Procedures**

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

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

When such a need arises, 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) is often the simplest way to achieve a satisfactory resolution.

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

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

### **Complaints**

If your concern or complaint relates to teaching or other provision made by the faculty/department, then you should raise it with the Director of Undergraduate Studies, Professor James Marrow. Complaints about departmental facilities should be made to the Head of Admin and Finance, Ms Fernanda Haswell-Martin. If you feel unable to approach one of those individuals, you may contact the Head of Department, Professor Hazel Assender. The officer concerned will attempt to resolve your concern/complaint informally.

If you are dissatisfied with the outcome, then you may take your concern further by making a formal complaint to the Proctors under the University Student Complaints Procedure ([www.ox.ac.uk/students/academic/complaints](http://www.ox.ac.uk/students/academic/complaints) ).

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

## **Academic appeals**

An academic appeal is an appeal against the decision of an academic body (e.g. boards of examiners, transfer and confirmation decisions, etc.), on grounds such as procedural error or evidence of bias. There is no right of appeal against academic judgement.

If you have any concerns about your assessment process or outcome it is advisable to discuss these first informally with your subject or college tutor, Senior Tutor, course director, director of studies, supervisor or college or departmental administrator as appropriate. They will be able to explain the assessment process that was undertaken and may be able to address your concerns. Queries must not be raised directly with the examiners. If you still have concerns you can make a formal appeal to the Proctors who will consider appeals under the University Academic Appeals Procedure ([www.ox.ac.uk/students/academic/complaints](http://www.ox.ac.uk/students/academic/complaints)).

## Appendix B Plagiarism

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

In their [Disciplinary Regulations for University Examinations](#), 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. Examples include unauthorised use of artificial intelligence.**

**4 Candidates shall submit their own work for examination. No candidate shall plagiarise by presenting work from another source as their own, or by incorporating work or ideas from another source into their own work without full acknowledgement. Examples of this practice include: verbatim quotation, cutting and pasting from the internet, and paraphrasing without clear acknowledgement; collusion; misleading citation; failure to acknowledge assistance; and unacknowledged use of material written by professional agencies or other persons, or material generated by artificial intelligence.”**

All undergraduate and graduate students must carefully read regulations 3 and 4 in the Proctors' Disciplinary Regulations for University Examinations. 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. This includes the use of artificial intelligence. Failure to acknowledge your sources by clear citation and referencing constitutes plagiarism. The University reserves the right to use software applications to screen any individual's submitted work for matches either to published sources or to other submitted work. Any matches might indicate either plagiarism or collusion. Although the use of electronic resources by students in their academic work is encouraged, you should remember that the regulations on plagiarism apply to on-line material and other digital material just as much as to printed material.

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

(The University Student Handbook Section 7.7; available at [www.ox.ac.uk/students/academic/student-handbook](http://www.ox.ac.uk/students/academic/student-handbook))

The University [definition of plagiarism](#) is:

“Presenting work or ideas from another source as your own, with or without consent of the original author, by incorporating it into your work without full acknowledgement. All published and unpublished material, whether in manuscript, printed or electronic form, is covered under this definition, as is the use of material generated wholly or in part through use of artificial intelligence (save when use of AI for assessment has received prior authorisation e.g. as a reasonable adjustment for a student’s disability). Plagiarism can also include re-using your own work without citation. Under the regulations for examinations, intentional or reckless plagiarism is a disciplinary offence.”

**Useful information on plagiarism** can be found on the Study skills and training pages at [www.ox.ac.uk/students/academic/guidance/skills](http://www.ox.ac.uk/students/academic/guidance/skills)

You are strongly advised to complete the [Online Plagiarism Course](#)  
(You will be required to complete this before you start your Part II Project.)

### **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 & Tsakiroopoulos 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 Tsakiroopoulos studied the aging of metal matrix composites based on Al-4wt%Cu containing 20wt% SiC particles [Stone & Tsakiroopoulos, 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 Tsakiroopoulos studied the aging of metal matrix composites based on Al-4wt%Cu containing 20wt% SiC particles [Stone & Tsakiroopoulos, 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 & Tsakiroopoulos, 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 & Tsakiroopoulos 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 & Tsakiroopoulos (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 & Tsakiroopoulos. 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. Where material available on the internet is taken from prior published work you must always reference the original source(s) and, if appropriate, the internet resource too. A useful style guide can be found at [authorservices.wiley.com](http://authorservices.wiley.com). Your tutor will be able to provide further guidance.

**Other useful information on plagiarism** can be found on the Study skills and training pages at [www.ox.ac.uk/students/academic/guidance/skills](http://www.ox.ac.uk/students/academic/guidance/skills)

## **Appendix C    Learning Development (Skills and Outcomes)**

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

### **Intellectual Skills**

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

### **Teaching/learning methods and strategies**

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

### **Assessment**

Skills 1-6 are summatively assessed through written examinations, written coursework assignments and project work. These skills are also assessed formatively through tutorials, which provide regular feedback on the student's progress. Skills 6-9 are assessed through practicals, project reports and public presentations. For students following the BA in Materials Science programme, 'project work' includes the extended essay.

