INTRODUCTION TO SKILLS-TRAINING COURSES (Research Skills and Transferable Skills, see sections 8 and 16 of your Graduate Course Handbook for teaching skills)

Graduates need to be skilled not only in the experimental and/or theoretical techniques relevant to their own research, but also in skills for communicating their results to a wider audience and for managing their own research programme and future career development. The handbook of ‘Postgraduate Lecture Synopses and Research Colloquia’ lists the different skills courses on offer under the title ‘Postgraduate Training’. You should keep a log-book or portfolio to record the various training that you undertake, of all kinds, formal and informal, since you may be asked to summarise this by your research sponsor or by a prospective employer and you will be required to summarise it on your applications for transfer of status and confirmation of status. There is an expectation by some sponsors and by the University that you will engage in approximately 10 days per annum of transferable skills training during years one to three of your research degree. Included in the 10 days is skills training and feedback provided by your supervisor, for example on presentation skills, report writing or writing a scientific paper.

Transferable skills are those in addition to your academic and research skills that employers both inside and outside academia are looking for. The government and funding agencies believe that these skills are essential for maintaining employability in a global economy which is increasingly requiring people to respond to and anticipate change. University College London on their website http://www.ucl.ac.uk/keyskills/resources/Grid has presented a matrix of these skills:
<table>
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<tr>
<th>Academic Skills</th>
<th>Self-Management Skills</th>
<th>Communication Skills</th>
<th>Interpersonal Skills</th>
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<tbody>
<tr>
<td>Library research</td>
<td>Synthesis of data</td>
<td>Written materials</td>
<td>Group work/Teamwork</td>
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<tr>
<td>Active Learning</td>
<td>Problem Solving</td>
<td>Oral/visual presentations</td>
<td>Peer Assessment</td>
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<tr>
<td>Creativity/Innovation</td>
<td>Numeracy</td>
<td>Information Skills</td>
<td>Understanding others</td>
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<td>Leadership</td>
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<td>Critical thinking</td>
<td>Self-awareness/Assessment</td>
<td>CAREER Management</td>
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<td>Project Management</td>
<td>Autonomy</td>
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<td>Active listening</td>
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<td>IT Skills</td>
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</table>

Further information about these graduate skills can be found on the EPSRC website and at www.vitae.ac.uk.

Skills training available to you as graduate students includes:

(i) Project management skills (Dr A O Taylor and others, MT Week 4);
(ii) Presentation skills (Staff of OUeS & Dr A O Taylor, HT Week 2);
(iii) Writing skills, lab notebooks, IPR and patents (Dr H E Assender & others, HT Week 5);
(iv) Information skills (Staff of Bodleian & Dr A O Taylor, MT Week 2);
(v) Career-planning (Alumni of Dept, OU Careers Service & Dr Taylor, MT Wk5)
(vi) Workshop skills (Laurie Walton, throughout year);
(vii) Microscopy skills;
(viii) Modelling skills/Introduction to the MML (Dr Paul Warren, MT Week 1);
(ix) GRADSchool, second (or third) year;
(x) Institute of Materials – Benefits of student membership (Mr D Arthur, MT Wk 4);
(xi) Poster presentation skills (Dr A O Taylor, MT Week 7));
(xii) Teaching skills (Lecturing, laboratory demonstrating, tutorials, classes, maths classes, advanced A/V equipment [see lecture lists]);
(xiii) Managing your References - Bibliographic software (Dr L Ristic, Bodleian, MT Week 6);
(xiv) Academic Writing Skills (for non-native English speakers);
(xv) Foreign Language Skills (register on-line with the OU Language Centre http://www.lang.ox.ac.uk/courses/index.html by Wednesday of MT Week 1);
(xvi) Managing Your DPhil (see MPLS Division Skills training web pages);
(xvii) Future Focus (OU Careers Service, for final year research students, how to access the jobs market, repeated termly);
(xviii) ISIS Innovation Ltd – Technology Transfer Protecting and Exploiting Your intellectual Property (TT Week 2));
(xix) Labview Workshop (Ralph Mcfadyen, National Instruments UK, HT Week 3).