## **Practical Skills**

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

## **Teaching/learning methods and strategies**

These skills are developed through (i) the practical courses, undertaken in the 1<sup>st</sup> and 2<sup>nd</sup> year of the programme in the Departments' teaching laboratories, (ii) observations made during industrial visits, (iii) open-ended mini-projects in the 3<sup>rd</sup> year, and (iv) the full-time, eight-month final year research project.

The teaching laboratory has an academic supervisor (The Practical Courses Organiser) and a Teaching Lab Technician, as well as a team of demonstrators and teaching assistants to guide the students through their practicals. Practical are undertaken as a cohort, normally in groups of three, and are scheduled throughout the academic year in order to support the lecture courses.

The students attend two industrial talks during the 2<sup>nd</sup> year, and undertake four industrial visits during the 2<sup>nd</sup> and 3<sup>rd</sup> years of the programme and, in the 3<sup>rd</sup> year of the programme, a team design project (TDP), an introduction to modelling of materials module and either a materials characterisation or atomistic modelling module. The TDP teams comprise 5-8 students and the mini-projects in the characterisation and modelling modules take the form of individually written-up open-ended practical or computational modelling work.

The 4<sup>th</sup> year consists of a full-time independent research project, undertaken in the University, overseas or in industry.

## **Assessment**

The teaching laboratory practicals are continually assessed and contribute to both the Preliminary examination and the Part I examination. Three of eight Prelims practicals are written up by each student as 'Acta Materialia' style papers which are marked by the member of academic staff in charge of the practical. The first of these is marked formatively only.



Three of twelve Part I practicals are written up as 'Acta Materialia' style papers which are summatively marked by the member of academic staff in charge of the practical and one is 'written up' in the form of an A0 poster. The three co-authors of the best poster in a cohort receive a prize and the student groups provide peer-feedback to each other on the strengths & weaknesses of their posters. In addition, the member of staff in charge of the practical provides written or face-to-face formative feedback on the 'Acta' style practical reports. Summative marks and formative feedback are also given for the student's use of their laboratory notebook for all twenty practicals.

The industrial visit and industrial talk reports are also continually assessed and contribute towards the Part I examination.

The 3<sup>rd</sup> year team design project is assessed both by written and oral presentations. The 3<sup>rd</sup> year introduction to modelling and characterisation/modelling mini-projects are assessed by means of a written report. All 3<sup>rd</sup> year projects contribute towards the Part I examination.

Marks for the final year project (Part II) are awarded for the standard of the project based on the evidence of the thesis (max 12,000 words) and discussions in a *viva voce* examination.

## Appendix D    Intended Learning Outcomes

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

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

Related teaching/learning methods and strategies

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

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

## Assessment

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

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

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

During the course, formative assessments are carried out within the college and departmental contexts through tutorials, classes and termly examinations (collections). These enable regular feedback and comment on the individual student's needs thus identifying any possible problem areas as well as highlighting areas of strength. Feedback on practical notebook entries is provided soon after each practical is completed; further feedback is provided by way of a written commentary on the scientific reports the students submit for 3 of the 8 practicals, thus providing both formative and summative assessment.

## **Appendix E    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, 7 August 2015 (*Gazette, Vol. 145, p. 694-696, 23 July 2015*), 5 August 2016 (*Gazette, Vol. 146, p. 706-708, 21 July 2016*), 1 October 2016 (*Gazette, Vol. 146, p. 619, 9 June 2016*) and 29 November 2016 (*Gazette, Vol. 147, p. 127, 10 November 2016*) and 9 August 2019 (*Gazette, Vol. 149, p. 632, 25 July 2019*), and 1 August 2023 (*Gazette, Vol. 153, p. 336, 4 May 2023*)

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 or otherwise in the context of legal proceedings or the taking of legal advice, in accordance with such procedures as may be approved by Council for this purpose.

- (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) Individuals 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 individual. 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 chair of his or her faculty board (or, if the user is the head of a department or the chair of a faculty board, from the head of his or her division);
  - (3) with the intention of drawing people into terrorism (contrary to the University's statutory duty under Prevent);

- (4) the creation, transmission, or display of material which is designed or likely to harass another individual in breach of the University's Policy and Procedure on Harassment;
- (5) the creation or transmission of defamatory material about any individual or organisation;
- (6) the sending of any e-mail that does not correctly identify the sender of that e-mail or any message appearing to originate from another individual, or otherwise attempting to impersonate another individual;
- (7) the sending of any message that attempts to disguise the identity of the computer from which it was sent;
- (8) 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;
- (9) 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;
- (10) 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;
- (11) 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;
- (12) 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;
  - (13) 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.
  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 individual or body entitled to give it.
  10. No user may redirect email automatically and indiscriminately from a University email account (@ox.ac.uk) to an external email account. An exception to this rule may only be granted in exceptional circumstances and by application to the Chief Information Officer.
  11.
    - (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 individual 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.
  12. Any individual 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 Information Security Policy and Data Protection Policy.
  13. 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.
  14. 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 in adherence with the University's Information Security Policy.
  - (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.
  - (c) The University may conduct automated security scans targeting any device connected to the University network without notification.
- (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 or other network-accessible media 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 or other media must endeavour to comply with guidelines published by IT Services or other relevant authorities.
  - (b) It is not permitted to offer commercial services through systems connected to the university network, or to provide other IT 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 individual 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 Chief Information Officer.
- (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.
- 15. (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 48 or 49 of Statute XI pending a determination, or may be made subject to such conditions as the Proctors or the Registrar or other decision maker (as the case may be) shall think proper in the circumstances.

### **Examining Users' Data**

- 16. 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.

17. (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.
18. (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 F Examination Conventions 2022/23**

## **Preliminary Examination in Materials Science**

### **1. INTRODUCTION**

Examination conventions are the formal record of the specific assessment standards for the course or courses to which they apply. They set out how examined work will be marked and how the resulting marks will be used to arrive at a final result progression decision and/or classification of an award.

These conventions apply to the Preliminary Examination in Materials Science for the academic year 2022/23. The Department of Materials' Academic (Undergraduate) Committee (DMAC) is responsible for approving the Conventions and considers these annually, in consultation with the examiners. 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 Examination Regulations may be found at: [www.admin.ox.ac.uk/examregs](http://www.admin.ox.ac.uk/examregs).

The paragraphs below indicate the conventions to which the examiners usually adhere, subject to the guidance of other bodies such as the Academic Committee in the Department, the Mathematical, Physical and Life Sciences Division, the Education Committee of the University and the Proctors who may offer advice or make recommendations to examiners.

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 act on behalf of the University and in this role are independent of the Department, the colleges and of those who teach the MS M.Eng. programme.

### **2. RUBRICS AND STRUCTURE FOR INDIVIDUAL PAPERS**

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

#### *Written Paper Format*

The Materials Science papers 1 - 3 comprise eight questions from which candidates must attempt five. Each question is worth 20 marks. The maximum marks available for each of these papers are 100. There is no strict rule about how many questions are set on each lecture course in the Materials

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\* for the 2022-23 examinations the Nominating Committee comprised Prof Assender, Prof Marrow & Prof. Speller.

Science papers 1 - 3. As a result, (i) it should not be assumed that a question will be set on every lecture course and (ii) some questions may require knowledge from across the entire year.

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

Examiners proofread the final 'camera-ready' pdf version of each examination paper. Great care is taken to minimise the occurrence of errors or ambiguities. Despite this care, on occasion an error does remain in a paper presented to candidates: if a candidate thinks there is an error or mistake in the paper, then they must state what they believe the error to be at the start of their answer to that question and if necessary, state their understanding of the question.

### *Coursework paper*

The Coursework Paper comprises three examined elements of coursework: (i) for the Practical Course two full reports as specified in the MS Prelims Handbook, together with assessment of the student's laboratory notebook entries for each of the eight specified practicals also as detailed in the MS Prelims Handbook (normally these reports and notebook entries have been marked already as the practical course progresses); (ii) a set of reports for crystallography (completed under the class schedule); and (iii) project work for Computing in Materials Science.

For formal submission of the practical coursework, the Examination Regulations stipulate that candidates are required to submit the Materials Practical Class reports and laboratory notebooks to the Chair of Moderators by no later than 10 am on Friday of the sixth week of Trinity full Term. Further information on this is provided in the MS Prelims Handbook.

The only types of calculators that may be used in examinations are from the following series:

CASIO fx-83

CASIO fx-85

SHARP EL-531

Candidates are not permitted calculators in the Mathematics for Materials Science examination. A basic periodic table is provided in all Preliminary examinations and some Maths definitions and formulae are provided for the Maths examination. (These are available on Canvas).

## **3. MARKING CONVENTIONS**

### ***3.1 University scale for standardised expression of agreed final marks***

Agreed final marks for individual papers will be expressed using the following scale: 0-100

### ***3.2 Qualitative criteria for different types of assessment***

*Qualitative descriptors, based on those used across the Mathematical, Physical and Life Sciences Division, are detailed below:*

70-100	The candidate shows excellent problem-solving skills and excellent knowledge of the material over a wide range of topics, and is able to use that knowledge innovatively and/or in unfamiliar contexts. The higher the mark in this band the greater will be the extent to which these criteria are fulfilled; for marks in the 90-100 range there will be no more than a very small fraction, circa 5-10%, of the piece of work being examined that does not fully meet all of the criteria that are applicable to the type of work under consideration. The 'piece of work' might be, for example, an individual practical report, a question on a written paper, or a whole written paper.
60-69	The candidate shows good or very good problem-solving skills, and good or very good knowledge of much of the material over a wide range of topics.
50-59	The candidate shows basic problem-solving skills and adequate knowledge of most of the material.
40-49	The candidate shows reasonable understanding of at least part of the basic material and some problem solving skills. Although there may be a few good answers, the majority of answers will contain errors in calculations and/or show incomplete understanding of the topics.
30-39	The candidate shows some limited grasp of basic material over a restricted range of topics, but with large gaps in understanding. There need not be any good quality answers, but there will be indications of some competence.
0-29	The candidate shows inadequate grasp of the basic material. The work is likely to show major misunderstanding and confusion, and/or inaccurate calculations; the answers to most of the questions attempted are likely to be fragmentary

### **3.3 Verification and reconciliation of marks**

During the marking process the scripts of all written papers remain anonymous to the markers. Each written paper is marked by a single moderator. Those papers identified by the moderator as having marks close to the boundaries of pass/fail and distinction/pass will be fully marked by a second moderator, who has sight of the first moderator's marks, but arrives at a formal independent mark. If the difference in these marks is small (~10% of the total available for the question, 2-3 marks for most questions), the two marks are averaged, with no rounding applied. Otherwise the moderators identify the discrepancy and read the answer again, either in whole or in part, to reconcile the differences. If after this process the moderators still cannot agree, they seek the help of the Chair, or another moderator as appropriate, to adjudicate. For all other papers, the second moderator checks that the overall mark for each question is consistent with one of three sets of descriptor(s), namely those for <40, 40 to 69, or  $\geq 70$  as appropriate. An integer total mark for each paper is awarded, where necessary rounding up to achieve this.