Attendance at the project management lecture in Week 4 of Michaelmas Term is compulsory. It is also strongly recommended that you attend some of the workshop sessions in Hilary Term on ‘Presentation skills’ and on ‘Writing skills’, since you will need the former to give a good presentation at your first-year viva (see section 10) and second-year talk (see section 12) and you will need good writing skills for your first-year report (see section 10) and your thesis (see section 13). These courses assume you know the basics of word processing and use of Powerpoint, but introductory courses to these (and a wide range of other IT courses) are available from the University Computing Service (http://www.oucs.ox.ac.uk/itlp/). Students whose first language is not English, should attend the courses on ‘Academic Writing’ that are offered by the Oxford University Language Centre at 12 Woodstock Road (http://www.lang.ox.ac.uk). You should also attend the lecture in Week 2 of Michaelmas Term on ‘Information Skills’ as the latter is critical for accessing the research already done in your chosen field. Information on accessing and searching the materials literature can be found at http://www.bodleian.ox.ac.uk/science/subjects/materials. In Michaelmas Term some alumni of the Department, together with a representative from the Oxford University Careers Service, will run a compulsory and very useful workshop on Career Planning - Looking to the Future. Further information about the Careers Service can be found on their website (http://www.careers.ox.ac.uk).

Towards the end of your degree there is an opportunity to discuss career opportunities for Materials Scientists on a one-to-one basis with several Alumni of the Department. This complements the many activities available through the OU Careers Service.

Some of you may find it useful to attend the course ‘Scientific Computing for DPhil Students’ which is run by the Maths Institute every other year. The next course will run in 2012/13. (Further details from Lotti Ekert, lotti.ekert@comlab.ox.ac.uk).
Since Materials Science is strongly linked with technology and therefore wealth creation, you might like to develop your business skills by attending some or all of a set of lectures in a series called ‘Building a Business’ organised by The Oxford Centre for Entrepreneurship and Innovation’, part of the Said Business School. The lectures take place at 5.30pm on Tuesdays at the Said Business School.

Lecture 1, Taking the first steps: Company basics (Russell Smith) - 1 Nov 2011
Lecture 2, Evaluating a venture idea (Pegram Harrison) - 8 Nov 2011
Lecture 3, Protecting your ideas: Intellectual property (Robert Pitkethly) – 15 Nov 2011
Lecture 4, Negotiation skills (Owen Darbishire) – 22 Nov 2011
Lecture 5, Marketing and product development (Patrick Mawhood) – 29 Nov 2011
Lecture 6, Raising capital, doing deals (tbc) - 17 Jan 2012
Lecture 7, Understanding financial control (Simon Husband) – 24 Jan 2012
Lecture 8, Managing people, managing teams (Tim Cook) – 31 Jan 2012
Lecture 9, Entrepreneurship and the ideal Business Plan (Dorothea Ringe) - 7 Feb 2012

Further details of the course and registration information can be found at the following web address:
http://www.sbs.ox.ac.uk/centres/entrepreneurship/programmes/Pages/Building%20a%20Business.aspx. The lecture on ‘Intellectual Property’ is particularly recommended, as understanding intellectual property rights (IPR) is very important for all researchers, whether academic or in industry. You should note that the University has in place arrangements governing the ownership and exploitation of intellectual property generated by graduate students in the course of their studies. The University claims ownership of certain forms of intellectual property that students may create, as described in the policy document included as an appendix. From time to time the MPLS Division also arranges courses on Intellectual Property and Entrepreneurship and Enterprise.

The MPLS Division runs a very useful workshop on ‘Managing Your DPhil’ (usually in Hilary Term) which complements the Department’s Project Management Scheme.