In the event that a possible error in the paper has been identified, the first moderator will consider the validity of the error and assess the impact of the error on candidates' choice of questions and on the answers written by those who attempted a question that contained an error, and will take this impact into account when marking the paper and prior to agreeing a final mark for all candidates.

First year practicals are assessed on a continual basis by the senior demonstrators. The work for the six crystallography classes is assessed by the Crystallography Class Organiser(s), the first of these classes being assessed formatively only. The project work for the Computing in Materials Science is assessed by the CMS senior demonstrator. Satisfactory performance in the practical work, in the crystallography classes, and in the CMS project work is defined in the MS Prelims Handbook. The Practical Courses Organiser reviews the marks for the practicals before they are considered by the moderators, drawing to their attention (i) any anomalously low or high average marks for particular practicals and (ii) any factors that impacted on the practical course, such as breakdown of a critical piece of equipment. The moderators review the practical, crystallography and project marks.

### **3.4 Scaling**

Adjustment to marks, known as scaling, normally is not necessary for prelims.

### **3.5 Short-weight convention and departure from rubric**

The rubric on each paper indicates a prescribed number of answers required (e.g. "candidates are required to submit answers to no more than five questions"). Candidates will be asked to indicate on the cover sheet which questions, up to the prescribed number, they are submitting for marking. Excepting section A of the Maths paper, for which all questions are compulsory, if this information is not provided then the examiners will mark the questions in numerical order by question number.

If the candidate lists more than the prescribed number of questions then questions will be marked in the order listed until the prescribed number has been reached. The examiners will NOT mark questions in excess of the prescribed number. If fewer questions than the prescribed number are attempted, (i)

each missing attempt will be assigned a mark of zero, (ii) for those questions that are attempted **no** marks beyond the maximum per question indicated under section 2 above will be awarded and (iii) the mark for the paper will still be calculated out of 100 for MS1, MS2 & MS3 and out of 180 for the Maths for Materials Science paper.

### **3.6 Late- or non-submission of elements of coursework**

**Including action to be taken if submission has been or will be affected by illness or other urgent cause, and circumstances in which academic penalties may be applied.**

The Examination Regulations prescribe specific dates and times for submission of the required elements of coursework to the Examiners (1. A set of five reports of crystallography coursework as specified in the MS Prelims Handbook (normally each individual report within the set has been marked already as the crystallography classes progress - penalties for late submission of an individual crystallography report are prescribed in the MS Prelims Handbook and are applied prior to any additional penalties incurred under the provision of the present Conventions.); 2. Two full reports of practical work as specified in the MS Prelims Handbook plus the student's laboratory notebook entries for the Prelims Practical Course (normally each individual report and laboratory notebook entries for each of the specified practical classes have been marked already as the Practical Course progresses - penalties for late submission of an individual practical report are prescribed in the MS Prelims Handbook and are applied prior to any additional penalties incurred under the provision of the present Conventions); 3. Project work for Computing in Materials Science as specified in the MS Prelims Handbook.) Rules governing late submission of these elements of coursework and any consequent penalties are set out in the 'Late submission and non-submission of a thesis or other written exercise' clause of the 'Regulations for the Conduct of University Examinations' section of the Examination Regulations (Part 14, 'Late Submission, Non-submission, Non-appearance and Withdrawal from Examinations' in the 2022/23 Regulations). A candidate who fails to submit an element of coursework by a prescribed date and time will be notified of this by means of an email sent on behalf of the Chair of Moderators.

Under the provisions permitted by the regulation, late submission of an element of coursework, as defined above, for Materials Science examinations will normally result in one of the following:

- a) Under paras 14.3 to 14.6. In a case where illness or other urgent cause has prevented or will prevent a candidate from submitting an element of coursework at the prescribed date, time and place the candidate may, through their college, request the Proctors to accept an application to this effect. In such circumstances the candidate is strongly advised to (i) carefully read paras 14.3 to 14.6 of the aforesaid Part 14, where the mandatory contents of such an application to the Proctors are outlined and the several possible actions open to the Proctors are set out, and (ii) both seek the guidance of their college Senior Tutor and inform at least one of their college Materials Tutorial Fellows. Some, but not all, of the actions open to the Proctors may result in the work being assessed as though it had been submitted on time (and hence with no late submission penalty applied).



- b) Under para 14.7. In the case of submission on or after the prescribed date for the submission and within 14 calendar days of notification of non-submission and without prior permission from the Proctors: subject to leave from the Proctors to impose an academic penalty, for the first day or part of the first day that the work is late a penalty of a reduction in the mark for the coursework in question of up to 10% of the maximum mark available for the piece of work and for each subsequent day or part of a day that the work is late a further penalty of up to 5% of the maximum mark available for the piece of work; the exact penalty to be set by the Moderators with due consideration given to the circumstances as advised by the Proctors. The reduction may not take the mark below 40%.
- c) Under Para 14.3(5). In the case of failure to submit within 14 calendar days of the notification of non-submission and without prior permission from the Proctors: a mark of zero shall be recorded for the element of coursework and normally the candidate will have failed that element. As stated in the Special Regulations for the Preliminary Examination in Materials Science, failure of the coursework will normally constitute failure of the Preliminary Examination.

If a candidate is unable to submit by the required date and time for any reason other than for acute illness their college may make an application to the Proctors for permission for late submission. An extended deadline may be approved, or late submission excused where there are grounds of 'illness or other urgent cause'. Applications may be made in advance of a deadline, or up to 14 days from when the candidate is notified that they have not submitted. In all cases, the applications will be considered on the basis of the evidence provided to support the additional time sought.

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

Penalties for late submission of individual practical reports and individual crystallography class reports are set out in the 2022-23 MS Prelims Handbook and are separate to the provisions described above.

The consequences of failure to submit individual practical reports or individual crystallography reports are set out in the MS Prelims Handbook (sections 10.6 and 11 of the 2022/23 version) and are separate to the provisions described above. In short, normally this will be deemed to be a failure to complete satisfactorily the relevant element of Materials Coursework and will therefore constitute failure of the Preliminary Examination as a whole, as stated in the Special Regulations for the Preliminary Examination in Materials Science.

Where an individual practical report or individual crystallography report is not submitted or is proffered so late that it would be impractical to accept it for assessment the Proctors may, exceptionally, under their general authority, and after (i) making due enquiries into the circumstances and (ii) consultation with the Chair of the Moderators, permit the candidate to remain in the examination. In this case for the individual piece of coursework in question (i) the Moderators will award a mark of zero and (ii) dispensation will be granted from the Regulation that requires submission/delivery of every individual piece of assessed coursework if the candidate is not to fail the examination as a whole.

### ***3.7 Penalties for over-length work and departure from approved titles or subject-matter***

This is not applicable to the Prelims examination.

### **3.8 Penalties for poor academic practice**

Substantial guidance is available to candidates on what constitutes plagiarism and how to avoid committing plagiarism (see Appendix B of the Materials Prelims Handbook and <https://www.ox.ac.uk/students/academic/guidance/skills/plagiarism>)

If plagiarism is suspected, the evidence will be considered by the Chair of the Moderators (or a deputy). They will make one of three decisions (<https://academic.admin.ox.ac.uk/examiners>):

- (a) No evidence, or insufficient evidence, of plagiarism – no case to answer.
- (b) Evidence suggestive of more than a limited amount of low-level plagiarism – referred to the Proctors for investigation and possible disciplinary action.
- (c) Evidence proving beyond reasonable doubt that a limited amount of low-level plagiarism has taken place – in this case the Board of Moderators will consider the case and if they endorse the Chair's judgement that a limited amount of low-level plagiarism has taken place will select one of two actions:
  - (i) Impose a penalty of 10% of the maximum mark available for the piece of work in question and a warning letter to be issued to the candidate explaining the offence and that the present incident will be taken into account should there be a further incidence of plagiarism.  
For a student who remains on course in addition there will be a requirement to demonstrate to their college Materials Tutorial Fellow that in the period between the present offence and the next submission of work for summative assessment they have followed to completion the University's on-line course on plagiarism (<https://www.ox.ac.uk/students/academic/guidance/skills/plagiarism>).
  - (ii) No penalty, but a warning letter to be issued to the candidate explaining the offence, indicating that on this occasion it has been treated as a formative learning experience, and that the present incident will be taken into account should there be a further incidence of plagiarism. For a student who remains on course in addition there will be a requirement to demonstrate to their college Materials Tutorial Fellow that in the period between the present offence and the next submission of work for summative assessment they have followed to completion the University's on-line course on plagiarism (<https://www.ox.ac.uk/students/academic/guidance/skills/plagiarism>).

### **3.9 Penalties for non-attendance**

Unless the Proctors have accepted a submission requesting absence from an examination, as detailed in [Section 14 of the Regulations](#), failure to attend an examination will result in the failure of the assessment. The mark for any resit of the assessment will be capped at a pass.

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Unless the Proctors have accepted a submission requesting absence from an examination, as detailed in [Section 14 of the Regulations](#), failure to attend an examination will result in the failure of the assessment. The mark for any resit of the assessment will be capped at a pass.

## 4. PROGRESSION RULES AND CLASSIFICATION CONVENTIONS

### 4.1 Qualitative descriptors

Qualitative descriptors, based on those used across the Mathematical, Physical and Life Sciences Division, are given below:

70-100	The candidate shows excellent problem-solving skills and excellent knowledge of the material over a wide range of topics, and is able to use that knowledge innovatively and/or in unfamiliar contexts.
60-69	The candidate shows good or very good problem-solving skills, and good or very good knowledge of much of the material over a wide range of topics.
50-59	The candidate shows basic problem-solving skills and adequate knowledge of most of the material.
40-49	The candidate shows reasonable understanding of at least part of the basic material and some problem solving skills. Although there may be a few good answers, the majority of answers will contain errors in calculations and/or show incomplete understanding of the topics.
30-39	The candidate shows some limited grasp of basic material over a restricted range of topics, but with large gaps in understanding. There need not be any good quality answers, but there will be indications of some competence.
0-29	The candidate shows inadequate grasp of the basic material. The work is likely to show major misunderstanding and confusion, and/or inaccurate calculations; the answers to most of the questions attempted are likely to be fragmentary

### 4.2 Final outcome rules (*Distinction, Pass, Fail*)

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.