If you wish to attend a key skills training course that is not offered by the Department of Materials or MPLS Division and for which a fee is charged, you may apply to the Director of Studies for funding using a copy of the form in the appendix of this handbook.
If you wish to use the supervised workshop in the basement of the Hume-Rothery building, then it is essential that you first attend a Workshop skills course given by Laurie Walton, the Head of Workshop. Similarly, if you wish to use the electron microscopes, then you should first complete an access and training request form (see section 7 of this Handbook). If you wish to use the computer facilities in the Materials Modelling Laboratory for your research, then you should attend the lecture on ‘Introduction to the Materials Modelling Laboratory’ which is given by Dr Paul Warren, the Senior IT Officer, in Week 1 of Michaelmas Term. You should also attend the lecture in Week 4 of Michaelmas Term by Mr Arthur on the benefits of student membership of the Institute of Materials. The receipt of their monthly magazine ‘Materials World’ and attendance at their meetings should both increase your general knowledge and improve your networking skills!

Further transferable skills training information and courses can be found via the University’s ‘skills portal’ at http://www.skillsportal.ox.ac.uk, and in the MPLS Division’s “Graduate Skills Training Handbook” with which you have been issued (see also http://www.mpls.ox.ac.uk/skills) and on the GAP database.

The Skills Portal is a new website created for all research students, postdoctoral researchers and their supervisors at Oxford. It brings together a range of information about transferable skills development and has details of skills training courses, seminars and workshops offered throughout the university in a searchable database. There are links to online resources and tips on subjects such as project management and teaching skills. It also gives advice on getting the most from your time at Oxford and putting yourself in the best possible position to succeed in your career, whatever it might be. The Skills Portal Forum is the place to ask questions, discuss issues with other researchers and make your views known to the people who organise the training.

6.3 GRADSCHOOLS AND VITAE

Attendance at a Vitae National GRADSchool (or its equivalent) is compulsory for all EPSRC-funded students who started their research after 1 October 2000 and is one of the conditions for receiving a grant from the Engineering and Physical Sciences Research Council (EPSRC) (http://www.vitae.ac.uk/policy-practice/1403/GRADSchools.html). Attendance at these residential schools is free for EPSRC-funded students but other students may need to pay a fee, which varies dependent on the course but is in the region of £500. The MPLS Division arranges an Oxford Graduate School which usually takes place in September and
you may attend this at no charge even if you are not sponsored by the EPSRC. We recommend that you attend a Graduate School during the summer of your second year. The purpose of these schools is to help graduates develop their awareness of key transferable skills and enhance their career development. Further information about these graduate schools can be found on the EPSRC website and at www.vitae.ac.uk.

The Vitae site contains an excellent section, originally designed by postgraduates, ‘Postgraduate Researchers’, and you are strongly advised to browse through this at your earliest convenience (http://www.vitae.ac.uk/researchers/1218/Postgraduate-researchers.html). It contains several interlinked sections, including:

- Managing yourself – evaluating your skills, setting personal objectives
- Managing your research project – time management, managing your supervisor, support mechanisms
- Developing your career – building a career plan, effective networking
- Completing your doctorate – tips on writing your thesis, submission and viva
- Supervision and key relationships

In their February 2001 review of the original site, Science magazine wrote: ‘The great strength of this site is that it has been put together for a very specific target group (doctoral students) and has clearly been written by people who know what they are talking about. From the ‘eight problems you can beat’ - such as lack of motivation, poor time management, and limited support - to the ‘nine factors to tip the balance’ in your favour when it comes to getting an academic job, this site is tailored to the needs of doctoral students and uses genuine examples. It talks about issues that are difficult to research elsewhere, such as building a good working relationship with your supervisor and writing up your thesis’.

You might find the UK Grad monthly bulletin for research students of interest at http://vitae.ac.uk/researchers/4069/PGR-tips-email-bulletin.html.

In addition to the transferable skills training courses offered by the Materials Department, the MPLS Division and other academic departments, the Oxford University Computing Centre and the Bodleian Library provide a wide range of courses (see www.skillstoolkit.ox.ac.uk) and courses in foreign languages are offered by the Oxford University Language Centre (www.lang.ox.ac.uk).