### 4.3 Progression rules

To pass the examination and progress to Part I, candidates are required to satisfy the moderators in all five papers, either at a single examination or at two examinations in accordance with the re-sit arrangements detailed below.

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  $\{36 + 38 + 2 \times 40 + 3 \times (40 - 36) + 3 \times (40 - 38)\}$  for both failures to be compensated

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

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.

#### **4.4 Use of Vivas**

There are no vivas in Prelims.

### **5. RESITS**

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

Candidates who pass the coursework paper and fail more than two written papers will be asked to resit all four 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 prohibited from progressing to Part I. Exceptionally, a college may allow a student to suspend studies 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.

The mark for any resit required due to non-attendance will be capped at a pass.

### **6. MITIGATING CIRCUMSTANCES NOTICES TO EXAMINERS (MCE)**

[For **late- or non-submission** of elements of coursework, including cases due to illness or other urgent cause, see section 3.6 of the present Conventions.]

A candidate's final outcome will first be considered using the classification rules/final outcome rules as described above in section 4. The exam board will then consider any further information they have on individual circumstances.

There are two applicable sections of the University's *Examination Regulations*.

- **Part 13 Mitigating Circumstances: Notices to Examiners** relates to unforeseen circumstances which may have an impact on a candidate's performance.
- **Part 12 Candidates with Special Examination Needs** relates to students with some form of disability.

Whether under Part 12 or Part 13, a mitigating circumstances notice to examiners should be submitted by the candidate through student self-service/eVision, or by the college on behalf of the candidate as soon as circumstances come to light. Candidates with alternative arrangements under Part 12 will not be considered under this mitigating circumstances process if they do not submit a separate mitigating circumstances notice.

Where a candidate or candidates have made a submission, under Part 12 or Part 13, that unforeseen factors may have had an impact on their performance in an examination, the moderators will meet to discuss the individual notice and band the seriousness of each notice on a scale of 1-3 with 1 indicating minor impact, 2 indicating moderate impact, and 3 indicating very serious impact.

Normally, this MCE meeting comprises two parts: Part A and Part B. Part A will take place before the meeting of the moderators at which the examination results are reviewed. When reaching these decisions on MCE impact level, the moderators will take into consideration, on the basis of the information provided to it, the severity and relevance of the circumstances, and the strength of the evidence. Moderators will also note whether all or a subset of written papers and/or elements of coursework were affected, being aware that it is possible for circumstances to have different levels of impact on different written papers and elements of coursework. The banding information is used at Part B of the MCE meeting: in Part B a candidate's results are discussed in the light of the impact of each MCE and recommendations formulated regarding any action(s) to be taken in respect of each MCE.

Further information on the procedure is provided in the [Examination and Assessment Framework, Annex E](#) and information for students is provided at <https://www.ox.ac.uk/students/academic/exams/problems-completing-your-assessment>. It is very important that a candidate's MCE submission is adequately evidenced and, where appropriate, verified by their college; the University forbids the Board of Moderators from seeking any additional information or evidence.

## **7. DETAILS OF EXAMINERS AND RULES ON COMMUNICATING WITH EXAMINERS**

The Moderators in Trinity 2023 are: Prof Harish Bhaskaran, Prof. Chris Grovenor (Chair), Prof, Angus Kirkland and Dr Enzo Liotti. It must be stressed that to preserve the independence of the Moderators, candidates are not allowed to make contact directly about matters relating to the content or marking of papers. Any communication must be via your college, who will, if the matter is deemed of importance, contact the Proctors. The Proctors in turn communicate with the Chair of Prelims.

Candidates should not under any circumstances seek to make contact with individual Moderators.

## ANNEX

### Summary of maximum marks available to be awarded for different components of the MS Preliminary Examination in 2023:

Component	Mark
Materials Science 1: Physical Foundations of Materials	100
Materials Science 2: Structure and Mechanical Properties of Materials	100
Materials Science 3: Transforming Materials	100
Mathematics for Materials Science	100
Coursework Paper:	
Crystallography Classes	25
Practicals	50
Computing in Materials Science	25
<b>Total</b>	<b>500</b>

## Appendix G University Policy on Intellectual Property Rights

Intellectual property (IP) is intangible property that is the result of creativity and innovation and which can be owned in a similar way to physical property. Examples of intellectual property rights (IPRs) include copyright, patents, and trademarks. In the University context, IP can be viewed as the results and outcomes of research. As with other property, there may be commercial value in IP, which may be realised via various routes including licensing or selling intellectual property rights. Oxford University Innovation, the University's technology transfer company, are responsible for assisting Oxford University researchers to protect and commercialise their IP. Oxford was one of the first UK universities to develop an intellectual property policy to govern the ownership and exploitation of IP generated by students and employees in the course of their employment or studies.

Oxford's IP policy is governed by the University's Statutes and Regulations. For ease of reference, an extract from the Statutes and Regulations is contained below. The Statutes and Regulations, as they relate to the University's IP policy, together with regulations for the administration of the IP policy, may be found in full on the University website ([researchsupport.admin.ox.ac.uk/innovation/ip](https://researchsupport.admin.ox.ac.uk/innovation/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, Oxford University Innovation, which has earned national and international recognition. since 1997 has been responsible for creating spinout companies based on academic research generated within and owned by the University of Oxford, and has spun out a new company every two months on average and files, again on average, one new patent a week.. Oxford University Innovation 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 Oxford University Innovation for exploitation.

### University intellectual property policy

(Extract from Statute XVI – Part B)

5. (1) The University claims ownership of all intellectual property specified in section 6 of this statute which is devised, made, or created:
  - (a) by persons employed by the University in the course of their employment;

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



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

## Appendix H Year 1 Foreign Language Study

To:	Director of Undergraduate Studies
From:	
College:	

I wish to study a Language Option this year:

Language	Course Type (e.g. General / Fast Track) and Level (1-7)	Online Test score (if applicable)	Previous Qualification in the Language		
			GCSE Grade	AS/A Level Grade	Other qualification

☐ I have enrolled in and paid for the above course and intend to claim for reimbursement of 50% of the costs from the Department.

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

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

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

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

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

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

This form must be returned to the Education Support Team by **Monday of week 2, Michaelmas Term.**

## Appendix I Application for 2nd year Foreign Language Option

To:	Education Manager
From:	
College:	

I wish to take the Foreign Language Option in my 2<sup>nd</sup> year, instead of the Entrepreneurship course.

Language	Course Type (e.g. General / Fast Track) and Level (1-7)	Online Test score (if applicable)	Previous Qualification in the Language		
			GCSE Grade	AS/A Level Grade	Other qualification
	Fast Track				

☐ Yes – I studied this language in my first year through a course with the Language Centre. Please state type and level of course: .....

☐ No – I did not take a language course with the Language Centre in my first year

☐ 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 Education Manager by the end of week 8, Trinity Term of the 1<sup>st</sup> year**

Note: it is possible to reconsider this decision over the Long Vacation and withdraw from the Foreign Language Option. If you do so, please contact the Education Support Team ([undergraduate.studies@materials.ox.ac.uk](mailto:undergraduate.studies@materials.ox.ac.uk)) as soon as you know.

## Appendix J      Crystallography Class Procedures

### Handing in the work

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

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

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

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

### Forgetting to hand in the work

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

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

### Missing one or more classes

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

#### **\*Satisfactory Performance in Coursework**

*To pass the coursework 'paper' candidates must normally demonstrate a satisfactory performance in both the Practical Work, the Crystallography Classes and the project work in Computing for Materials Science (CMS).*

*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.*

*For their CMS project work to be judged as satisfactory candidates must have achieved at least 40% on this coursework.*

*As indicated in the Examination Regulations for the Preliminary Examination in Materials Science (clause 2b), 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.*

## Appendix K    Electronic Declaration of Authorship for online practical reports

I confirm the following:

1. I have read and understood the University's disciplinary regulations concerning conduct in examinations and, in particular, the regulations on plagiarism (The University Student Handbook Section 7.7; available at <https://www.ox.ac.uk/students/academic/student-handbook>).
2. I have read and understood the Education Committee's information and guidance on academic good practice and plagiarism at <https://www.ox.ac.uk/students/academic/guidance/skills>.
3. The [thesis/dissertation/extended essay/assignment/project/other submitted work] I am submitting is entirely my own work except where otherwise indicated.
4. It has not been submitted, either partially or in full, either for this Honour School or qualification or for another Honour School or qualification of this University (except where the Special Regulations for the subject permit this), or for a qualification at any other institution.
5. I have clearly indicated the presence of all material I have quoted from other sources, including any diagrams, charts, tables or graphs.
6. I have clearly indicated the presence of all paraphrased material with appropriate references.
7. I have acknowledged appropriately any assistance I have received in addition to that provided by my [tutor/supervisor/adviser].
8. I have not copied from the work of any other candidate.
9. I have not used the services of any agency providing specimen, model or ghostwritten work in the preparation of this thesis/dissertation/extended essay/assignment/project/other submitted work. (See also section 2.4 of Statute XI on University Discipline under which members of the University are prohibited from providing material of this nature for candidates in examinations at this University or elsewhere: <https://governance.admin.ox.ac.uk/legislation/statute-xi-university-discipline-0>)
10. I agree to retain an electronic copy of this work until the publication of my final examination result, except where submission in hand-written format is permitted.
11. I agree to make any such electronic copy available to the examiners should it be necessary to confirm my word count or to check for plagiarism.

## Appendix L Teaching Labs – Lab Notebook marking sheet

**The marking scheme and assessment criteria used in 2023-24 are given below:**

Recording research data is as important as the experiment itself. If your lab notebook is well maintained and contains an accurate record of the research protocols used and the results obtained, it will be the basis to reproduce the experiment in the future (if needed) and to write scientific papers and reports. It will also be an invaluable source of information if you want to claim a discovery or an invention, to prove that you have adhered to standards of good practice (e.g. in case of an accident in the lab) and that you have acted with academic and ethical integrity.

The lab notebook doesn't have to look perfect. It should reflect, in a practical and efficient way, your experiences in the lab. Some of you will be tempted to use a "draft" lab notebook and then transfer all its content to the "real" one once you've finished the practical, with all the extra time it takes. This is not encouraged, and it won't bring you any extra marks. If the lab notebook is legible and shows the right content, it's served its purpose.

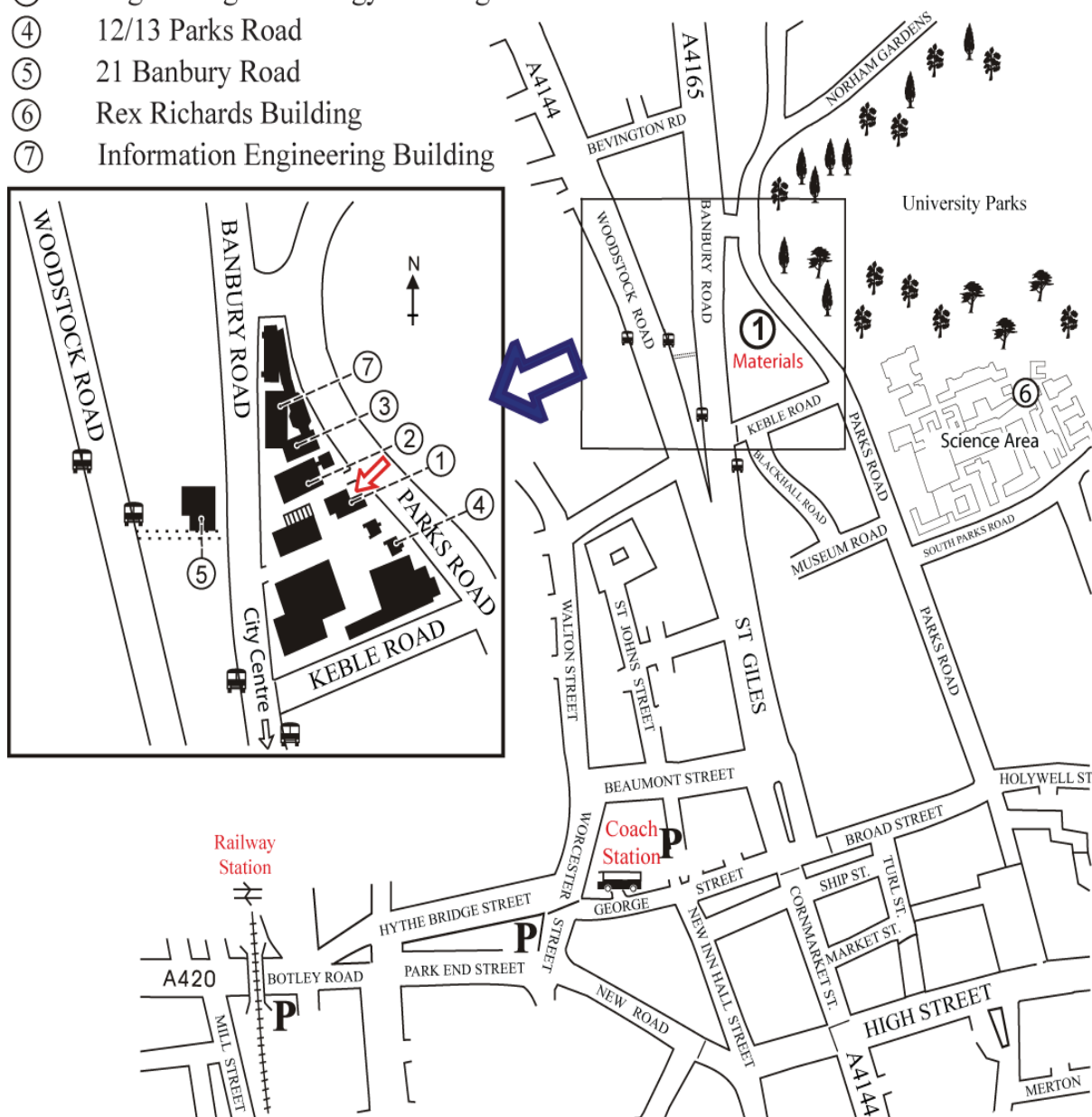
### **Means of Assessment:**

Up to three marks are awarded for the quality of your lab notebook entry. In awarding these marks the Senior Demonstrator will consider all of the following:

Category	Details	Comments
<b>Presentation and completeness of results</b>	To check you have followed the "best practice guidelines in this document (e.g. "Things to check section") and whether you have included and correctly described all the data/results specified in the script	
<b>Data analysis and errors</b>	To evaluate if the analysis of data, including error analysis, is adequate.	
<b>Interpretation of results and conclusions</b>	To evaluate your understanding of the experiment, its results and how you summarize it all in some brief but meaningful conclusions.	
<b>Overall Mark (integer only)</b>	[Not released to student]	

## 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





**Department of Materials**  
University of Oxford  
Parks Road  
Oxford OX1 3PH  
United Kingdom

Tel +44 (0)1865 273700  
Fax +44 (0)1865 273789  
Email [enquiries@materials.ox.ac.uk](mailto:enquiries@materials.ox.ac.uk)  
Web [www.materials.ox.ac.uk](http://www.materials.ox.ac.uk)

